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Government Expenditures and Economic Growth: Evidence from Malaysia

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ABSTRACT

This paper aims to empirically analyse the relationship between government expenditures and economic growth in Malaysia from 1987 to 2016. This study uses the time series data in identifying the economic growth determinants in Malaysia. The Multiple Linear Regression (MLR) is used to establish the relationship between government expenditure which are education expenditure, health expenditure, defense and security expenditure, and social services expenditure towards the economic growth in Malaysia. The findings for this study indicate all the independent variables have a significant relationship towards economic growth in Malaysia where the health expenditure is the most influenced government expenditure component towards the economic growth in Malaysia. These findings may give some overview of policy implications to the policymakers on optimising the effects of government expenditure on economic development.

Keywords: *government expenditures, economic growth, multiple linear regression*

INTRODUCTION

Economic growth is the process by which the productive capacity of the economy is increased over time to bring about rising levels of national output and income (Smith, 2003). In other words, it portrays economic growth as a primary quantitative measure based on the rate of change of GDP. For decades, the relationship between government expenditure and economic growth has created much attention and became a great concern for both economists and policymakers (Hasnul, 2015). Government expenditure has been debated as a medium either to enhance the country's economic growth or only as an expenditure in many countries' fiscal policy thus resulting in doubtful and controversial issues (Hasnul, 2015). Abdullah *et al*. (2010), views government expenditure as an important tool that can give a contribution to a country's economic growth including Malaysia. It also reflects the incident of expansion in the economy since the economic growth has a close relationship with the long-term economic situation. Furthermore, government expenditure is also an important factor that must be enhanced to maintain economic growth at a high-level. This is because, government expenditure is an important component that can be used to restore the economy (Abdullah *et al*., 2010). Historical data from the World Development Indicators (2018) in Figure 1 shows that Malaysia's GDP growth has been fluctuating continuously from 1990 to 2016 with significant declines recorded from 1984 to 1985, 1997 to 1998, 2000 to 2001, and 2007 to 2009. This indicates that even though there are solid efforts in macroeconomics management, Malaysia is still facing the challenges arising from the external development and risks due to a higher open economic environment. Due to the above, there had been numerous past studies that were directed to investigate the role of government expenditure towards the economic growth in a nation's level. However, the empirical findings from the past studies were found to be distinct from one another and of a mixed interpretation. As indicated by Noraina and Nur Azura (2010), public social expenditure on education and healthcare is fundamental to the advancement of Malaysia's economic development aspects. Nevertheless, Abdul Jabbar Abdullah (2013) contested that higher education is not creating a higher financial development but rather is contrarily influencing the economy. This study will be interested in assessing the mixed findings facilitated by past researchers concerning the relationship between education expenditure, health expenditure, defense and security expenditure, and social services

towards economic growth. The time-series data in Malaysia will be used to perform the empirical analysis. Besides, as an aid to fiscal policy, it is additionally valuable to have a greater understanding of the relationship between government expenditures and economic growth. In this manner, this study highlights the significance of government since it may be utilised as a competent direct for monetary arrangement.

Figure 1: Malaysia's GDP Growth [U2]. Source: World Economic Outlook (April 2018)

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Theoretical Review

The theoretical review of economic growth was based on Keynesian theory (Chau, Khin, Tay, & Meng, 2016). This theory views government expenditure as an exogenous policy instrument that can influence GDP growth (Iftikhar & Husnain, 2011). Furthermore, it assumes that increasing government expenditure will result in aggregate demand to be higher and ensuring the economic growth to increase rapidly (Nurlina, 2015). Thus, this theory can also be used in economics study to investigate the significant relationship between government expenditure and economic growth (Govindaraju & Rao, 2011). This study uses the Keynesian theory to identify the relationship between government expenditure and economic growth as the theory expressed that as a fiscal policy instrument, the government expenditure is useful to achieve short-term stability and a higher long-run growth rate. It is recommended for the government to intervene in the economy through fiscal policies since it plays an important role in the development process (Srinivasan, 2013). This theory also suggests that government expenditure gave a positive contribution to economic growth based on the multiplier effects in the Keynesian model (Srinivasan, 2013).

Empirical Review

Dependent Variable (Economic Growth)

Economic growth or known as GDP is defined as an increase in the productive capacity of an economy (Palmer, 2012). It is the result of which the economy can produce many additional quantities of goods and services (Palmer, 2012). GDP is also a measure of the goods and services value which are produced in the economy regardless of many factors of production being used to produce these goods and services. Many studies have been done to identify the relationship between government expenditure and economic growth. However, these studies have produced mixed results. Hasnul (2015) has shown either negative or positive results of government expenditure

towards economic growth. Besides that, a study carried out by Stevan Gaber and Ilija Gruevski (2013) also found the positive and negative significant relationship between government expenditure towards economic growth. A study in East Africa by Gisore, Kiprop, Kalio, Ochieng, and Kibet (2014) has found that government expenditure has a positive significant relationship with economic growth. Regardless of all positive results found, some studies however showed different results as proven by Hasnul (2015) were proven the negative significant relationship between government expenditure and economic growth in Malaysia.

Empirical Review on Independent Variable

(i) Education Expenditure (ED) with Economic Growth (GDP)

Education and development are an important tool which can improve the competitiveness of a country (Rambeli, Ramli, Hashim, Affizah, & Marikan, 2016). Therefore, the government has to provide education to everyone since education is a powerful tool that can be used in reducing poverty, enhancing economic growth, empowering people, improving private earnings, promoting a flexible and healthy environment and create a competitive economy (M. Afzal, M. Farooq, H. Ahmad, *et al*, 2010). [U3] According to Churchill, *et al* (2015), education expenditure provides a positive impact on economic growth as it develops the social welfare of a country. In the meantime, the gain from the educational sector would increase the productivity of labour as well as the increase of economic growth (Churchill, *et al*, 2015). Despite that, there were several studies which findings have shown the opposite. De Meulmester and Rochet (1995) stated that the relationship between education and economic growth can also be negative and not always positive. Some previous researchers also argued that education is just an application and therefore cannot be used to improve a country's economy. Gisore, Kiprop, Kalio, Ochieng, and Kibet (2014), found that education expenditure has a negative significant relationship with economic growth. Therefore, the following hypothesis is developed:

H_1 = There is a significant relationship between education expenditure towards economic growth[U4]

(ii) Health Expenditure (HE) with Economic Growth (GDP)

World Health Organization (WHO) has stated that the government plays an important role to provide a greater quality of life for the citizens through a good health system since health is an important determinant of economic development for improving a population's health. This means that a healthy population in turn can results in higher productivity, increase in income, thus resulting in a better economic performance (Wang *et al*., 2015). Besides, to have sustainable development and economic growth of a country, human capital and health improvement programmes are very important and needed (Chai *et al.*, 2008). However, less attention has been given in analysing the relationship between government expenditure in health care and economic growth especially in developing countries (Ahmad *et al*., 2016). For instance, in sub-Saharan Africa (SSA) and other developing regions which relatively lack in resources, the governments in these regions gave less attention to health expenditure (Aboubacar & Xu, 2017). A study was done in East Africa by Gisore, Kiprop, Kalio, Ochieng, and Kibet (2014) also found that health and defense expenditure have a positive significant relationship with economic growth. However, a study done by Hasnul (2015) showed a different finding where the health expenditure showed an insignificant relationship towards economic growth. Therefore, the following hypothesis is developed:

H_2 = There is a significant relationship between health expenditure towards economic growth (U5)

(iii) Defense and Security Expenditure (DS) with Economic Growth (GDP)

Defense and security expenditure is defined as an expenditure by governments that influences the resources it takes up, especially when it leads to or facilitates conflicts (Dunne, 2014). It is found that there has been a growing interest in the role of defense and security expenditure in the last four decades especially about developing countries such as Malaysia. Based on the very first study done by Benoit (1973), he found that the relationship between defense and security expenditure on economic growth has a significant positive relationship. This is because the defense and security expenditure can boost economic growth. Since Benoit's study, there

have been many other studies trying to identify the relationship of defense expenditure on economic growth. On the contrary, a study done by Haseeb (2014), found that the relationship between defense and security expenditure has a negative significant relationship with economic growth and strongly suggested that the policymakers need to focus more on the development expenditure rather than defense expenditure (Haseeb, 2014). Moreover, there is a significant negative relationship between defense and security expenditure on economic growth which has been found by a study carried out by Aziz *et al*. (2017). Therefore, the following hypothesis is developed:

H_3 = There is a significant relationship between defense and security expenditure towards economic growth[U6]

(iv) Social Services Expenditure (SS) with Economic Growth (GDP)

Social protection is a set of policies and programmes designed to reduce poverty and vulnerability in a country. It is being done by promoting efficient labor markets, lessening the exposure of risks to the people, and enhancing their capacity to protect themselves against risks and loss of income (Édes *et al*., 2012). Malaysia is a developing country that is going to become a developed nation in a few years to come, therefore, government expenditure on social services is needed for the economy's development (Noraina & Azura, 2010). These services are an investment or capital by the government to carry out economic development projects. This is because it can enhance the socioeconomic status and thus, improve economic growth (Abdullah *et al*., 2010). Therefore, the following hypothesis is developed:

H_4 = There is a significant relationship between social services expenditure towards economic growth. Based on the discussion in the previous section, the following theoretical model is developed (Figure 2).

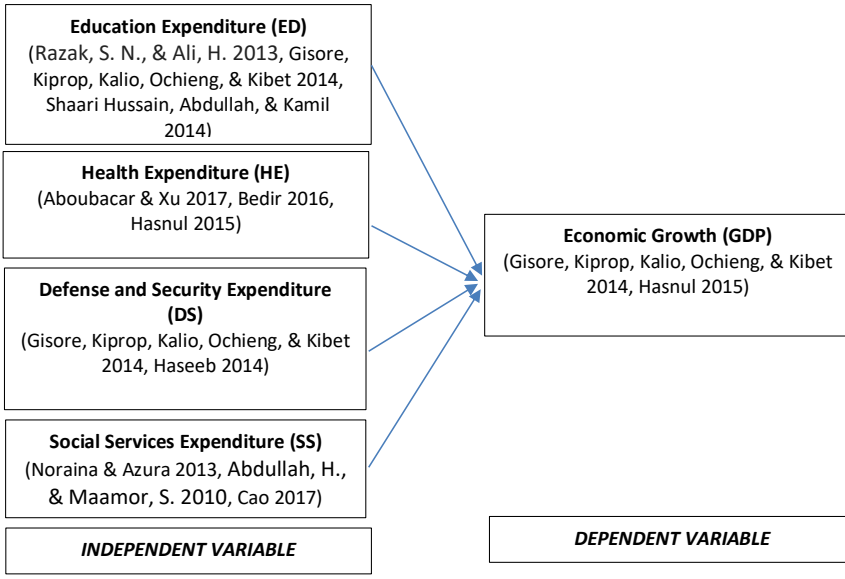

Figure 2: Theoretical Framework for the Study

METHODOLOGY

Data Collection and Research Design

This study is carried out on yearly basis starting from the year 1987 to 2016 to determine the relationship between the Education expenditure (ED), Health expenditure (HE), Defense and Security expenditure (DS), and Social Services expenditure (SS) towards economic growth (GDP). In this study, time series analysis is applied where the data is a set of observations on the values required by variables at different times. The model used is applied to gain a better understanding of the strengths and structures of the observed data. Therefore, Econometric Views (E-views 9) software is used as an excellent tool to view and test the regression analysis and to answer the research objectives. The tests list includes the Descriptive Statistics, Unit Root test (Augmented Dickey-Fuller & Phillips- Perron), Normality Test (Jarque-Bera), and Multiple Linear Regression. Whereas the impacts of on the Education expenditure (ED), Health expenditure (HE), Defense

and Security expenditure (DS) and Social Services expenditure (SS) towards economic growth (GDP) are examined using the following model:

$$rgdp,t = 0 + ed,gdp\ red,t + he,gdp\ rhe,t + ds,gdp\ rds,t + ss,gdp\ rss,t + \varepsilon \quad [U7]$$

FINDING

Descriptive Statistics

Table 1: Result *F*-Test & *T*-Test Statistics

	LGDP	LED	LHE	LDS	LSS
Mean	26.99968	1.659719	1.209693	2.459479	6.404267
Median	27.01522	1.620627	1.207225	2.455443	6.842210
Maximum	27.73378	2.035744	1.580919	2.887033	7.988543
Minimum	26.02954	1.375873	0.993710	1.921661	3.761200
Std. Dev.	0.490459	0.165252	0.165897	0.308593	1.222169
Skewness	-0.356671	0.786926	0.365106	-0.050470	-0.858106
Kurtosis	2.112545	3.124401	1.922958	1.790243	2.510975
Jarque-Bera	1.620543	3.115611	2.116534	1.842126	3.980660
Probability	0.444737	0.210598	0.347057	0.398096	0.136650
Sum	809.9905	49.79157	36.29079	73.78438	192.1280
Sum Sq. Dev.	6.975938	0.791934	0.798135	2.761656	43.31722
Observations	30	30	30	30	30

***,** and * denote significant at the 1%, 5% level and 10% level respectively

The standard deviation of GDP is 0.490459 and has a negative skewness with a value of -0.356671 which indicates that the distribution of the data is negatively skewed. The value of kurtosis for GDP shows that it is being considered as platykurtic distribution with a value of 2.112545 which is less than 3, the value of kurtosis value for normal distribution. Platykurtic distribution is the distribution with less peaked in the mean, and thinner tails compared to normal distributions. The standard deviation of ED is 0.165252. ED has a positive skewness with a value of 0.786926 which indicates that the distribution of the data is positively skewed. The value of kurtosis for ED shows that it is being considered as leptokurtic distribution with a value of 3.124401 which is more than 3 which means the sharper peak and fatter tails distribution. The Jarque-Bera value for ED shows an insignificant result which failed to reject the null hypothesis where it indicates that the data is normally distributed. The standard deviation of HE is 0.165897 and has a positive skewness with a value of 0.365106. The value of kurtosis for HE is being considered as a normal distribution with a value of 1.922958 which is less than 3. The Jarque-Bera value for HE shows an insignificant result that failed to reject the null hypothesis where it indicates that the data is normally distributed. The standard deviation of DS is 0.308593 with a value of -0.050470 which indicates that the distribution of the data is negatively skewed. The value of kurtosis for DS shows that it is being considered as platykurtic distribution with a value of 1.790243 which is less than 3, the value of kurtosis value for normal distribution. The Jarque-Bera value for DS shows an insignificant result that failed to reject the null hypothesis where it indicates that the data is normally distributed. The standard deviation of SS is 1.222169 with a value of -0.858106 which indicates that the distribution of the data is negatively skewed and the value of kurtosis for SS shows that it is being considered as a platykurtic normal distribution with a value of 2.510975 which is less than 3. The Jarque-Bera value for SS shows an insignificant result which failed to reject the null hypothesis where it indicates that the data is normally distributed.

Unit Root Test

Table 2: Augmented Dickey-Fuller (ADF) Test

	Level		1st Differences	
Variables	**No Trend**	**Trend**	**No Trend**	**Trend**
GDP	1.9759 (0.9997)	-0.6807 (0.9652)	-4.6248 (0.0010)***	-4.8457 (0.0031)***
ED	-2.4500 (0.1377)	-2.4269 (0.3591)	-5.5620 (0.0001)***	-5.4423 (0.0007)***
HE	0.2550 (0.9715)	-2.6812 (0.2509)	-5.9634 (0.0000)***	-6.1822 (0.0001)***
DS	-1.0231 (0.7314)	-3.1947 (0.1081)	-2.7600 (0.0779)*	-3.3135 (0.0890)*
SS	-1.5692 (0.4851)	-2.4414 (0.3524)	-5.4507 (0.0001)***	-5.3617 (0.0009)***

*****, ** and * denote significant at the 1%, 5% level and 10% level respectively**

The result of the Augmented Dickey-Fuller Test shows that the data for GDP is stationary at 1st difference for both trends and no trend at 1% significant level with a 99% confidence level. Meanwhile, the result level for both trends and no trend, the data shows that the result for GDP is insignificant. As for ED variable, the result shows that the data is stationary at 1st difference for both trends and no trend at a 1% significant level with a 99% confidence level. Meanwhile, the result level for both trends and no trend, the data shows that the result for ED is insignificant. Next, the result of the data for HE is stationary at the 1st difference for both trend and no trend at a 1% significant level with a 99% confidence level. Meanwhile, the result level for both trends and no trend, the data shows that the result for HE is insignificant. The result of the data for DS is stationary at 1st difference for both trends and no trend at a 10% significant level with a 90% confidence level. Meanwhile, the result level for both trends and no trend, the data shows that the result for DS is insignificant. The result for

SS is stationary at the 1st difference for both trends and no trend with a 99% confidence level where the result level for both trends and no trend is insignificant. As the *p*-value of the dependent and independent variables is below the significant level at 1% and 10%, thus the null hypothesis will be rejected. Therefore, it can be concluded that the data is stationary at a 1st difference with the trend and no trend.

Table 3: Phillips-Perron (PP) Test

	Level		1st Differences	
Variables	**No Trend**	**Trend**	**No Trend**	**Trend**
GDP	1.9759 (1.0000)	-0.6807 (0.9652)	-4.6248 (0.0010)***	-4.8457 (0.0011)***
ED	-2.4500 (0.0877)*	-2.4269 (0.2544)	-5.5620 (0.0001)***	-5.4423 (0.0007)***
HE	0.2550 (0.9955)	-2.6812 (0.3281)	-5.9634 (0.0000)***	-6.1822 (0.0001)***
DS	-1.0231 (0.7684)	-3.1947 (0.0590)*	-2.7600 (0.0000)***	-3.3135 (0.0000)***
SS	-1.5692 (0.4751)	-2.4414 (0.3524)	-5.4507 (0.0001)***	-5.3617 (0.0008)***

*****,**and * denote significant at the 1%, 5% level and 10% level respectively**

Based on the result Phillips-Perron test, the data of the dependent and independent variables is stationary at 1st difference for trend and no trend at a 99% level of confidence. This finding is supported by a statistically significant PP test for the data at 1st difference. As the p-value for the dependent and independent variables are below the level of significance then the data is considered as stationary thus rejecting the null hypothesis.

Normality Test (Jarque-Bera Test)

Table 4: Result Normality Test (Jarque Bera Test)

Variables	Coefficient Value (*p*-value)
GDP	1.620543 (0.444737)
ED	3.115611 (0.210598)
HE	2.116534 (0.347057)
DS	1.842126 (0.398096)
SS	3.980660 (0.136650)

*****, ** and * denote significant at the 1%, 5% level and 10% level respectively**

The normality test is also being tested for each variable by using the Jarque-Bera which proved that the result for GDP, ED, HE, DS, and SS are insignificant Thus, it has failed to reject the null hypothesis at a 10% significant level with a 90% confidence level. Therefore, this indicates that the data for GDP, ED, HE, DS, and SS are normally distributed.

Results of the Estimated Regression

Table 5: Result Multiple Linear Regression (MLR)

Coefficient	Coefficient Value	*P*-value
β_0	26.50016	0.0000***
$\beta_{ed,gdp}$	-0.482658	0.0022***
$\beta_{he,gdp}$	1.380619	0.0000***
$\beta_{ds,gdp}$	-0.485200	0.0005***

$\beta_{ss,gdp}$	0.128634	0.0001***
F-statistic	107.0760	0.0000***
R^2	0.944849	
Adjusted R^2	0.918062	

*****, ** and * denote significant at the 1%, 5% level and 10% level respectively**

Table 5 shows four types of variables where economic growth (GDP) as a dependent variable, meanwhile education expenditure (ED), health expenditure (HE), defense and security expenditure (DS), and social services expenditure (SS) as independent variables. Therefore, the result of the model equation as follows:

$$r_{gdp,t} = 26.50016 - 0.482658\, r_{ed,t} + 1.380619\, r_{he,t} - 0.485200\, r_{ds,t} + 0.128634\, r_{ss,t} + \varepsilon$$

The result of the coefficient shows that the education expenditure (ED) has a negative significant relationship with economic growth (GDP) in Malaysia. The null hypothesis 1 has been rejected because the coefficient $\beta_{ed,gdp}$ is significant at a 1% significant level with a 99% confidence level. The variable has a coefficient of -0.4827 which indicates that, if education expenditure increases by 1%, the economic growth will decrease by 0.4827%. [U10] This shows that there is a negative significant relationship between education expenditure and economic growth in Malaysia (Gisore, Kiprop, Kalio, Ochieng, and Kibet, 2014). De Meulmester and Rochet (1995) stated that the relationship between education and economic growth can also be negative and not always positive. Some previous researchers also argued that education is just an application and it is not being used to improve economy [U11]. Besides that, it has been stated by Blaug (1970) that investment in education is just merely consumption. This is because the investment made by the government in obtaining knowledge or skills is only for the individual interests and it does not give any contribution to economic growth. Thus, this indicator shows that increase in the education expenditure would expect to push economic growth and vice versa.

Furthermore, health expenditure (HE) has a positive relationship with the economic growth (EG) in Malaysia where the null hypothesis 2 has been rejected because a coefficient $\theta_{he,gdp}$ is significant at 1% significant level with 99% confidence level. The variable has a coefficient of 1.3806 which indicates that, if education expenditure increases by 1%, the economic growth will increase by 1.3806%. This shows that there is a positive significant relationship between health expenditure and economic growth in Malaysia (Bedir, 2016). It is because when a person is healthy, their work can be more effective and efficient, thus contributing more of their time in more productive activities (Bedir, 2016). A study was done in East Africa by Gisore, Kiprop, Kalio, Ochieng, and Kibet (2014) also found that health and defense expenditure has a positive significant relationship with economic growth. Meanwhile, Craigwell *et al*. (2012) has surveyed the viability of government expenditure especially on healthcare and education in 19 Caribbean nations, and found that health expenditure has a huge positive and significant relationship with economic growth. It is because when people are in good health, they are will be more productive and as a result, it can help to improve economic growth.

Meanwhile, the defense and security expenditure (DS) has a negative relationship with the economic growth (GDP) in Malaysia which null hypothesis 3 has been rejected because the coefficient $\theta_{ds,gdp}$ is significant at 1% significant level with 99% confidence level. The variable has a coefficient of -0.4852 which indicates that, if defense and security expenditure increases by 1%, the economic growth will decrease by 0.4852%. This shows that there is a negative significant relationship between defense and security expenditure and economic growth in Malaysia (Haseeb, 2014). Besides that, there is a significant negative relationship between defense and security expenditure on economic growth (Aziz *et al*., 2017). This is because they found out that defense and security expenditure does not have proper potential that can affect the economic development. A survey by Dunne (2014) mainly within the Keynesian framework, also suggests that defense expenditure gives no effect on economic growth. It has been certain that there is no evidence of a positive relationship and instead it is likely to have a negative relationship (Dunne, 2014).

The result of the coefficient shows that the social services expenditure (SS) has a positive relationship with economic growth (GDP) in Malaysia.

The null hypothesis 4 has been rejected because the coefficient $\beta_{ss,gdp}$ is significant at a 1% significant level with a 99% confidence level. The variable has a coefficient of 0.1286 which indicates that, if social services expenditure increases by 1%, the economic growth will increase by 0.1286%. This shows that there is a positive significant relationship between social services expenditure and economic growth in Malaysia (Cao, 2017). Based on the previous study by Noraina dan Azura (2010), the result also shows that there is a positive relationship towards economic growth in both the short run and the long run. It shows that social services expenditure is important to the development of human capital and economic growth. Thus, this can help to produce better human capital and gain economic sustainability (Noraina & Azura, 2010). The result for F-statistic is 107.0760 which indicates that the null hypothesis has been rejected because the F-statistic is statistically significant at 1% significant level with 99% confidence level. The result shows that at least one of the independent variables used in this study has a significant effect on economic growth in Malaysia. The adjusted R2 value is 0.918062 which indicates that 91.81% of the variation in economic growth (GDP) is explained by all of the variations of independent variables which are education expenditure (ED), health expenditure (HE), defense and security expenditure (DS), and social services expenditure (SS). The remaining 8.19% of the variation in economic growth is explained by other factors that are omitted in the model.

CONCLUSION

It is a stance through this finding where the government expenditure does matter to the economic growth in Malaysia. It was proven via the Multiple Linear Regression Model where the result shows that all the independent variables tested (ED, HE, DS and, SS) have a significant relationship with economic growth (GDP). Two independent variables are found to have a negative significant relationship which is education expenditure (ED) and defense and security expenditure (DS) and another two independent variables have a positive significant relationship which is health expenditure (HE) and social services expenditure (SS). All these results have been supported by the previous studies conducted to prove the significant and insignificant relationship. Additionally, the results of this study suggested that health expenditure (HE) as the most influenced government expenditure

component towards economic growth (GDP) in Malaysia. As the health expenditure (HE) is the most influenced, the researcher suggested that the government needs to reallocate the budget and should increase the budget allocation towards health expenditure (HE) (Low *et al*., 2013). This suggestion also applies to the social services expenditure (SS) as well as its result also showed a positive significant relationship with economic growth (GDP) in Malaysia. This is because, an increase in health expenditure (HE) and social services expenditure (SS), will also increase the economic growth. If the government increases its spending on health expenditure, this can improve a population's health. A healthy population in turn can result in higher productivity, increase in income, thus resulting in a better economic performance of a country (Aboubacar & Xu, 2017). The government also needs to increase its spending on social services expenditure as well. These services are an investment or capital by the government to carry out economic development projects. This is because it can enhance the socioeconomic status and thus, improve economic growth. As the government begins to focus more on the social planning, several social workers also need to be urged to be more actively participate in a social activity that emphasizes more on the preservation of public welfare and needs (Abdullah *et al*., 2010). In short, one can conclude that as the education expenditure (ED) and defense and security expenditure (DS) have a negative significant relationship, the policymaker would need to change and implement policies that can give better defense and security facilities and education to the population. This is because, a good defense and security facilities and education will help the improvement of human capital and upgrading economic development.

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