

Government Health Expenditures on Economic Growth in ASEAN-9 Countries

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Abstract—Government expenditure is one of the part of fiscal policy that governs the economy for the realization of people's welfare and the stability of economic activity. One of the government expenditures is used for the health sector, where health is one of important indicator as an effort in realizing public health development. Accordingly, this study aims to analyze the effect of government health expenditure on economic growth in ASEAN-9 countries. This paper based on panel data of a sample of 9 countries in ASEAN that consist of Indonesia, Malaysia, Singapore, Thailand, Philippines, Brunei Darussalam, Myanmar and Cambodia, using data for the period 2000-2019. The best selection model in this paper is fixed effect model. Empirical results find that health expenditure of GDP have a positive effect to economic growth. Then, the health expenditure of pocket and population have a negative significant effect on economic growth. However, the health expenditure per capita and health expenditure government have no significant effect on economic growth. This suggests that there needs to be an increased of focus on investment and the speed of developing medical services and public health efficiency so as to improve public health and economic growth.

Keywords: ASEAN Countries; Economic Growth; Expenditures; Government Health; Panel Data

1. INTRODUCTION

Health is an issue that is almost always the concern of the governments of countries in the world. The level of health of a good citizen can spur a more productive life, as well as a reflection of progress and human development in a country. Health also plays an important role in supporting the achievement of a country's economic indicators. Some researchers reveal that health has an important role in spurring economic growth. Akram, Padda and Khan (2008) show that health indicators play an important role in determining economic growth. Gauri (2004) shows that consumption of health and education can spur household productivity and increase economic growth. One of the main subjects in health is the financing or allocation of funds budgeted for health. In developed countries usually have a greater portion of government health expenditure compared to developing countries (Baltagi, 2010). An increase in health care expenditure will have an impact on improving social security, calm, security and welfare of a country. This leads to an increase in the efficiency of the country's productivity, where a healthy person can work harder and longer.

Mayer, et al. (2001), empirically explores how health spending affects economic growth. The results of his research show that health spending plays an important role in increasing economic growth after compared with education or other social indicators. The empirical relationship between health expenditure and economic growth has been widely discussed in the previous literature. As for some literature from Kleiman (1974) and Newhouse (1977) in his study which has developed rapidly. Newhouse (1977) shows that a country's GDP is the most influential factor in health expenditure. This is supported by research from Kleiman (1974). After this study, some literature that empirically discusses the impact of health spending on economic growth is Behrman (1990), Barro and Sala-i Martin (1995), and Bloom and Sachs (1998), which explain the positive impacts obtained. While some studies that explain the negative impact on growth are Cullis and West (1979), Easterly and Rebelo (1993), Acemoglu and Johnson (2006).

Even several other studies have also discussed how the influence of government health spending on the achievement of health indicators. Gupta, Verhoeven and Tiongson (2002) used data from 50 transition and developing countries in the 1993-1994 period in their study and showed that the percentage of primary health spending on total health spending had a significant effect on health indicators. Studies conducted by Baldacci, Guin-Slu and de Mello (2003) using data from 111 transition and developing countries in the period 1985-1998 also showed different results related to the effect of government health spending on health indicators.

Wang (2011) in his opinion regarding the economic development of a country, one tends to place greater value on quality of life, namely to have a higher demand for medical services, especially in developed countries with higher national income. Previous research on this issue has shown that health spending varies widely in various countries even with the same level of economic development. Therefore, this study contributes to analyze how the influence of government health spending on economic growth especially in ASEAN-9 countries, where these countries have different levels of economic development and background so it is interesting to study.

2. METHODOLOGY

Alhowaish (2014) in his research explained the relationship and causality between health care expenditure and economic growth in Saudi Arabia in the period 1981-2013 using the Granger Causality method. The study shows that there is a

causal relationship in the direction of economic growth to health care spending. Bakare and Sanmi (2011) explored the relationship between health care expenditure and economic growth in Nigeria using the Least Square Multiple Regression analysis for the period 1970-2008. The empirical findings show that there is a significant and positive relationship between health care expenditure and economic growth. Meanwhile, Sulku and Caner (2011) found that there was a long-term relationship between GDP per capita and per capita health expenditure and population growth rate in Turkey during the period 1984-2006, using the Johansen Multivariate co-integration method. Akram, et al. (2008) examined the relationship between health indicators and economic growth in Pakistan in the period 1972-2006 using co-integration, Error Correction and Granger causality techniques. The results of his study found that there is causality in the health indicators of GDP per capita. GDP per capita is positively affected by health indicators in the long run, but in short-term health indicators it does not significantly affect GDP per capita. This situation shows that health indicators have a long-term impact on economic growth.

This research used a quantitative method approach that contributes to analyze the influence of Government Health Expenditures on economic growth. The data used were ASEAN-9 Countries (Indonesia, Thailand, Philipines, Singapore, Malaysia, Vietnam, Myanmar, Brunei Darussalam, Cambodia) from 2000-2019. The data used to estimate the Effect of Government Health Expenditures on Economic Growth comes from the World Development Indicator (WDI) which variables are Economics Growth, Health Expenditure per Capita, Health Expenditure of GDP, Government Health Expenditure , Out of Pocket Health Expenditure and Population as control variable.

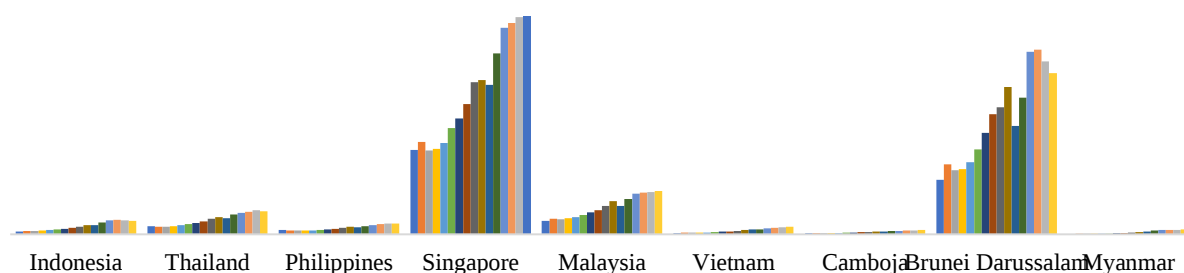


Figure 1. GDP on ASEAN-9 Countries, 2000-2019

Based on the figure 1 shows that Gross Domestic Product (economic growth) in the ASEAN-9 countries the trend has increased from 2000 to 2019. Singapore is a country with very large economic growth in the ASEAN region while Cambodia is the smallest country in the ASEAN region. Although the difference in GDP is very contrast between ASEAN countries, in general the economic conditions in ASEAN increase.

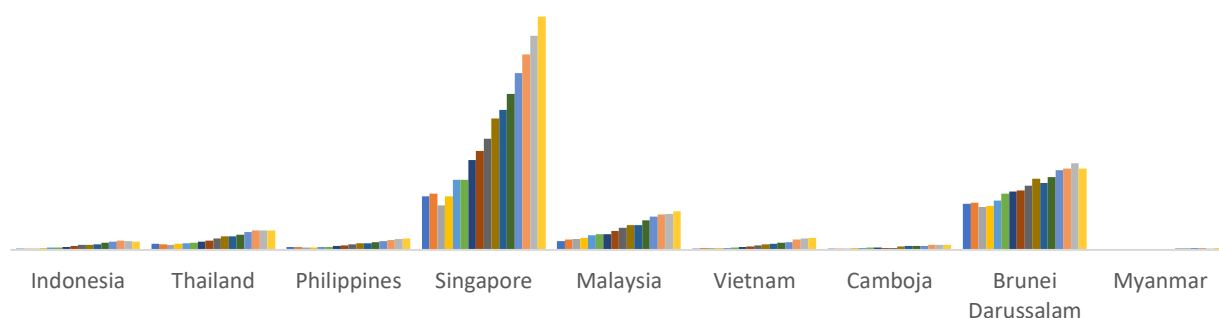


Figure 2. Health expenditure per capita (current USD) on ASEAN-9 Countries, 2000-2019

Figure 2 describes the government health expenditure on ASEAN-9 countries from 2000-2022. Government health expenditure trends increase every year. Singapore and Brunei Darussalam are countries where government health expenditure is very large in ASEAN, while Cambodia and Myanmar are countries where government health expenditure is very small. Seeing the influence of economic growth on government health expenditure in 9 countries in ASEAN can be estimate with the equations is:

$$EG_{it} = \beta_0 + \beta_1 GHE_{it} + \beta_2 Control_{it} + \mu \quad (1)$$

From the equations EG is economic growth, GHE os Government Health Expenditure, Control is variables control and μ is residual (error term). According to Baltagi (2005) and A'yun (2022) this regression model estimation method by using panel data can be done through three approaches, including: (1) Common Effect Model, the simplest technique for estimating panel data because it only combines time series data and cross section. This approach does not pay attention to time or individual dimensions, so it is assumed that the behaviour of individual data is measured equally in various time periods. This method uses the Ordinary Least Square (OLS) approach or the least squares technique to estimate the

panel data model. (2) Fixed Effect Model, this model assumes that there is a difference between individuals who are very clear and the difference in their intercepts. To estimate panel data, the fixed effect model uses dummy variable techniques to capture differences in intercepts, but the slope remains the same between individuals and between times. This estimation model is often also called the Least Squares Dummy Variable (LSDV) technique. (3) Random Effect Model, this model will estimate panel data where interference variables may be interconnected between time and between individuals.

In the Random Effect model differences in intercepts are accommodated by each individual's error terms. The advantage of using the Random Effect model is to eliminate heteroscedasticity. This model is also called the Error Component Model (ECM) or Generalized Least Square (GLS) technique. To ascertain which model is best in estimating the equation should do a statistical test, namely: (1) Chow Test, this test is used to compare which is better between Common Effect or Fixed Effect. If the value of F-test is greater than F-table or the probability value is less than the significant level of 5% (0.05) then the model used is a Fixed Effect but if the opposite is used, Common Effect is used. (2) Hausman test, this test is used to compare which is better between the Fixed Effect or Random Effect model, if the probability value (p-value) is less than the significant level of 5% (0.05), then the model used is Fixed Effect but if the reverse is the Random Effect used. (3) The Lagrange Multiplier (LM) test is used to determine whether Random Effect is better than the Common Effect model. The calculated LM value will be compared with the Chi Squared table with the degrees of freedom as many as the independent variables and alpha (α) or the significance level of 5%. If the LM value is calculated > Chi Squared table, the chosen model is the Random effect.

3. RESULT AND DISCUSSION

Table 1 shows the descriptive statistics for all of the variable used in this research. The observations made in this study were 189. The mean of economics growth is 5.55 percent, the minimum value of economic growth is -2.5 percent and the maximum value of economics growth is 14.5 percent. While the mean of health expenditure of GDP (HEGDP) is 3.6 percent, the minimum of HEGDP is 1.8 percent and the maximum is 7.5 percent. Then, the mean of health expenditure per capita is 336.7989 million USD, the minimum is 4.335375 million USD and the maximum is 2667.675 million USD. The mean of health expenditure of government (HEGov) is 53.14383 million USD, the minimum of HEGov is 4.858352 million USD and the maximum is 85.89757 million USD.

Table 1. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
EGrowth	180	5.553343	3.25393	-2.508353	14.52564
HEGDP	180	3.660262	1.357058	1.850972	7.583306
HEPerCapita	180	336.7989	539.8257	4.335375	2667.675
HEGov	180	53.14383	20.46712	4.858352	85.89757
HEpocket	180	42.24004	20.0708	4.858352	85.89757
Population	180	6.52e+07	7.06e+07	333166	2.71e+08

Using panel data analysis to see the influence of Government Health Expenditures on economic growth first ensures the selection of the right model in order to interpret the estimated variables can be more accurate. Chow test is used to select common effect models and fixed effects. In Chow test it is known that the value of F-test = 4.71 and F-table at the level of 5% = 2.01. Based on these results it is known that F-test > F-table so that H_0 is rejected means that the right estimation model is the fixed effect model. After knowing the results of the Chow test, the next test is Hausman test. Table 2 is the result of the Hausman test.

Table 2. The Result of Hausman Test

Test Summary	Chi-Sq. Statistic	P-value
Cross-section random	17.45	0.0016

Table 2 shows that p-value = 0.0016 is smaller than $\alpha = 5\%$. This result states that H_0 is rejected so that the fixed effect model is more appropriate than the random effect model. Then, before do the regression estimation, this research should estimate the diagnostic test. After determining the exact model that the best model is fixed effect model, then do the regression estimation. Table 3 is the estimation result to analyze the Effect of Government Health Expenditures on Economic Growth from ASEAN-9 countries.

Table 3. The Estimation Result

Variables	Coefficient	Std.Error	Probability ($p > z $)
HEGDP	-1.361085	0.3035948	0.000**
HEPerCapita	0.0004001	0.0007994	0.617
HEGov	0.0355004	0.048852	0.468
HEpocket	0.0866826	0.0499777	0.085*
Population	5.96e-08	2.49e-08	0.018**

Table 3 is the estimation result of fixed effect model before robust, and table 4 is the estimation after robust.

Table 4. The Estimation Result

Variables	Coefficient	Std.Error	Probability (p> z)
HEGDP	-1.361085	0.1655317	0.000**
HEPerCapita	0.0004001	0.000384	0.328
HEGov	0.0355004	0.0263258	0.214
HEpocket	0.0866826	0.0333924	0.032**
Population	5.96e-08	1.70e-08	0.008***

Table 4 explain that health expenditure of GDP, health expenditure of pocket and population have statistically significant on economic growth. Health expenditure of GDP have a negative significant, it means that if health expenditure of GDP increase 1 percent then economic growth will decrease about 1.36 percent. Then, health expenditure of pocket and population also have a positive significant effect on economic growth. If health expenditure of pocket increase 1 percent, it means the economic growth also increase about 0.08 percent. Next, for population variable is the population increase 1 person, it also will increase the economic growth about 5.95 percent. On the other hand, health expenditure of per capita and health expenditure of government are insignificant. It means that health expenditure per capita and health expenditure of government have no effect to economics growth in ASEAN-9 countries.

Even though, good economic conditions in a country will make the country care about public health. Public health care programs such as health insurance will be implemented because a healthy society means that human resources are strong and have an impact on economic growth. Relationships like this are also found by Fazaeli at al. (2002) in oil exporting countries, where health expenditures and GDP are co-integrated and have Engle and Granger causality. Health is not a luxury good in oil exporting countries. The government must provide health services for all communities so that health is a basic right for society. Kurt (2016) found that government health expenditure had a significant direct impact on economic growth in turkey. Bedir (2016) also found that increased revenues will affect healthcare expenditures. The health sector is important in economic growth. Developed countries have healthier communities compared to developing countries. Investment in health has also increased in recent years. People are concerned and aware of the importance of health so that demand for health services increases. This phenomenon is good because health affects labor productivity and welfare as expressed by Bloom et al. (2004).

4. CONCLUSION

Health is an issue that is almost always the concern of the governments of countries in the world. The level of health of a good citizen can spur a more productive life, as well as a reflection of progress and human development in a country. Health also plays an important role in supporting the achievement of a country's economic indicators. In this study, the results obtained indicate that government health expenditure does not affect economic growth in ASEAN-9 countries. However, several other variables, such as health expenditure of GDP, health expenditure of pocket and population affect the economic growth in ASEAN-9 countries.

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