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Analysis of Health Causality, Participation of Work Force, Education and Economic Growth in Asean Countries

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ABSTRACT
This study aims to study and analyze the relationship between health and labor force participation, health and education, economic growth and health, labor force participation and education, labor force participation and economic growth, and education and economic growth. This type of research is descriptive research, where the data used are secondary data consisting of time series from 2010 to 2018 data obtained from related institutions and institutions, which are analyzed using the Vector Autoregression (VAR) method. The findings of this study indicate health reasons and labor force participation do not have a causal relationship or one-way relationship. Health and education do not have a causal or one-way relationship. health and economic growth do not have a causal or one-way relationship. Workforce participation and education do not have a causal or one-way relationship. And education and economic growth do not have a causal or one-way relationship.

Keywords: *health, labor force participation, education, economic growth, vector autoregression (var)*

1. INTRODUCTION

The economy of a country is interrelated and interrelated other countries, such as the economy in ASEAN. Economic rise in one ASEAN country triggers other ASEAN countries to develop and improve the economy of the country. So is on the contrary if a country experiences an economic downturn, it will also affect other countries that have relations between these countries. Mutual relations here can be interpreted as the progress of a country can help other countries, and vice versa a country's economic setback will has a negative impact on the countries that have these relations. There are several driving and inhibiting factors for a country within achieve economic growth. Countries that are able to maximize factors the driver will be easier to achieve economic growth. Vice versa, a country that is unable to minimize factors it will be more difficult to increase economic growth. The key to macroeconomic goals is economic growth, this is due for several reasons. First, the population is always increasing so with economic growth it will be able to provide a field work. Second, human wants and needs are always unlimited so with economic growth will be able to produce more goods and services to fulfill those wants and needs. Third, effort creating economic equality more easily achieved in growth high economy. The purpose of this study is to investigate the causality relationship between health and labor force participation, Health and education, health and economic growth, labor force participation and education, labor force participation and economic growth, then education and economic growth. From background and according to previous experts

who stated contributions between health and education that most influences human capital health (Kolawole Ogundari and Titus Awokuse (2018)). The author is interested in do this research, but the authors add other variables like labor force participation and economic growth.

Health

According to Todaro (2003: 404) health is a prerequisite for increased productivity. Therefore, health can also be seen from as a vital component of economic growth and economic development as an aggregate production input, its dual role as input and output cause health is very important in economic growth. Implications of the application of *human capital* theory in the field of nutrition and improvement health is the need to fight poverty. Next Tjiptoherijanto (2001: 17-18) argues that general health will correlated with the level of productivity of the population and workers. Increased degrees of health will extend the service life and power body resistance which in turn will affect the increase in growth the economy.

Labor Force Participation

The choice of age of 15 years as the minimum age limit is based on the fact that the population aged 15 years in Indonesia already works or looking for work especially in the villages. Likewise Indonesia did not specify maximum age limit for workers because there is no social security national. Only a small portion of the population receives old-age benefits, namely public servants and some private employees. Even for this group received is not sufficient for daily needs so those who have reached retirement age are still working to make ends meet their needs, so they are still classified as workers (Payaman, 1998). Workforce consists of the labor force and not *labor force* . The *labor force* is part of the population that is capable and willing to do work. The meaning of being able is physically and physically capable, mentally and physically juridical capable and do not lose the freedom to choose and do work and willing to actively and passively do and search work (Sumarsono, 2004)

Education

Education plays a major role in shaping abilities a developing country to create new, absorbing knowledge modern technology, gave birth to experts and to develop the capacity to create sustainable growth and development. Theories relating to education and economic growth are theories Human Capital. In this theory it states that education has positive influence on economic growth. If someone who higher level of education, and length of time in education will have a better job and wage compared to lower education. If the wages of workers reflect productivity, then more and more people have education higher, the higher the productivity and national economy will grow well (Simanjuntak in Indrasari, 2009).

Economic growth

Economic growth is a term macroeconomic problem long. In each period something society will increase its ability to produce goods and services. This is caused by additional factors applicable factors of production. In each period the number of workers will be increased because there are groups of people who will enter the workforce. Past investments will add capital goods and capacity produce in the present. In addition, investment is usually followed by technological development of production equipment, and this will accelerate again increased production capability. Various countries do not always get it achieve economic growth in accordance with the development of capabilities producing which is owned by factors of production which are increasingly

increased. In many countries conditions are often found to grow the real economy is far lower than the growth potential can be achieved. This sometimes causes numbers and levels unemployment is increasing (Sukirno, 2016: 13). On the one hand, economic growth throughout the world might be good for our economy because it means a bigger market for our exports lowering prices for our imports. On the other hand, growth in countries another can mean increased competition for exporters and producers within our country, which is clean to compete with foreign exporters (Krugman et al., 2013: 147). The economic growth of other countries in the world has a positive effect and negative for the nation's economy, if experienced in other countries good economic growth then on the positive side will encourage one megara exports to other countries, but competition will occur between exporters and producers.

The conceptual framework is a temporary conclusion from a theoretical review which reflects the relationship between the variables studied. This matter is demands to solve problems in research and formulate hypotheses.

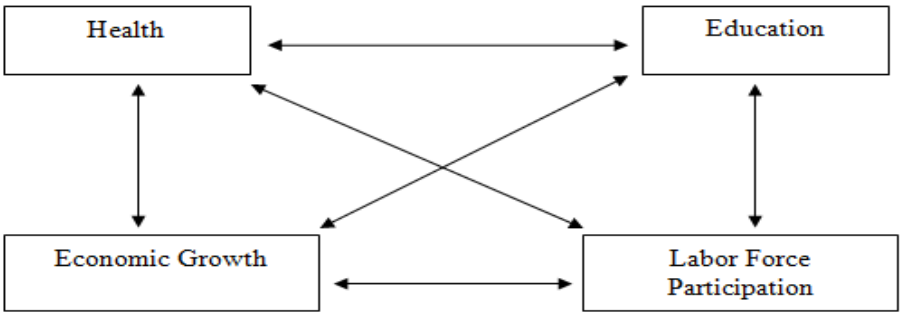

Figure 1. Conceptual Framework

Hypothesis

1. There is a causal relationship between healthy and participation Workforce
2. There is a causal relationship between Healthy and Education
3. There is a health relationship with Economic Growth
4. There is a relationship between Labor Force Participation and Education
5. There is a relationship between Labor Force Participation and Growth The economys
6. There is a relationship between Education and Economic Growth

2. METHODS

The scope of this study regarding the analysis of health causality, labor force participation, education and economic growth. Data used is time series data from 5 countries in ASEN from year 2010-2018. The data used are secondary data sourced from the *World Bank* , another source of literature needed in this research. The research model using the standard VAR model becomes as follows :

$$KES_t = \sum_{i=0}^{n} \alpha i \, KES_{t-i} + \sum_{i=0}^{n} \alpha i \, AK_{t-i} + \sum_{i=0}^{n} \alpha i \, PEND_{t-i} + U1_t$$

$$AK_t = \sum_{i=0}^{n} \alpha i \, AK_{t-i} + \sum_{i=0}^{n} \alpha i \, PEND_{t-i} + \sum_{i=0}^{n} \alpha i \, KES_{t-i} + U2_t$$

$$PEND_t = \sum_{i=0}^{n} \alpha i \, PEND_{t-i} + \sum_{i=0}^{n} \alpha i \, KES_{t-i} + \sum_{i=0}^{n} \alpha i \, AK_{t-i} + U3_t$$

$$PE_t = \sum_{i=0}^{n} \alpha i \, PE_{t-i} + \sum_{i=0}^{n} \alpha i \, AK_{t-i} + \sum_{i=0}^{n} \alpha i \, KES_{t-i} + U1_t \quad (4)$$

Where :

KES = Health
AK = Labor Force Participation
PEND = Education
PE = Economic Growth

The VAR form above is a regular free VAR form restriction is used if the data stationer is at the level level. Variation of shapes VAR usually occurs due to differences in the degree of data integration from variable, known as *VAR in level* and *VAR in difference* . VAR level is used if the research data has a form stationary in level. If the data is not stationary *(Unit Root)* inside level, but does not have a cointegration relationship, then the VAR estimate done in the form of *difference* . The analysis technique used in this study is by using the Granger Causality Test. The variable X causes the variable Y to mean how many values of Y on the current period can be explained by the value of Y in the previous period and the value of X in the previous period.

3. RESULTS AND DISCUSSION

Unit Root Test Results

Before conducting the Granger Causality test, it is tested root unit (unit root test) using time series data on each province on the island of Sumatra, it is necessary to have a unit root test this itself is done so that the data becomes stationary but can also be whether the data contains unit roots or not. If The variable contains unit roots, so the data is said non stationary data. The following is the unit root test results for on each variable used in this study.

Table 1. Stationary Test Results of Each Variable

Variable	**Unit Root Test**			
	Level		1st difference	
	ADF	Prob	ADF	Prob
Education	-1.945964	0.3089	-6.564205	0.0000
Health	-1.025583	0.7332	-8.855112	0.0000
Labor Force Participation	-2.224671	0.2015	-9.88319	0.0000
Economic Growth	-1.57992	0.4842	-6.550439	0.0000

Source: Eviews8 Data Processing, 2020

Lag Length Test

Granger Causality Testing is one of the issues of concern is in determining the length of the lag. The length must be right because this is important to avoid specification errors (misspecified) the model due to the length of the lag is too short or the degree reduction freedom (degree of freedom) is too long. Testing lag with using Eviews can make it easier to determine the right length of lag. So that good data results can be obtained and right. In Eviews determining the optimal lag is with see the most (*) sign in each lag option.

Table.2. Criteria for Determining Optimal Lag Length

Lag	LogL	LR	FPE	AIC	SC	HQ
0	**-231.2227**	**NA***	**3.909007***	**12.71474***	**12.88889***	**12.77614***
1	-229.8334	2.403128	8.668118	13.50451	14.37527	13.81149
2	-226.7874	4.610112	18.04769	14.20472	15.77210	14.75730
3	-225.1695	2.098837	42.76394	14.98214	17.24613	15.78030
4	-215.9754	9.939668	73.39400	15.35002	18.31062	16.39377
5	-208.9891	6.042174	163.4678	15.83725	19.49447	17.12659
6	-206.3575	1.706948	585.1477	16.55987	20.91370	18.09480
7	-189.6596	7.220750	1542.581	16.52214	21.57258	18.30266

Source: Data Eviews 8, 2020.

Based on Table 2. Optimal lag according to LR, FPE,AIC, SC, and HQ which have the smallest and most value (*) shown in lag 0.

Granger Causality Test (Granger Causality Test)

Determination of causality relationships between variables is done with using the *granger causality test* . In this case the test is carried out by testing the causality of one variable against another variable.

Table 3. Granger Causality Test Results

Null Hypothesis:	Obs	F-Statistic	Prob.
AK does not Granger Cause KES	44	0.04210	0.8384
KES does not Granger Cause AK		0.97926	0.3282
PEND does not Granger Cause KES	44	2.39111	0.1297
KES does not Granger Cause PEND		0.48774	0.4889
PE does not Granger Cause KES	44	0.25858	0.6138
KES does not Granger Cause PE		0.47546	0.4944
PEND does not Granger Cause AK	44	2.28084	0.1387
AK does not Granger Cause PEND		2.74023	0.1055
PE does not Granger Cause AK	44	0.31491	0.5777
AK does not Granger Cause PE		0.03195	0.8590
PE does not Granger Cause PEND	44	3.12325	0.0846
PEND does not Granger Cause PE		0.16626	0.6856

Source: Processed Results Eviews 8, 2020

Health does not affect Labor Force Participation, meanwhile Labor Force Participation does not affect Health. Therefore there is no relationship between Health and Force Participation Work. Health does not affect education, while education does not affect health. while education affects health. Thus there is no relationship between health and education. Health does not affect economic growth whereas economic growth does not affect health. Therefore there is no relationship between health and economic growth. Labor Force participation does not affect Education and Education does not affect Labor Force Participation. With thus there is no relationship. Labor Force participation does not affect economic growth and economic growth does not affect labor force participation.there is no relationship between Labor Force Participation on economic growth. Education does not affect economic growth whereas economic growth does not affect education. Therefore there is no relationship between education on economic growth.

4. CONCLUSION

Based on the analysis used in the study is a calculationVAR with the number of variables Health, labor force , education and economic growth in ASEAN can be concluded:

Health has no relationship with labor force . This is proven by the probability value between friendliness and labor force participation by 0.84384> 0.05%. Force participation work has no relationship with health as evidenced by the probability value between labor force participation and health is amounting to 0.3282. > 0.05%.

Health has no relationship with education. It is in prove it by the probability value between health and education amounted to 0.1297> 0.05%. Education has no relationship with health is proved by the probability value between education and health is 0.4889. > 0.05%.

Health has no relationship with economic growth. Thing this proven by the probability value between friendliness and economic growth of 0.6138>0.05%. Economic growth has no relationship with health is proven by value the probability between economic growth and health is equal 0.4944. > 0.05%.

Workforce participation has no relationship with education. This proved by the probability value between Labor Force Participation with education is 0.1387> 0.05%. Education has no relationship with workforce participation proven by the probability value between labor force participation with education of 0.1055> 0.05%.

Workforce participation has no relationship with economic growth . This is proven by the probability value between Labor Force and economic growth of 0.5777> 0.05%. economic growth does not have the relationship with labor force participation is proved by value probability between economic growth and labor force 0.8590> 0.05%.

Education has no relationship with economic growth. This is proven by the probability value between education and economic growth of 0.0846> 0.05%. economic growth does not have an educational relationship proven by value probability between economic growth and labor force 0.6856> 0.05%. Continued research can be done by looking at limitations - limitations in this study which can be a source of ideas for future research development. Expansion of research

that is It is recommended from this research to expand the range of objects research, not just examining one object. Apart from that it should be future research further develops more methods research in use in order to obtain better results.

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