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THE IMPACT OF POPULATION, LABOR FORCE, AND GLOBAL ECONOMIC UNCERTAINTY ON INDONESIA'S ECONOMIC GROWTH

PENGARUH POPULASI, ANGKATAN KERJA, DAN KETIDAKPASTIAN GLOBAL TERHADAP PERTUMBUHAN EKONOMI INDONESIA

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Abstract (In English). *This research tries to find the impact of population (age 15 – 64 years old), labor force and global economic policy uncertainty (GEPU) on Indonesia's economic growth (GDP of Indonesia). The research conducted since period 1997 until 2018. By using VECM we found that in the long-term, population and GEPU have significant negative impact on GDP. Meanwhile, population and GEPU also have negative significant impact on labor force in the long-term. In the short-term, only GEPU influencing on GDP and labor force negatively. Population (age 15 – 64 years old) did not show any impact on GDP, but had positive significant effect on labor force in the short-term. From this finding Indonesia must make better preparation in facing global economic uncertainty in the future, due to as an open economy Indonesia vulnerable to any shock. Indonesia has also surplus of productive people as many experts says bonus demography that must be empowered well. These two factors if not anticipated early can be burden of economic development in the future.*

Keywords: Population; Global Uncertainty; Economic Growth

Abstract (In Bahasa). *Penelitian ini berusaha menemukan pengaruh populasi (usia 15 hingga 64 tahun), angkatan kerja, dan ketidakpastian kebijakan ekonomi global (GEPU) terhadap pertumbuhan ekonomi Indonesia (GDP). Riset dilakukan dengan mengambil periode 1997 hingga 2018. Dengan menggunakan VECM kita menemukan bahwa dalam jangka Panjang, populasi dan GEPU berpengaruh negatif terhadap GDP. Sementara itu, populasi dan GEPU juga berpengaruh negatif signifikan terhadap angkatan kerja dalam jangka Panjang. Dalam jangka pendek, hanya GEPU yang berpengaruh signifikan negatif terhadap GDP dan angkatan kerja. Populasi (usia 15 – 64 tahun) tidak menunjukkan pengaruh sama sekali terhadap GDP, tetapi berpengaruh signifikan positif terhadap angkatan kerja dalam jangka pendek. Dari temuan ini Indonesia harus membuat persiapan yang lebih baik dalam menghadapi ketidakpastian ekonomi global di masa depan, karena sebagai ekonomi terbuka rentan menghadapi guncangan. Indonesia juga memiliki surplus penduduk usia produktif sebagaimana banyak ahli menyebut bonus demografi yang mesti diberdayakan dengan baik. Kedua hal ini jika tidak diantisipasi sejak dini dapat menjadi beban pembangunan ekonomi di masa depan.*

Keywords: Populasi; Ketidakpastian Global; Pertumbuhan Ekonomi

1. INTRODUCTIONS

Global economic uncertainty is believed as a big problem for open economies, such as Indonesia. Although Indonesia has good capability in term of producing goods and services due to much of its resources, in fact Indonesia's economy depends on other countries in trade and capital. When shocks occur in developed countries, developing countries tend to be affected. That naturally happens. The most important thing is how the government responds to these shocks without sacrificing important aspects. The strength of the country's economy determines its independence in the international arena.

In addition to the problem of global uncertainty shocks, economic fundamentals that often worse the economy of developing countries such as problem of too much population. The large population becomes a burden for development, including unemployment if a large population cannot be absorbed by employment. Indonesia's population continues to grow, making the government have to work extra hard to use all its potential to advance the economic capacity. According to the World Bank, in 2018 the populations of Indonesia are 267 million people. Those aged 15-64 years as many as 180 million people. Indonesia's population growth rate in 2018 is 1.1 percent, down from 1.3 percent in 2014 and 1.2 percent in 2015. The population continuing to grow, requires the government to work hard on how to provide a living for its people. In 2023 according to Badan Pusat Statistik (BPS), the number of Indonesian populations is more than 278 million people. The increase of growth is fantastic enough.

Nevertheless, we need to think deeply about this population problem. Citizens who work must be more than those who do not, so that the balance is maintained. Bloom & Finlay (2009) successfully demonstrated that demography is one of the important factors for creating high growth in the Asian region. Governments in the region are able to provide better systems and implement policy flexibility that makes trade openness as a big advantage for development. It is believed that there is strong evidence that the Asian countries are able to absorb the size of population growth to become productive workers. Instead of being a burden for development, the large population was able to increase their productivity from 1965 to 2005. However, there are still big obstacles faced by the Asian region if they are unable to stabilize between a large labor growth rate and employment, so that the population will become problem of development.

Thinking about the effect of population on the economy in general has two points of view: pessimism represented by Malthus and optimism represented by the founder of social sciences such as Adam Smith, Emile Durkheim (Crenshaw, 2017). Both sides of that thought always took turns the discourse of scientific debate. For social scientists, an increasing population can trigger competition to open up innovation and progress. For Malthusian thought, which has its roots in an agrarian society, population density will bring problems because population growth is faster than food provided by society. Actually, the influence of the population on the economy actually needs to be seen with more complex thinking. Populations have non-linear effects on the economy, so that in different cultures and countries it can have different effects.

There is an interesting discourse that developed countries such as the USA, are considered to face problems with a lack of workforce. This is because

birth rates are relatively low compared to developing countries. But the phenomenon is actually not true at all. The number of workers in the USA turned out to be smaller than the increase in the number of jobs available: economic conditions compared to when World War 2 had increased 8-fold, while the number of workers had doubled (Capelli, 2005). Workers apparently contribute more to the economy than ever before.

The fear of the dangers of large unproductive populations has prompted the Chinese government to implement the one-child policy in 1979 (Chen, 2018). But now, since the beginning of 2010, there has been a negative impact of changes in population age structure on the economy. Declining labor participation has caused problems due to education expansion and old age of workers. In the absence of employment availability for young people who are just graduated from school, will be a problem that worsens the economy in the long run.

Major reforms in China in terms of employment can be divided into two phases: before 1996 and during 1996. Before 1996, labor market reform in China was marked by adjustments to the placement of people and income structure. Whereas in 1996, employment reform in China was carried out by restructuring jobs that encouraged expansion of the field of work so as to be able to encourage economic growth more quickly. In 1996, the turning point in terms of Chinese economic growth began (Lu & Jiang, 2008).

To better maintain economic stability and increase economic growth, we need to have a large and strong middle class. The countries that have more middle-class population, can make faster economic progress. Some economists believe that. An empirical evidence proves the middle-class contribution to economic growth through increasing input factors, namely human capital (Chun et al., 2016). Middle-class consumption occupies a significant portion of the country's productivity. With better education, the middle-class demands high standards for their various needs of life, including public services provided by the government. This will encourage a bargaining situation that allows changes in public and also private sectors. The government and private will make reforms in terms of improvement in the business climate, better wage rates, protection from all risks, and investment opportunities.

In less-developed countries, people movements are very often. It is because increasing employment in the service and manufacturing sectors, while in developed countries the pattern of development was accompanied by an economic transition. These two situations are called overurbanization which is considered to be a problem in the development of an area (Timberlake, 1983). The concept of overurbanization can be seen by comparing the size of the population of a city with the level of economic development. In Indonesia it seems that it is happening in the capital city of Jakarta and any other big cities, which has to accommodate a large number of residents.

With the trend of globalization, workplace is no longer the same as before. There have been many significant changes that have caused those who are not ready to face any challenge will be displaced. Globalization has produced a more confusing future uncertainty. Older workers who are accustomed to feeling safe with the seniority system, will be displaced by those who are younger and bring new abilities according to the times (Buchholz, 2006). At the very least, there are four mechanisms of globalization that change people's lives today: 1) market internationalization; 2) intensification of competition based on liberalization, privatization, and deregulation of many policies in many countries; 3) faster

information dissemination through the advancement of ICT (Information Communication Technology); 4) increased local market dependence on random global shocks. These four things can ultimately change the social economy of the community and cause a lot of uncertainty. An event in a developed country will easily impact another country, especially a developing country. Indonesia as an open economy is always affected by various economic uncertainties that occur in other countries, it can be negative or even positive.

However, the issue of linkages in globalization does not always have a negative impact on developing countries like Indonesia. Holik (2018) showed that uncertainty in developed countries sometimes has positive impacts, such as the case of the emergence of Donald Trump and Brexit (the withdrawal of the UK from eurozone membership). That both phenomena have positive sides which actually benefit Indonesia. This empirical research has proof that in the face of uncertainty in other countries it still needs to be addressed wisely and not easy to conclude recklessly.

Pangestu et al. (2018) has reminded us that there has been a slowdown in trade experienced by the Asian nations. One issue that caused this is the business protection. East Asian countries need to adopt firmer policies regarding multilateral cooperation and form better regional trade in the face of globalization.

This our research has several advantages. It can be seen from our efforts to find the effect of economic uncertainty in the global context with wider perspective. In addition, we are also trying to find a link between labor force and population age 15-64 years old in total. During this time, a lot of research has sought a relationship between the number of labor force and the overall population in a country. But those who look for links to specific populations do not appear to exist yet.

The importance of this research is because we see the potential that exists in Indonesia sometimes just ignored, especially in terms of the capacity of the productive age population. We want to test whether big amount of Indonesia's population at productive age in line with the labor force to make contribution to economic growth. This is what we are trying to answer, besides of course the global uncertainty problem sometimes considered problems for emerging market.

2. METHOD

This study aims to find the influence of population (age 15 – 64 years old), labor force, and the Global Economic Policy Uncertainty (GEPU) on Indonesia's economic growth (GDP of Indonesia). This research conducted since period 1997 until 2018. The data used are secondary data, obtained from the World Development Indicator (WDI) issued by the World Bank for data on population (age 15-64 years old, male & female), labor force and Indonesia's economic growth. It is indeed necessary to note that the labor force in Indonesia includes residents aged 15 – 64 years old. But in this case, excluding those who are busy attending school, housewives, and voluntary unemployment. We try to dig deeply about these people categories among the society. While the dependent variable is the Global Economic Policy Uncertainty (GEPU) taken from the uncertainty policy site. All data is converted into natural logarithms for making analysis easier.

This research uses a time series approach. Before doing the analysis, the condition of stationary test of all data is needed. This is due to analysis model

with non-stationary data will produce spurious regression. Based on the analysis, the results show that some data are not stationary at the level, but stationary at the first difference. Then all the data are transformed into first difference to equalize all of them. The result as below:

Table 1. Stationary Test

Variable	**Level**		**First Difference**	
	t-stat	prob.*	t-stat	prob.*
GEPU (Global Economic Policy Uncertainty)	-1.015043	0.7281	-4.492734	0.0023
GDPI (GDP of Indonesia)	6.551877	1.0000	-24.07761	0.0000
LAB (Labor force)	0.209105	0.9664	-3.526952	0.0181
POPI (Population of Indonesia)	1.294612	0.9976	-3.003013	0.0517

Source: analysis by author

To get certainty whether VECM is suitable for use in this study, we propose a cointegration test. The results found that there are 2 cointegrated variables. The table as follows:

Table 2. Cointegration Test

Trend assumption: Linear deterministic trend (restricted)				
Series: DLPOPI DLLAB DLGEPU DLGDPI				
Lags interval (in first differences): 1 to 1				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.886515	86.67880	63.87610	0.0002
At most 1 *	0.645857	45.33313	42.91525	0.0281
At most 2	0.590481	25.61011	25.87211	0.0538
At most 3	0.365634	8.647447	12.51798	0.2032
Trace test indicates 2 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Source: analysis by author

Based on table 2, cointegration was found in 2 variables. This finding confirms that research is more feasible using the VECM (Vector Error Correction Model) model, rather than VAR (Vector Autoregression). VECM is development from VAR method by using restriction to endogenous variables (Lütkepohl, 2005). Therefore, we choose VECM for analysing the data of this research. The model is arranged as follows:

1) $\Delta Y_t = \delta_1 + \gamma_1 e_{t-1} + \tau_{11}\Delta Y_{t-1} + \cdots + \mu_{1u}\Delta Y_{t-u} + \sigma_{11}\Delta X_{t-1} + \phi_{11}\Delta Z_{t-1} + \partial_{11}\Delta P_{t-1} + \cdots + \sigma_{1v}\Delta X_{t-v} + \phi_{1w}\Delta Z_{t-w} + \partial_{1k}\Delta P_{t-k} + \varepsilon_{1t}$
2) $\Delta X_t = \delta_2 + \gamma_2 e_{t-1} + \tau_{21}\Delta X_{t-1} + \cdots + \sigma_{2v}\Delta X_{t-v} + \mu_{21}\Delta Y_{t-1} + \phi_{21}\Delta Z_{t-1} + \partial_{21}\Delta P_{t-1} + \cdots + \mu_{2u}\Delta Y_{t-u} + \phi_{2w}\Delta Z_{t-w} + \partial_{2k}\Delta P_{t-k} + \varepsilon_{2t}$
3) $\Delta Z_t = \delta_3 + \gamma_3 e_{t-1} + \tau_{31}\Delta Z_{t-1} + \cdots + \phi_{3w}\Delta Z_{t-w} + \sigma_{31}\Delta X_{t-1} + \mu_{31}\Delta Y_{t-1} + \partial_{31}\Delta P_{t-1} + \cdots + \sigma_{3v}\Delta X_{t-v} + \mu_{3u}\Delta Y_{t-u} + \partial_{3k}\Delta P_{t-k} + \varepsilon_{3t}$
4) $\Delta P_t = \delta_4 + \gamma_4 e_{t-1} + \tau_{41}\Delta P_{t-1} + \cdots + \partial_{4k}\Delta P_{t-k} + \sigma_{41}\Delta X_{t-1} + \mu_{41}\Delta Y_{t-1} + \phi_{41}\Delta Z_{t-1} + \cdots + \sigma_{4v}\Delta X_{t-v} + \mu_{4u}\Delta Y_{t-u} + \phi_{4w}\Delta Z_{t-w} + \varepsilon_{4t}$

Where:

$e_{t-1} = Y_{t-1} - \beta - \beta X_{t-1} - \beta Z_{t-1} - \beta P_{t-1}$;

or e_{t-1}= residual of simple linear regression

Y_t = GDP Indonesia at period t

X_t = Laborforce Indonesia at period t

Z_t = Global Economic Policy Uncertainty at period t

P_t = Population Indonesia at period t

$\gamma, \tau, \mu, \sigma, \phi$ = Coefficient of each independent variable

δ = Vector of Cointegration

Δ = symbol of first difference

ε = error term pada VECM

3. RESULT

Our result can be seen as follows:

Table 3. Result of VECM Analysis

Cointegrating Eq:	CointEq1	CointEq2		
DLGDPI (-1)	1.000000	0.000000		
DLLAB(-1)	0.000000	1.000000		
DLGEPU(-1)	-0.012110	-0.037646		
	(0.00698)	(0.00703)		
	[-1.73543]	[-5.35744]		
DLPOPI(-1)	-4.749896	-3.555172		
	(0.94292)	(0.94955)		
	[-5.03742]	[-3.74406]		
C	0.021409	0.039257		
	(0.01494)	(0.01504)		
	[1.43303]	[2.60935]		
Error Correction:	D(DLGDPI)	D(DLLAB)	D(DLGEPU)	D(DLPOPI)
CointEq1	-0.354625	0.557173	-7.312885	0.098420
	(0.22291)	(0.34429)	(9.92311)	(0.03876)
	[-1.59092]	[1.61832]	[-0.73696]	[2.53892]
CointEq2	-0.137343	-1.578475	9.671395	-0.014734
	(0.23809)	(0.36774)	(10.5990)	(0.04141)
	[-0.57686]	[-4.29233]	[0.91248]	[-0.35585]
D(DLGDPI(-1))	0.025250	0.149103	-0.106155	0.028222
	(0.10989)	(0.16973)	(4.89190)	(0.01911)
	[0.22978]	[0.87848]	[-0.02170]	[1.47681]
D(DLLAB(-1))	0.263216	0.455144	-0.545452	0.007799
	(0.16012)	(0.24732)	(7.12822)	(0.02785)
	[1.64383]	[1.84030]	[-0.07652]	[0.28006]
D(DLGEPU(-1))	-0.015129	-0.021133	-0.029274	-0.000961
	(0.00575)	(0.00888)	(0.25588)	(0.00100)
	[-2.63210]	[-2.38030]	[-0.11440]	[-0.96165]
D(DLPOPI(-1))	0.205877	6.274338	78.63060	-0.190563
	(1.38039)	(2.13209)	(61.4508)	(0.24006)
	[0.14914]	[2.94281]	[1.27957]	[-0.79382]
R-squared	0.759523	0.709460	0.429925	0.466235
Adj. R-squared	0.667032	0.597714	0.210665	0.260941

Sum sq. resids	0.000558	0.001330	1.105229	1.69E-05
S.E. equation	0.006550	0.010117	0.291578	0.001139
F-statistic	8.211857	6.348861	1.960800	2.271058
Log likelihood	72.18342	63.92337	0.061836	105.4190
Akaike AIC	-6.966676	-6.097197	0.625070	-10.46516
Schwarz SC	-6.668432	-5.798953	0.923314	-10.16692

Source: analysis by author

The analysis in Table 3 shows us that in the long run the global economic policy uncertainty (GEPU) has a negative impact on labor force. It is found that when there is an increase in GEPU of one percent, labor force will decrease by -0.012 percent. The value of t-test 1.73543 is greater than the t-table at 10 percent degree which is 1.729. Of course it does not mean quantity of labor force, but rather the number of productive labor force working in various sectors. The decline in productive labor force because place of business will be challenged by the shocks due to global economic uncertainty.

The next variable, namely population, has a negative impact on labor force. When a population increases one percent, labor force will decrease by -4.74 percent. This number can indeed be considered large enough in the simulation. However, the decrease in labor force is caused by too many people who cannot get into the labor market, making the position more difficult for working class movement. This is a problem that must be of mutual concern, because the size of the population in Indonesia must be balanced with an increase in their ability and work capacity. We write the first model in the long run as follows:

$$\begin{array}{lccc} \Delta \ln LAB_t = & 0.021409 & -0.012110\Delta \ln GEPU_t & -4.749896\Delta \ln POPI_t \\ s.e. & (0.01494) & (0.00698) & (0.94292) \\ t-stat & [\ 1.43303] & [-1.73543] & [-5.03742] \end{array}$$

In the first equation, the GDP variable is not included because of a cointegration problem. The GDP variable appears in the second equation, by removing the labor force. The second equation in the long run as follows:

$$\begin{array}{lccc} \Delta \ln GDPI_t = & 0.039257 & -0.037646\Delta \ln GEPU_t & -3.555172\Delta \ln POPI_t \\ s.e. & (0.01504) & (0.00703) & (0.94955) \\ t-stat & [\ 2.60935] & [-5.35744] & [-3.74406] \end{array}$$

Based on the second model in a long-term analysis, it was found that global economic policy uncertainty affected Indonesia's GDP negatively. When GEPU increases by one percent, GDP will decrease by 0.037646. A negative sign on the coefficient indicates the bad thing. The significance of this effect is evidenced by the t-test of 5.35744 which is greater than the t-table at degrees of 5 percent and 10 percent which are respectively 2.093 and 1.729. This is a reminder to us that Indonesia as an open economy tends to be vulnerable, and in certain situations will be very difficult to face global uncertainty. Whatever happens in the world, its influence will affect Indonesia.

Interestingly, the findings of this study also show that the population has a negative impact on GDP. When there is a population increase of one percent, GDP growth can fall by 3.555172 percent. This value can be considered too large. But we should understand that the assessment in the simulation may be overestimated or even too small otherwise. The most important is the significance

and negative sign on the coefficient of the variable. The significance is clear, the t-count value of 3.74406 is greater than the t-table at degrees 5 percent and 10 percent which are consecutively 2.093 and 1.729.

On other side, the effect of population on GDP is not found at all in the short-run. The influence of population growth is totally absent. Labor force also does not have impact on GDP. The influence of GEPU is negative on GDP. When GEPU increases by one percent, GDP growth will decrease by -0.015129 percent. This value is supported by a t-test of 2.63210 which is greater than the t-table of 5 percent which is 2.093. Analysis in the short term can be seen in table 3 at the bottom.

In the short-term effect of the GDP on labor force is not found at all, with no sign of significance of t-test. While GEPU was found to have a significant negative effect on labor force. When there is a one percent increase in GEPU, labor force will decrease by 0.021133 percent. The t-test value of 2.38030 which is greater than the t-table at the 5 percent degree of 2.093. The effect of population on labor force shows a significant positive sign. When there is a population increase of one percent, labor force will increase by 6.274338 percent. This is evidenced by the t-value 2.94281 which is greater than the t-test at a degree of 5 percent, which is 2.093.

GEPU in the short term does not seem to be affected by any things. All variables (GDP, labor force, and population) do not show significant signs. This is understandable, because Indonesia is an open country that will not be able to influence something too much on a global scale. Therefore, any changes that occur at the world level are completely out of the phenomena that occur in Indonesia. If any, it has only very little effect.

An interesting thing is also found in the population variable. Our result shows that all variables (GDP, labor force, and GEPU) did not have any influence on the population. As something that is generally accepted, in developed countries, people are prosperous and the population growth is small. Whereas, average people in developing countries are less prosperous than in developed countries. It also has large populations with high levels of growth every year. In this finding, we find that the increase or decrease in GDP did not affect the proportion of the population. Similarly, the number of labor force that also does not affect the population. Global economic policy uncertainty apparently has no effect on the population in Indonesia at all.

The results of this study are supported by classical assumptions tests. There are 4 tests that we highlight, namely: autocorrelation, heteroscedasticity, normality, and multicollinearity. The table of autocorrelation test as below:

Table 4. Autocorrelations Test

VEC Residual Portmanteau Tests for Autocorrelations					
Null Hypothesis: no residual autocorrelations up to lag h					
Date: 07/17/19 Time: 05:28					
Sample: 1997 2018					
Included observations: 19					
Lags	Q-Stat	Prob.	Adj Q-Stat	Prob.	df
1	11.98986	NA*	12.65597	NA*	NA*
2	26.52895	0.4343	28.90553	0.3154	26
*The test is valid only for lags larger than the VAR lag order.					

df is degrees of freedom for (approximate) chi-square distribution

Source: analysis by author

Based on table 4 above, it is known that the model is free from autocorrelation. This is proven by rejecting the alternative hypothesis and we accept the null hypothesis, due to the value of probability is greater than 5 percent. Similarly, heteroscedasticity problems are also completely rejected. The table as follows:

Table 5. Heteroskedasticity Test

VEC Residual Heteroskedasticity Tests: No Cross Terms (only levels and squares)					
Date: 07/17/19 Time: 05:29					
Sample: 1997 2018					
Included observations: 19					
Joint test:					
Chi-sq	df	Prob.			
142.5859	120	0.0781			

Source: analysis by author

Based on table 5 above, the probability of accepting the alternative hypothesis is greater than 5 percent. Therefore, the null hypothesis is accepted, meaning that a heteroskedasticity problems in the model are rejected. The result of normality test confirms that model is good.

Table 7. Normality Test

VEC Residual Normality Tests				
Orthogonalization: Cholesky (Lutkepohl)				
Null Hypothesis: residuals are multivariate normal				
Date: 07/17/19 Time: 05:28				
Sample: 1997 2018				
Included observations: 19				
Component	Skewness	Chi-sq	df	Prob.
1	-0.782044	1.936710	1	0.1640
2	-0.082343	0.021471	1	0.8835
3	-0.329900	0.344641	1	0.5572
4	0.200941	0.127861	1	0.7207
Joint		2.430684	4	0.6571
Component	Kurtosis	Chi-sq	df	Prob.
1	3.135277	0.014487	1	0.9042
2	1.777451	1.183246	1	0.2767
3	2.326600	0.358996	1	0.5491
4	1.641981	1.460003	1	0.2269
Joint		3.016733	4	0.5550
Component	Jarque-Bera	df	Prob.	
1	1.951198	2	0.3770	
2	1.204718	2	0.5475	
3	0.703637	2	0.7034	
4	1.587864	2	0.4521	
Joint	5.447416	8	0.7089	

Source: analysis by author

Based on the calculation in Table 7 above, it was found that the null hypothesis cannot be rejected, as evidenced by a probability value greater than 5 percent, which means all data is normally distributed. The next is multicollinearity test. The table as below:

Table 8. Multicollinearity Test

	DLPOPI	DLLAB	DLGEPU	DLGDPI
DLPOPI	1	0.48013	-0.02375	-0.68799
DLLAB	0.48013	1	0.06947	-0.32933
DLGEPU	-0.02375	0.06947	1	-0.11424
DLGDPI	-0.68799	-0.32933	-0.11424	1

Source: analysis by author

Based on the test in table 8, all data do not have a very close relationship with each other. The highest value is the relationship between Indonesia's GDP and Indonesia's population which is 0.68799. This value is relatively small, so we can accept it. Then it can be concluded that the model is free from multicollinearity problems.

Impulse Response Test

Impulse response testing is intended to find out how big the response of variables when shocks occur in other variables. In this section, testing is primarily intended to look at GDP.

Table 9. Impulse Response of GDP

Response of DLGDPI:				
Period	DLGDPI	DLLAB	DLGEPU	DLPOPI
1	0.006550	0.000000	0.000000	0.000000
2	0.007585	0.001406	-0.002193	0.001356
3	0.006494	-0.000940	0.001318	0.001734
4	0.004784	-5.82E-05	0.000252	0.000787
5	0.005301	0.000849	0.000408	0.001717
6	0.005769	0.000470	0.000383	0.001552
7	0.005790	0.000608	-1.40E-06	0.001452
8	0.005789	0.000435	0.000327	0.001580
10	0.005645	0.000518	0.000246	0.001509
15	0.005682	0.000484	0.000257	0.001504
20	0.005686	0.000481	0.000260	0.001505
25	0.005686	0.000481	0.000260	0.001506
30	0.005686	0.000481	0.000260	0.001506

Source: analysis by author

Based on table 9, it is known that the response of labor force, GEPU, and population to GDP, was not found at all in the first period. The influence was actually only seen in the second period. GEPU shows negative signs, while labor force and population show positive signs. In the fourth period, labor force shows a negative value to GDP. For the next period the effect of the shock becomes positive. In the seventh period the GEPU again showed a negative value. However, in the following period, all variables showed a positive sign until the end

of the observation in period 30th. In this case, the Indonesian economy was able to adjust to the shocks of global economic policy uncertainty in the long-term.

Variance Decomposition Test

This test is carried out with the aim of seeing the impact of which variable is most dominant affecting other variables in the future. Forecasting is used to find out how big the effect, if we make a simulation by considering other things constant. The table can be seen as follows:

Table 10. Variance Decomposition Test

Variance Decomposition of DLGDPI:					
Period	S.E.	DLGDPI	DLLAB	DLGEPU	DLPOPI
1	0.006550	100.0000	0.000000	0.000000	0.000000
2	0.010443	92.09087	1.812405	4.411544	1.685183
5	0.014573	91.15843	1.688174	3.191436	3.961965
10	0.019732	91.84063	1.232077	1.841916	5.085377
15	0.023750	92.08740	1.055686	1.332410	5.524506
20	0.027177	92.21893	0.962887	1.063542	5.754642
25	0.030217	92.30056	0.905558	0.897392	5.896485
30	0.032979	92.35605	0.866621	0.784557	5.992771

Source: analysis by author

Based on table 11 above, the GDP variable is more influenced by GDP itself in the previous periods. It can be seen since period 1st to 10th. While other variables were not found at all influence in period 1. Only in the second period, the effect of each variable began to appear. GEPU has a greater influence than other variables on GDP. Nevertheless, the influence of the GEPU on GDP slowly began to decline. The population begins to increase its influence when the influence of GEPU begins to decrease. In period 5th, the effect of GEPU has been replaced by population. Until the 30th period, the effect of population on GDP outperformed the GEPU.

4. CONCLUSION

This study successfully concluded that a number of independent variables significantly influence the dependent variable, both in the long term and short term. From the estimation results it was found that the population had a negative impact on economic growth. Nevertheless, the findings are only valid in the long term, because in the short term the impact is not found at all. In addition, the Global Economic Policy Uncertainty (GEPU) also shows a negative impact on economic growth, both in the short and long term. The labor force variable does not show any impact on GDP.

Based on the findings in this study, it is very important for the Indonesian government to utilise maximum capacity of the population of productive age (15-64 years old), so that they do not become a burden for development. Those who are in that age, must be truly empowered to boost their potentials.

In addition, a number of strategies must be prepared in dealing with uncertainty on the global scene which impact will affect Indonesia with all costs. Although the issue of uncertainty is not new, sometimes the size and effect can

vary at every period. The global uncertainty can affect the condition of the Indonesian economy, sometimes being good or otherwise. We have to prepare it nicely.

Despite this research is interesting paper, but it still has a number of weaknesses due to limited data and less detailed discussion. Future research can broaden the discourse that we propose. These our findings can be source of materials to be discussed in the next study with more complicated model and simulation.

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