Analysis the Interdependence of Foreign Debt and Economic Growth in Indonesia

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Abstract: This research is aimed to analyze interdependence of foreign debt on economic growth in Indonesia. Methods used in this research with Vector Autoregression (VAR), by using time series yearly data from 1991 to 2016. Model analysis tools obtained is estimation results obtained, the relationship between the two variables, namely external debt and economic growth have a 2-way relationship or feedback, meaning that both variables affect each other. And based on the results of the unit root test (Unit Roots Test), the relationship between the two variables external debt and economic growth have a relationship stationary at first differences which means that there is a long-term relationship between external debt and economic growth in Indonesia.

1 INTRODUCTION

Sustainable development is needed to improve the economy of a country. Indonesia, as the country is developing, it has obstacles in realizing development programs for national prosperity. The government faces the problem of limited capital to finance development. This is due to the gap in income and expenditure or the existence of a development budget deficit. The Indonesian government carries out various policies including implementing foreign debt policies.

According to the Big Indonesian Dictionary, debt is money that borrowed from other people. While etymologically, debt or debt (English) comes from the French term dette or Latin term debit which means "the one who owes". The term debtor is said to have been first used in English in the early 13th century.

The Big Indonesian Dictionary also defines loans as debts borrowed from other parties with the obligation to repay. Whereas Foreign Loans are a number of funds obtained from other countries (bilateral) or (multilateral) which are reflected in the balance of payments for investment activities, close the saving-investment gap and foreign exchange gap that is carried out by both the government and the private sector.

According SKB Menteri Keuangan and Kepala Bappenas (No. 185/KMK.03/1995 dan Nomor KEP.031/ KET/5/1995) Foreign Loans are state revenues in the form of foreign exchange, or foreign exchange that is ratified or in the form of goods and services obtained from the provision of foreign loans that must be repaid with certain conditions.

People, companies and countries institutionally are never separated from the practice of debts. Not only for business purposes, but also for meeting consumer needs. In business, debt is considered a common thing to increase business capital. Something similar happened in the governance of a country. Almost all countries, have even continued to owe to add funds or national development capital. Indonesia, as a developing country, has a long history of debt or loans to external parties, both bilaterally and multilaterally through international and regional financial institutions.

Lincolin Arsyad (2010) said foreign debt is a source of funding for government budgets and economic development. External debt is used to finance state expenditure so that it can support economic activities, especially productive activities so that in turn it will encourage economic growth. Debt is usually used to finance budget deficits.

Foreign debt can be a variable that can drive the economy while hampering economic growth. Encourage the economy to mean, if the debts are used to open employment and investment in the

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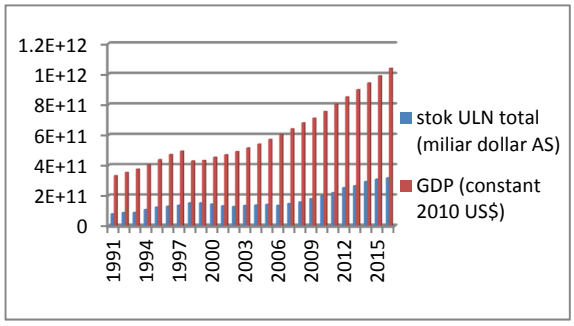
development sector which can ultimately drive an economy, while inhibiting growth if the debts are not used optimally because there is still a lack of oversight function of the person in charge of the debts themselves.



Source: worldbank.go.id

Figure 1: Graph of the development of foreign debt and economic growth in Indonesia from 1991-2016

Based on the graph above that shows the total external debt and GDP both fluctuate. But from 2007 to 2016 the total external debt and GDP experienced an increase every year. Foreign debt continues to increase because the government cannot meet the needs of the economy. And GDP that continues to increase is supported by growth in public consumption, government and private investment, and other things are not discussed in this study.

Normatively, every foreign debt is used by Indonesia is for development expenditure. The hope is to participate in financing various development projects and creating economic growth as indicated by rising GDP values and creating jobs, which in turn can contribute to reducing poverty.

In practice, not all foreign debt is spent on development spending. Some of the debt is actually used to cover the principal and interest installments. Hernatasa's research (2004) found the existence of Fisher Paradox, a situation where more and more foreign debt repayments were made, the greater the accumulation of foreign debt. A similar condition was stated by other researchers that installments plus interest on foreign debt were substantially financed by new debts resulting in a net transfer of financial resources from Indonesia to foreign creditors (Swasono dan Arief, 1999).

This condition is certainly not profitable. This is because most of the funds from the State Budget (APBN) are expected to drive the economy, turned out to be sucked in by routine expenditures, most of them which were realized in principal installments and debt interest. The payment of principal and interest on foreign debt has an effect on the economy because in certain conditions the installment payments can have a negative impact on the economy there by eliminating the positive contribution of foreign debt.

Foreign debt is needed to have a positive influence on economic growth such as by increasing production (GDP), expand employment opportunities and improve balance of payments. However, if the debt is used improperly then the possibility of being able to have a negative impact on economic growth even threatens the country's macroeconomic stability.

Rachmadi (2013:13) said that Indonesia's Foreign Debt is able to encourage Indonesia's Economic Growth. Economic sectors that absorb foreign debt are quite high, proven to show increasing GDP growth.

Atmadja (2000) said that in the short term, foreign debt is very helpful for the Indonesian government in its efforts to cover the budget deficit of state revenues and expenditures, due to the financing of routine expenses and considerable development expenditures. But in the long run, it turns out that the government's foreign debt can cause various economic problems in Indonesia, one of which can cause the rupiah exchange rate to fall. Foreign debt is like development capital. Foreign debt can increase investment activities so that domestic needs can be met. In the economy of a country there is an indicator that is used to assess whether the economy is going well or badly. Indicators in assessing the economy are reflected in GDP growth.

With all the reviews above, in this study, the author will discuss how the reciprocal relationship between foreign debt and economic growth in Indonesia.

2 THEORICAL FRAMEWORK

Foreign debt

Foreign debt is part of the total state debt obtained from creditors outside the country. Recipients of foreign debt can be in the form of governments, companies or individuals. The form of debt can be in the form of money obtained from private banks, governments of other countries or international financial institutions.

Indonesia is one of the third world countries. Before the monetary crisis in the Southeast Asia region, Indonesia had a fairly high economic growth rate. This is in line with the economic development strategy reserved by the government at that time, which placed high economic growth as a priority target of national economic development.

Indonesia's economic growth since the end of the 1970 has always been positive, and the level of income per capita is relatively low, causing the relatively high target of economic growth to be insufficiently financed with own capital, but it must be supported by using foreign capital assistance. The government which initially became the main motor of development continues to increase its foreign debt so that it can be used to finance national economic development in order to achieve the target of such a high level of economic growth, without being accompanied by an increase in the ability to mobilize capital in the country. This indicates a positive correlation between the success of economic development at the macro level and an increase in the amount of government foreign debt (growth with indebtedness) (Atmadja, 2000).

EVIEWS application for the VAR: Stationarity test, optimum lag selection, Cointegration Test, Vector error correction model (VECM), Instrument vector Autoregression.

$$PE_t = \sum_{i=1}^{n} a_i ULN_t - i + \sum_{j=1}^{n} b_j PE_{t-j} + \delta t$$

$$ULN_t = \sum_{i=1}^{n} c_i ULN_t - i + \sum_{j=1}^{n} j_j PE_{t-j} + \lambda t$$

It is assumed that δt and λt are not correlated.

PE = Economic Growth
PEt-j = Economic Growth Lag
ULN = foreign debt
$ULN_t - i$ = foreign debt Lag

Economic growth

In general, economic growth is defined as an increase in the ability of an economy to produce goods and services. Economic growth is one of the most important indicators in carrying out an analysis of economic development that occurs in a country. Economic growth shows the extent to which economic activity will generate additional community income in a given period. Because basically economic activity is a process of using production factors to produce output, then this process in turn will result in a return of service to the factors of production owned by the community. With the economic growth, it is expected that people's income as the owner of production factors will also increase (Sukirno, 2006: 423).

Factors that influence economic growth according to Sukirno (2010: 429) include: land and other natural wealth; the number and quality of the population and labor; capital goods and technology level; social system and attitudes of the community; market area as a source of growth.

3 RESEARCH METHOD

This study will examine the analysis of foreign debt and economic growth in Indonesia (Cointegration Method) during the period 1991-2016. Problems in this study will be analyzed using vector autoregression. Simply put, VAR describes a relationship that "causes each other" (causality) between variables in the system, by adding an intercept. Outcome data were analyzed using the EVIEWS application for the VAR: Stationarity test, optimum lag selection, Cointegration Test, Vector error correction model (VECM), Instrument vector Autoregression.

4 RESULT AND DISCUSSION

1. Stationary Data Test

Stationary data testing can be done with the graph method and unit root method. Unit root test is used augmented Dickey-fuller test (ADF) if the value of absolute statistics t is smaller than the critical value in the MacKinnon table at various levels of confidence (1%, 5% and 10%). Then indicates data is not stationary. Besides that it can also be seen in a prob value greater than 0.05 which also indicates that the data is not stationary. Conversely, if the ADF value is greater than the critical value of various levels of confidence (1%, 5% and 10%), then there is no unit root or stationary data.

Table 1: ADF Test

Variable	Unit Root	Include in test equation	ADF Test Statistic	Critical Value 5%	Probability	Information
Foreign Debt	Level	Intercept	-0,383176	-2.991878	0.8972	Stasioner but not significant
	First Diff	Intercept	-3.021560	-2.991878	0.0471	Stasioner
Economic Growth	Level	Intercept	-4.771149	-2.991878	0.0008	Stasioner
	First Diff	Intercept	-7.082076	-2.991878	0.0000	Stasioner

Table 1, it can be explained that the ADF test value for foreign debt rates is smaller than the critical value of 5%, means that it is stationary both at the level but not significant, so first data is taken which is stationary & significant. And the Economic Growth variable is stationary at level, first different but to equalize the data then first different is taken. For second different in this study it was not tested again.

2. Optimal Lag Length Test

The VAR approach is very sensitive to the amount of data lag used, therefore it is necessary to set the optimal lag length. Determination of the length of the lag is used to determine the length of the period of influence on an endogenous variable with the past time and other endogenous variables. Determination of length of lag can be seen from the values of the LikelihoodRratio (LR), Final Prediction Error (FPE), Akaike Information Criterion (AIC) and Schwarz information (SC). Values can be seen from table 2, the results of the optimal lag length test below.

Table 2: Optimum Lag Length Test

VAR Lag Order Selection Criteria

Endogenous variables: DLGDP DLULN

Exogenous variables: C

Date: 11/26/18 Time: 22:15

Sample: 1991 2016

Included observations: 22

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-26.88643	NA	0.047378	2.626039	2.725225	2.649404
1	-19.00813	13.60796*	0.033411*	2.273467*	2.571024*	2.343562*
2	-18.04356	1.490709	0.044593	2.549414	3.045343	2.666240
3	-17.10400	1.281208	0.060667	2.827637	3.521936	2.991193

Table 3: Granger Causality Test

Pairwise Granger Causality Tests

Date: 11/26/18 Time: 22:18

Sample: 1991 2016

Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
DLULN does not Granger Cause DLGDP	24	0.14953	0.7029
DLGDP does not Granger Cause DLULN	24	0.00183	0.9662

In table 3 all variables have a reciprocal relationship or have a significant two-way relationship at the level of 5% (probability> 0.05) in lag 1. It means that foreign debt affects economic growth but not significantly.

3. Results of Analysis of causality granger

Granger causality test between research variables is intended to find out the causality relationship between variables (Nachrowi, 2006: 289). From the following table the results of these tests can be known to be reciprocal relationships.

4.Cointegration Test Results

Cointegration means there is a long-term relationship (balance). In the short term and the possibility of imbalance (disequilibrium). Because of this imbalance, correction is needed with an error correction model introduced by Sarga, developed by

Hendry and popularized by Engle and Granger (Winarno, 2006: 11.7-11.9). There are three ways to test cointegration, namely 1) Engle Grenger Cointegration Test 2) Cointegration regression Durbin Watson 3) Johansen test.

This study uses the johansen test, with the johansen test, compared the value of the trance statistic with the critical value at the confidence level of 5% and 1%. If the value of the trance statistic is smaller than the critical value, it can be concluded that the two variables are not mutually integrated (Winarno, 2006: 11.7).

Through the Johansen cointegration test in Table 5 below, there appears a trace statistic value> critical value at a 5% confidence level. Thus indicating both variables mutually co-ordinate. This cointegeration is also shown in the notes below the table that says "Trace test indicates 2 cointegrating eqn (s) at the 0.05 level".

Table 4: Johansen's Co-integration Test

Date: 11/26/18 Time: 22:50
Sample (adjusted): 1994 2016
Included observations: 23 after adjustments
Trend assumption: Linear deterministic trend
Series: DLGDP DLULN
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 *	0.510925	20.95249	15.49471	0.0068
At most 1 *	0.177774	4.502011	3.841466	0.0338

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

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.510925	16.45048	14.26460	0.0222
At most 1 *	0.177774	4.502011	3.841466	0.0338

Max-eigenvalue 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

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

DLGDP	DLULN			
-0.716983	-0.925173			
-0.096663	-18.03208			

Unrestricted Adjustment Coefficients (alpha):

D(DLGDP)	2.789485	-0.158747		
D(DLULN)	-0.007701	0.027157		

1 Cointegrating Equation(s): Log likelihood -24.91166

Normalized cointegrating coefficients (standard error in parentheses)

DLGDP	DLULN			
1.000000	1.290370			
	(5.55576)			

Adjustment coefficients (standard error in parentheses)

D(DLGDP)	-2.000014			
	(0.45317)			
D(DLULN)	0.005522			
	(0.01067)			

The next indicator based on the results of the co-operation test, there is no sign of co-integration with the symbol (*) at most 1. If there are marked (**) or (*) at least one, then the equation must be solved by the VECM method (Vector Error Correction Model) Based on Johansen's co-integration test of the two variables in the equation system, we can find out the number of possible relationships.

Seen in the table above that there are:

- The trace test identifies 1 cointegration equation at the level of 5%.
- At the Max Eigenvalue test identify there is a cointegration equation at the level of 5%.

Thus, between the variables of Foreign Debt and Economic Growth in Indonesia there is a relationship between long-term balance stability and movement in the long run, while in the short term all variables are mutually adjusted to achieve long-term balance.

5. Impulse Response Analysis and Variance Decomposition

• Impulse Response Analysis

Figure 2 shows the Impulse of Foreign Debt Response to Economic Growth, and the Response of economic growth to foreign debt.

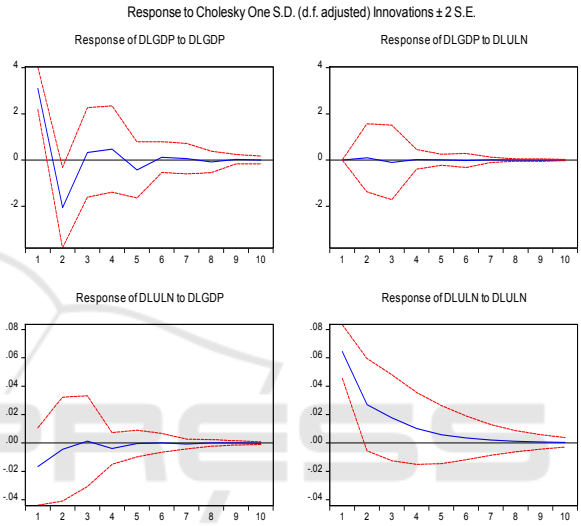


Figure 2: Foreign Debt Response to Different Economic Growth

• Analysis of Variance Decomposition

After analyzing the dynamic behavior of the model through impulse response functions, then the characteristics of the model will be seen through Variance Decomposition. The results of variance decomposition can be seen in table 5 where fluctuations in Differences in Economic Growth are influenced by Foreign Debt. In the second period the highest economic growth of 99.93% continued to decline until the tenth period to 99.86%. Conversely the effect of profit sharing experienced an opposite increase starting from 0.0687% in the second period to 0.1479% in the 10th period.

Tabel 5: Variance Decompotion Test

Variance Decomposition of DLGDP:			
Period	S.E.	DLGDP	DLULN
1	3.109088	100.0000	0.000000
2	3.728966	99.93126	0.068741
3	3.744707	99.85681	0.143188

4	3.774806	99.85350	0.146503
5	3.798797	99.85477	0.145235
6	3.800908	99.85241	0.147589
7	3.801390	99.85205	0.147947
8	3.802274	99.85212	0.147879
9	3.802433	99.85206	0.147944
10	3.802436	99.85203	0.147966
Variance Decomposition of DLULN:			
Period	S.E.	DLGDP	DLULN
1	0.066567	6.253329	93.74667
2	0.071958	5.724630	94.27537
3	0.074124	5.423298	94.57670
4	0.074926	5.578608	94.42139
5	0.075154	5.548120	94.45188
6	0.075237	5.536035	94.46397
7	0.075269	5.542479	94.45752
8	0.075278	5.541134	94.45887
9	0.075281	5.540655	94.45934
10	0.075283	5.540893	94.45911
Cholesky Ordering: DLGDP DLULN			

5 CONCLUSIONS

After analyzing the research above, the author concludes as follows:

1. Foreign Debt and Economic Growth are closely related and influence each other. Increasing Economic Growth has a positive effect on Foreign Debt. In the long run, the relationship between Foreign Debt and economic growth tends to be stable but the short term tends to decrease.
2. Johansen's cointegration test appears trace statistic value > critical value at 5% confidence level. Thus identifying both mutually integrated variables.

SUGGESTION: It is necessary to do further studies by using variables outside that used in this study..

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