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The Impact of Government Bond Issuance on Banking Activities and Economic Growth in Indonesia

ABSTRACT

This paper aims to test the effect of crowding out on one of the developing countries, especially Indonesia. Using monthly data from January 2008 to June 2023, VECM's estimates show that the growth of government debt through its securities is negatively and significantly related to the growth of banking loans, both in the short and long term. This shows that there has been a crowding out effect in the process of withdrawing government debt. Meanwhile, the results of the Markov-switching estimate show that credit growth has a positive and significant impact on economic growth, both in normal and turbulent conditions. The growth of government debt is only positive and significant in turbulence periods, but not significant in normal times. These findings show that the government's debt policy has been at risk to the banking system and the economy.

Keywords: Crowding out effect; Government securities; Banking activities; Deposit growth; Economy growth.

Received October x, 2023; Revised October xx, 2023; Accepted October xx, 2023

Doi: <https://xxxxxxx>

1. INTRODUCTION

Indonesia and others developing country, requires a lot of investment, both domestic and foreign investment, to ensure sustainable development and maintain economic stability. Indonesia, as a developing country, requires a lot of investment, both domestic and foreign investment, to ensure sustainable development and maintain economic stability. The consequence is a crowding out effect which occurs due to the attraction of investor funds by financial institutions and the government through bonds and others. In the last decade, the number of Indonesia's government debt withdrawals, especially through securities, has increased significantly. Data from Bank Indonesia shows that by the end of 2022, the total government debt through its securities has reached IDR 5,365.24 trillion. This value has increased by around IDR 4,839.54 trillion or around 920.60% from 2008 (IDR 525.70 trillion). The average growth is around 18.23% per year. Meanwhile, credit growth tends to slow down, even in recent years it has also experienced negative growth. The average credit growth is only 11.53% per year, with a tendency to get lower from year to year. At the end of 2022, credit growth was only 4.93%, whereas before 2013 the growth exceeded 20% per year. The economic growth during 2008-2022 tends to stagnate around 5-6% per year (BPS, 2022).

The crowding out effect is a condition, where the withdrawal of government debt through securities has caused deposits in banks to decrease. At least, there are two ways that public debt, especially through securities, can affect bank credit. First, many banks act as underwriters for government securities. Second, high public debt is a financial signal that represents a weak economy, where banks are forced to invest in government securities, which are considered risk-free assets. Deposits, which should be used for credit for the community, have instead turned to the state treasury. As a result, fresh funds for private investment are reduced, thus having an impact on its productivity. In addition, higher government debt withdrawals will also trigger an increase in market interest rates, as yields on government securities are a benchmark for banks. An increase in yields from government securities will be

48 followed by an increase in borrowing costs (Albertazzi et al., 2012, Mazioud, 2022, Surugiu et
49 al, 2023, Louail et al, 2024). Substantially, these things will have a negative impact on the
50 economy.

51 A number of studies have also shown that there is a negative relationship between public debt
52 and bank credit (e.g., Reinhart and Rogoff, 2011; Furceri and Zdzienicka, 2012; De Bonis and
53 Stacchini, 2013). Specifically, the Committee on the Global Financial System (2011) also stated
54 that the debt crisis experienced by countries in the Eurozone is the result of a causal
55 relationship between public debt and bank credit. However, there is no clear consensus on
56 empirical evidence on the relationship between government debt and economic growth
57 (Kumar and Woo, 2010; Reinhart & Rogoff, 2010; Panizza and Presbitero, 2012; Herndon et al.,
58 2013). This is because there are two possibilities. First, if the debt is used for domestic
59 spending, then there is a tendency for government debt to have a positive impact on economic
60 growth. Second, if the debt is used for foreign spending, including the payment of the principal
61 and interest, there will be a capital outflow, so it will have an impact on economic growth
62 (Athari, 2022, Yasamura, 2023).

63 This paper is aimed at examining whether the crowding out effect really occurs in Indonesia,
64 and how it affects the national economy. Empirical evidence for crowding out effect is
65 important for evaluating public policy. High public debt is a heavy burden that must be
66 managed prudently. This is because it takes a relatively long time to reduce the debt. In
67 addition, public debt also has major consequences, including bankruptcy or failure of
68 countries, such as Zimbabwe (2008), Argentina (2001 and 2014), Ecuador (2014), Greece
69 (2015), Venezuela (2017), and Sri Lanka (2021).

70 This paper consists of four parts. The second part presents data and methodologies. Part three
71 presents the results and discussion. Part four contains conclusions and policy implications,
72 which is also the closing part of this paper.

73 2. METHODOLOGY

74
75 The study consisted of two parts of testing. Test I is intended to test the crowding out effect,
76 which is a negative and significant relationship between the growth of public debt (especially
77 through government securities) and the growth of bank credit. Test II is aimed at examining
78 the impact of debt and credit growth on economic growth.

79 For Test I, we used monthly data from January 2008 to June 2023. Debt growth is proxied by
80 aggregate growth from outstanding government securities of Indonesia, as well as credit
81 growth, i.e. aggregate growth from all banks. Government debt growth ($\Delta Debt$) and credit
82 growth ($\Delta Credit$) are calculated from month to month, with the following formulation:

$$\begin{aligned} & \text{Debtt0} - \text{Debtt-1} \\ \Delta \text{Debtt0} &= \left(\frac{\text{Debtt0} - \text{Debtt-1}}{\text{Debtt-1}} \right) \times 100\% \\ & \text{Creditt0} - \text{Creditt-1} \\ \Delta \text{Creditt0} &= \left(\frac{\text{Creditt0} - \text{Creditt-1}}{\text{Creditt-1}} \right) \times 100\% \end{aligned}$$

where: t_0 is the current period; $t-1$ is the previous period; $\Delta Debt$ is the outstanding growth of government securities; and $\Delta Credit$ is credit growth.

To test the relationship between government debt growth and credit growth, we used a vector autoregression or vector error correlation model (VAR/VECM). Systematically, the VAR models developed for this purpose are:

$$\Delta Credit_t = \alpha_{10} + \sum_{t=1}^k \alpha_{11} \Delta Credit_{t-1} + \sum_{t=1}^k \alpha_{12} \Delta Debt_{t-1} + \epsilon_{1,t}$$

$$\Delta Debt_t = \alpha_{20} + \sum_{t=1}^k \alpha_{21} \Delta Credit_{t-1} + \sum_{t=1}^k \alpha_{22} \Delta Debt_{t-1} + \epsilon_{2,t}$$

The above form of VAR is a regular VAR that is used if the data is stationary at the level. If not, then the test is carried out with VECM (Almuntasir, 2015). Systematically, the VECM developed for this purpose is:

$$\Delta Credit_t^{-1} = \alpha_{10} + \sum_{i=1}^1 \alpha_{11} \Delta_{-1} + \sum_{i=1}^1 \alpha_{12} \Delta_{Credit Debt_{t-1}} + \epsilon_{1,t}$$

$$\Delta Debt_t^{-1} = \alpha_{20} + \sum_{i=1}^1 \alpha_{21} \Delta_{Credit}^{-1} + \sum_{i=1}^1 \alpha_{22} \Delta_{Debt_{t-1}} + \epsilon_{1,t}$$

VAR/VECM includes three main analyses, namely the *granger causality test*, *impulse response function*, and *variance decomposition*. The causality test is carried out to find out whether an endogenous variable can be treated as an exogenous variable. This is because there is an ambiguous relationship between endogenous and exogenous variables. In this context, whether the growth of government debt affects economic growth or vice versa. Theoretically, such growth has a cause-and-effect relationship. Before the issuance of government securities, bank credit growth began to slow down, as deposits were prepared to buy government securities. After the issuance of government securities, there are two possibilities. First, if the emission proceeds are used for government spending in the country, and this will cause the funds to return to the community, which will further increase deposits and bank credit. Second, if the proceeds from emissions are used for foreign spending, including the payment of principal and interest on foreign debt, there will be *capital outflows*, which may not affect or even negatively affect bank credit growth. Thus, before the emission, the pattern of the relationship is: $\Delta Credit \rightarrow \Delta Govsec_Outs$. The pattern of post-emission relationships is: $\Delta Govsec_Outs \rightarrow \Delta Credit$.

The impulse response function aims to test the dynamic behavior of the VECM model, which can be seen through the response of each variable to the surprise of the variable as well as to other endogenous variables. The variance decomposition analysis aims to test the characteristics of the model used, namely how much the difference between the variance

before and after the shock, both the shock that comes from oneself and the shock from other variables to see the relative influence of the research variables on other variables.

For Testing II, we used quarterly data from Q1 of 2008 to Q2 of 2023. Data analysis uses markov-switching modeling. This model allows us to analyze the movements of government debt growth, bank credit, and the economy simultaneously. This modeling can also be used to detect the effects of data variance in two conditions, namely normal conditions and turbulence. This is very useful in this study, because during this observation period there have been various shocks, ranging from the global financial crisis (2008), the European crisis (2009), the general election (2009, 2014, 2019), and the COVID19 pandemic (2020-2022). Systematically, the model we developed for this purpose is:

$$\Delta \text{Eco}_t = \begin{cases} \beta_{11} \text{St}=1 \Delta \text{Credit}_{t-1} + \beta_{12} \text{St}=1 \Delta \text{Debt}_{t-1} + \epsilon_{1t} \\ \beta_{21} \text{St}=2 \Delta \text{Credit}_{t-1} + \beta_{22} \text{St}=2 \Delta \text{Debt}_{t-1} + \epsilon_{2t} \end{cases}, \epsilon_t \sim \text{NID}(\sigma^2_{\text{st}})$$

where: ΔEco is economic growth, where this data is obtained from the Central Statistics Agency; ΔDebt is the outstanding growth of government securities; ΔCredit is credit growth; $\text{St}=1$ shows exogenous variables under normal conditions; $\text{St}=2$ indicates the exogenous variables in turbulence conditions; β is the slope; ϵ is the error term; t is the running period; and $t-1$ is the previous period.

3. RESULTS AND DISCUSSION

The results of the study show that throughout this observation period, the growth of government debt through its securities tends to be inversely proportional to the growth of bank loans. The average value of government debt increase reached IDR 28.80 trillion or grew by around 1.42% per month, with a tendency to increase from time to time (see Figure 1 and Table 1). The lowest growth occurred in January 2013 (-1.64%) and the highest in April 2016. Meanwhile, the average credit growth is only 0.99% per month, with a tendency to get lower over time. The lowest growth occurred in January 2018 (-2.14%) and January 2020 (-2.10%). Specifically, around 21.05% of this observation period has seen negative credit growth, especially in 2020 which reached 8 times.

Table 1. Statistics

	N	Min	Max	Mean	SD	Kurtosis	Skewness
Government Debt Growth (%)							
Monthly	186	-1.64	8.40	1.42	1.34	7.43	.96
Quarterly	61	-1.16	4.98	1.49	1.27	3.45	.18
Credit Growth (%)							
Monthly	186	-2.14	3.67	.98	1.24	2.67	-.30
Quarterly	61	-.63	4.24	1.92	.98	2.95	-.01

Economy Growth (%)

Quarterly

61

—4.19

5.05

1.18

2.47

1.79

0.35

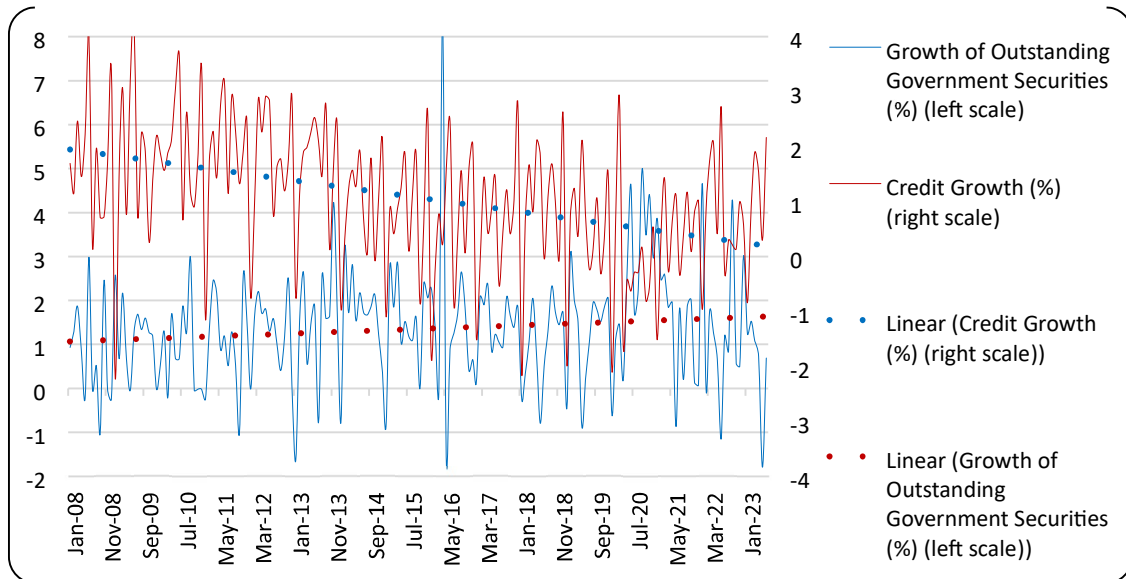


Figure 1. Outstanding Government Debt and Credit Growth

Based on Figure 1. showed the most significant increase in government debt occurred in 2015, which coincided with the change of government from the Susilo Bambang Yudhoyono Government to the Joko Widodo Government. Debt growth is also very significant in 2020-2023, which coincides with the occurrence of the COVID19 pandemic. In line with that, bank credit growth also tends to decline, and the decline is most significant from 2015-2023. The average debt growth from 2008-2014 was 1.19%, with credit growth of 1.66%. Meanwhile, the average debt growth from 2015-2023 reached 1.48%, with credit growth reaching 0.58%.

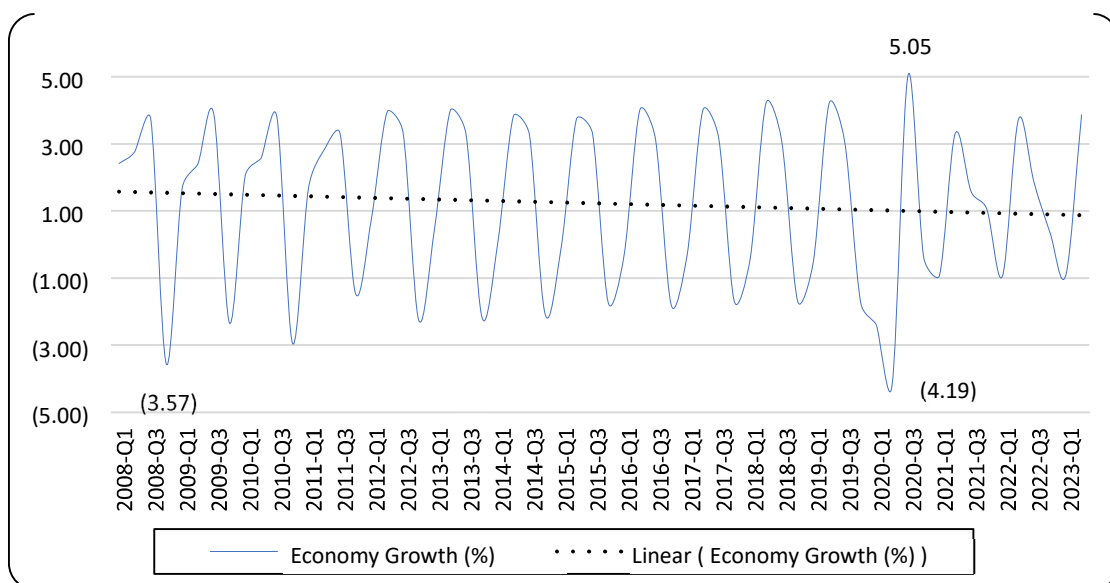


Figure 2. Indonesia's Economic Growth

In contrast to government debt and bank credit, economic growth tends to stagnate over time (see Figure 2 and Table 1). From the 1st quarter of 2008 to the 2nd quarter of 2023, the average economic growth was only 1.22%. The lowest economic growth occurred in Q2 of 2020 (-4.19%) and Q4 of 2008 (-3.57%), while the highest growth occurred in Q3 of 2020 (5.05%), Q2 of 2019 (4.20%), and Q2 of 2018 (4.21%).

Test Results I

The results of test I show that there is a significant relationship between the growth of government debt and the growth of bank credit, both in the short and long term (see Table 2). However, there is no causal relationship between the two. In this context, the growth of bank credit significantly affects the growth of government debt, but the growth of debt does not significantly affect credit growth.

Table 2. Vector Error Correlation Model

	Coefficient	SD	t-statistic
Constant	-0.01	0.11	-0.13
CointEq1	-0.90	0.22	-4.18 ***
D(Δ Credit)(-1)	0.04	0.16	0.23
D(Δ Credit)(-2)	-0.40	0.18	-2.20 ***
D(Δ Credit)(-3)	-0.27	0.18	-1.57 **
D(Δ Credit)(-4)	-0.14	0.18	-0.76
D(Δ Credit)(-5)	-0.05	0.16	-0.35
D(Δ Credit)(-6)	-0.05	0.12	-0.42
Cointegrating Eq:			
Constant	-1.96		
Δ Credit(-1)	-0.55	0.18	3.07 ***

R-squared = 0.60; Adj. R2 = 0.57; F-statistic = 15.11***; LogL = -230.67; Akaike AIC = 3.40; Schwarz SC = 3.69; significant at 1%; **significant at 5%; *significant at 10%.

In the short term, credit growth has had a negative and significant impact on government debt growth in Lag2 and Lag3. This shows that before the government withdrew its debt (issued its securities), banking credit had declined in the previous two to three months. This decline is due to banks holding back or reducing their credit portions to buy government securities in the near future. On the other hand, depositors may also have withdrawn their money from banks, and will transfer it to government securities. As a result, the availability of funds for credit has decreased.

Specifically, the decline in banking credit growth in Lag2 was more significant than the decline in Lag3. A decline in credit growth in Lag3 is likely to increase government debt by around 27%, while a decline in Lag2 will encourage an increase in government debt by around 40%.

199 In other words, the withdrawal of government debt through its securities will "suck" bank
200 deposits by around 67%.

201 In the long term, the growth of banking credit is also negatively and significantly related to the
202 growth of government debt. The current decline in credit growth will encourage greater
203 government debt growth in the future. Declining credit growth over time will lower fresh
204 funds for the private sector, and therefore reduce their productivity. If this condition occurs
205 for a relatively long time, it will encourage economic sluggishness, thus forcing the
206 government to withdraw larger debt to pump the economy.

207 Test Results II

208 The results of the second examiner show that, both under normal and turbulent conditions,
209 the growth of banking credit is positively and significantly related to economic growth.
210 Meanwhile, debt growth does not have a significant relationship with economic growth.
211 Under normal conditions, an increase in banking credit growth will contribute around 72% to
212 economic growth. On the contrary, a decline in credit growth will have an impact on a decrease
213 in real output, causing a slowdown, even a decline in the economy.

214 Table 3. Markov-Switching

	Coefficient	SD	z-statistic
Panel A. Regime 1 (Normal Period)			
Constant	0.38	0.83	0.46
Credit Growth	0.72	0.29	2.51 **
Government Debt Growth	−0.38	0.83	−0.46
Panel C. Regime 2 (Turbulence Period)			
Constant	3.97	0.52	7.60 ***
Credit Growth	0.31	0.11	2.82 **
Government Debt Growth	0.75	0.15	4.99 ***

215

216 AIC = 4.41; HQ Criteria = 4.53; LogL = -125.51; Schwarz Criterion = 4.72; significant at 1%;
217 **significant at 5%; *significant at 10%.

218 In turbulent conditions, such as the 2008 financial crisis, which was followed by the European
219 crisis (2009), and the COVID19 pandemic, credit growth and debt growth both have a positive
220 and significant impact on economic growth. Interestingly, the contribution of credit growth to
221 economic growth is lower than in normal times. In this condition, the contribution from
222 government debt is actually more dominating (75%). This shows that during turbulence, the
223 increase in government debt tends to be used more for productive fields, such as providing
224 economic stimulus. Meanwhile, in normal times, the increase in government debt may be
225 more dominantly used for non-productive fields or foreign spending and the payment of the
226 principal and interest of the debt. As a result, banking loans that are "sucked" by government
227 securities do not return to the Indonesia economic system.

228

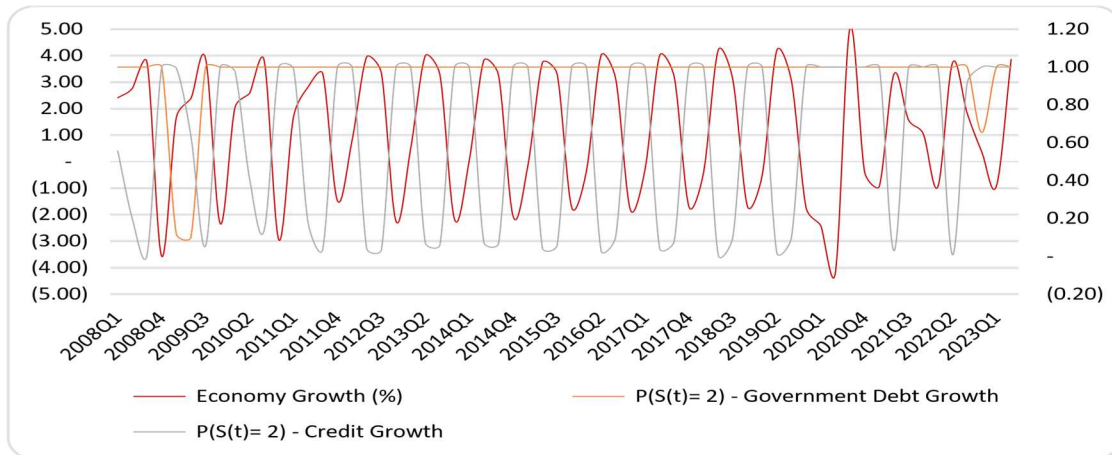


Figure 3. Smoothing Probabilities

Based on Figure 3, it can be seen that the smoothing probabilities of credit growth dominated all movements of economic growth, while the smoothing probabilities of government debt growth were only seen in 2008, which coincided with the global financial crisis, and 2020, which coincided with the COVID19 pandemic. This makes it clear that credit growth has a very strong positive effect on economic growth.

4. CONCLUSION

The results of the study show that there was a crowding out effect from January 2008 to June 2023. This can be seen from the negative and significant relationship between government debt growth and bank credit growth, both in the short and long term. In the short term, credit growth is negatively and significantly related to government debt growth in Lag2 and Lag3. This shows that the credit decline occurred two to three months before the government made a debt withdrawal (government securities issuance). In the long term, it also has a negative and significant relationship with government debt growth.

The results of the analysis with markov-switching show that under normal conditions, bank credit growth has a positive and significant relationship with economic growth. However, debt growth does not significantly affect economic growth. However, in turbulent conditions, credit growth and government debt are positively and significantly related to the economy. In this condition, the contribution of government debt to economic growth is greater than the contribution of bank credit.

These findings show that the increase in government debt in normal times tends to be used for non-productive activities, while in turbulence periods it is more dominantly used for productive activities. Based on these findings, it shows that government debt withdrawals from January 2008 to June 2023 tend to be risky for the banking system and the economy. The withdrawal of government debt has caused the lending function of banks, especially underwriters, to be reduced. This can of course have an impact on industrial and economic productivity. Therefore, the government needs to evaluate the debt policy through domestic securities. In this context, the coupon rate offered should be lower than the market interest, and underwriting banks should be prioritized on investment banks, not commercial banks.

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