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THE EFFECT OF THE GOVERNMENT BOND VALUE ON THE INTERMEDIARY FUNCTION OF BANKS IN THE CAPITAL MARKET OF INDONESIA

Abstract

The distribution of funds becomes the identity and function of banks. By performing this function well, the banks can get profit to survive. One of the considered factors affecting this channeling function is the issuance of government bonds to finance the state budget, which may be harmful to this bank channeling function. Therefore, to prove this situation, it is necessary to check a causal relationship between the government bond value and the bank intermediary function through this study, adding bank size and loans as a control variable.

This study utilizes the banks listed on the capital market of Indonesia as the population. Furthermore, the Slovin formula and a simple random sampling method are employed to determine the number of banks to be the samples and take them. Also, the regression model with pooled data and the t-statistic test are used to estimate its coefficients and examine the proposed hypotheses, respectively.

Overall, this study demonstrates that the government bond value positively affects the bank intermediary function. This indicates that the crowding-out does not exist. By this evidence, the government does not need to worry because this debt does not disturb the bank function to deliver the credit to society. Likewise, bank size and bad loans have a positive impact on this function. Thus, banks must be able to diversify risks among their assets and restructure bad loans when performing this function.

Keywords

bank credit distribution, crowding-out absence, issue of government bonds

JEL Classification

G20, G21, G28

INTRODUCTION

The government of Indonesia has already issued and managed bonds to finance its budget following the Minister of Finance Decree No. 101/KMK.017/2000. This circumstance has opened the opportunity for its citizens to join the national development and get the coupon regularly paid for the issued bonds that they have bought (Law No. 24 of 2002). Two arguments exist regarding the issuance of government bonds and the effect. First, the supporting one, as Abbas and Christensen (2007) demonstrate. They argue that by selling the bonds, the government can create macroeconomic stability, for example, reducing inflation and protecting the state from monetary crisis and other external crises. Second, the contra one, as shown by Hanson (2007). He declares that although domestic debt can help the capital market, the large amount of this debt has a similar risk to foreign debt.

Additionally, the issuance of government bonds can be a competition for banks to search for funds to redistribute them back to society in a

loan. Consequently, what the government executes disturbs the intermediary function of commercial banks. This condition was supported by Christensen (2005) declaring the government debt goes down the bank lending to private sectors; DeBonis and Stacchini (2013) pointing out that the debt issued by the government drops the bank credit growth. Based on their study, Altaylıgil and Akkay (2013) suggest that the government should reduce its debt to facilitate the banks to distribute credits to the private sectors to enhance economic growth. Correspondingly, Anyanwu, Gan, and Hu (2017) confirm that government debt diminishes bank credit to private sectors. Similarly, Mwakalila (2020) shows that domestic government liabilities tend to cut bank credit.

Unfortunately, this crowding-out hypothesis has been broken by Utari, Kurniati, and Surjaningsih (2011), stating that government debt has a positive impact on a bank's ability to distribute funds; Akpansung (2018), announcing no effect; and Benayed and Gapsi (2020), finding that the inverted-U shape curve exists. Furthermore, they explain that under the starting point of 52% of GDP, domestic public debt supports private banks for lending money. Upper this point, bank credits to the private sector fall.

This study also utilizes bank size and bad loans as the control variables. These variables are used because they become the determinants of the bank in channeling funds.

For bank size as the determinant of the bank intermediary function, the study of Shah, Khan, Shah, and Tahir (2018) and Khanal (2019) shows a negative effect. On the other hand, Vodová (2011), Chagwiza (2014), El-Chaarani (2019) display a positive impact. This positive effect of size on lending behavior is affirmed by Rabab'ah (2015), Boako, Acheampong, and Ibrahim (2017), Adzis, Sheng, and Bakar (2018), and Tran (2019). Meanwhile, Świtła, Kowalska, and Malajkat (2020) confirm a positive influence of the bank size on credit growth.

For bad loans as the determinant of the bank intermediary function, Ramadhani and Indriani (2016) and Somantri and Sukmana (2019) show a negative impact. Consistently, Rabab'ah (2015) confirms that the non-performing loan negatively influences bank lending behavior. Conversely, Akbar, and Mentayani (2010) and El-Chaarani (2019) illustrate a positive impact. When the bank credit distribution is measured by loan growth, Cucinelli (2015) and Ivanović (2016) reveal a negative effect.

This research intends to ensure the crowding-out phenomenon by investigating and analyzing the government bond effect on the bank intermediary function in the Indonesia capital market by employing its size and loans as a control variable.

1. THEORETICAL FRAMEWORK AND HYPOTHESES DEVELOPMENT

By issuing bonds to finance the state budget deficit, the government attracts the attention of the public to allocating money in this instrument. This condition makes money flow from the corporate bond market (Wibowo, Passagi, and Prasetyo, 2018) and the banking industry (Wibowo, 2018) to the government bond market (Wibowo, 2018; Wibowo, Passagi, and Prasetyo, 2018). Therefore,

it disturbs the bank function to distribute credit to the private sectors, as confirmed by Christensen (2005), DeBonis and Stacchini (2013), Altaylıgil and Akkay (2013), Anyanwu Gan, and Hu (2017), Mwakalila (2020). Denoting this information, hypothesis 1a can be represented as follows:

H_{1a}: Government bond value negatively affects the intermediary bank function.

The issuance of government bonds attracts the attention of commercial banks to investing money in government bonds. By having them in their asset portfolio, banks confidently distribute funds to

private sectors because these bonds can compensate for the credit distribution risk (Utari, Kurniati, and Surjaningsih, 2011). Moreover, Utari, Kurniati, and Surjaningsih (2011) find that this bond value positively contributes to the rise in total credits for private sectors to the gross domestic product ratio. Denoting this information, hypothesis 1b can be represented as follows:

H_{1b}: Government bond value positively affects the intermediary bank function.

Banks' size reflects their capability to survive (Siringoringo, 2017), expand their business, and manage their asset portfolio (Kembuan, Rahman, and Setiawan, 2018). Unlike small banks, big banks can execute them; therefore, they can distribute loans based on the borrower asset guarantees, such as inventory, non-tangible assets, and accounts receivable (Uchida, Udellb, and Watanabe, 2008). These explanations are also affirmed by Vodová (2011), Chagwiza (2014), and El-Chaarani (2019). In the same way, the research of Rabab'ah (2015), Boako, Acheampong, and Ibrahim (2017), Adzis, Sheng, and Bakar (2018), Tran (2019), Świtała, Kowalska, and Malajkat (2020) supports this situation by inferring a positive effect of bank size on lending behavior. Given this argument and the previous research evidence, hypothesis two can be represented as follows:

H₂: Bank size positively affects the intermediary bank function.

Banks with high non-performing loans (NPL) have a liquidity problem so that they cannot distribute funds (Surjaningsih, Yumanita, and Deriantino, 2014), which is reflected in a higher LDR (Kartini and Nuranisa, 2014; El-Chaarani, 2019). In their research, Akbar and Mentayani (2010) and El-Chaarani (2019) confirm this situa-

tion by presenting a positive effect of NPL on LDR. Given this argument and the previous research evidence, hypothesis three can be represented as follows:

H₃: Bad loans positively affect the intermediary bank function.

2. RESEARCH METHOD

2.1. Research variables and their measurement

The variables in this study have two positions: outcome and explanatory. A bank intermediary function acts as an outcome. On the other hand, government bond value, bank size, and bad loans are explanatory variables. Table 1 shows the measurement of these variables.

2.2. Population and samples

The population of this study consists of the banks listed on the capital market of Indonesia during the period 2010–2018. By referring to the consistency-based observation, their number is 30. Moreover, the number of samples (*n*) that can represent the number of populations (*N*) is counted by the Slovin formula in Suliyanto (2009) by using the error boundary (*e*) of 10%. Moreover, this formula exists in equation (1).

$$n = \frac{N}{1 + Ne^2} \quad (1)$$

By denoting this formula, the number of samples

$$n = \frac{30}{1 + 30(0.10)(0.10)} = \frac{30}{1.3} = 23.07 \approx 23.$$

Table 1. Research variables and their measurement

Variable position	Research variable	Indicator	Scale of variable
The outcome variable	Bank intermediary function	Loan to deposits ratio (LDR) of the bank at the end of the year	Ratio
	Government bond value (GBV)	Natural logarithm of monthly GBV (LNGBV) accumulated for the year	Ratio
The explanatory variable	Bank size	Natural logarithm of total assets of the bank at the end of the year (LNTA)	Ratio
	Bad loans	Gross non-performing loans of the bank at the end of the year (G_NPL)	Ratio

Likewise, we employ the simple random sampling method to take 23 banks as the samples. Assuring the randomness, we also utilize the random number generated by Microsoft Excel, as Hartono (2012) explains. After that, the names of the banks obtained are available in Table 2.

Table 2. Bank names serving as a sample

No.	Code	Bank names
1	AGRO	Bank BRI Agroniaga
2	BABP	Bank MNC Internasional
3	BACA	Bank Capital Indonesia
4	BBCA	Bank Central Asia
5	BBKP	Bank Bukopin
6	BBNI	Bank Negara Indonesia 46 (Persero)
7	BBNP	Bank Nusantara Parahyangan
8	BBRI	Bank Rakyat Indonesia (Persero)
9	BBTN	Bank Tabungan Negara (Persero)
10	BCIC	Bank JTrust Indonesia
11	BDMN	Bank Danamon Indonesia
12	BJBR	BPD Jawa Barat and Banten
13	BKSW	Bank QNB Indonesia
14	BMRI	Bank Mandiri (Persero)
15	BNBA	Bumi Artha
16	BNGA	Bank CIMB Niaga
17	BNII	Bank Maybank Indonesia
18	BVIC	Bank Victoria Internasional
19	INPC	Bank Artha Graha
20	MAYA	Bank Mayapada
21	MCOR	Bank Windu Kencana Internasional
22	MEGA	Bank Mega
23	PNBN	Bank Pan Indonesia

2.3. Data analysis method

Referring to the variable scale in Table 1, this study uses the regression with pooled data adopting the ordinary least square method as the parameter estimation method (Nachrowi & Usman, 2006). (Nachrowi and Usman, 2006). Additionally, this model can be seen in equation (2).

$$LDR_{it} = \beta_0 + \beta_1 \cdot LNCBV_{it} + \beta_2 \cdot LNTA_{it} + \beta_3 \cdot G_NPL_{it} + \varepsilon_{it} \quad (2)$$

The regression model must reach the test of some classical assumptions to yield the best, linear and unbiased estimators (BLUE). In other words, this model's errors have to follow the normal distribution and be free from the impact of explanatory variables (the absence of heteroscedasticity). Additionally, there is no significant correlation between the independent variables (the nonappearance of multicollinearity).

The residuals have to be random (the absence of autocorrelation) (Ghozali, 2016).

- To attest to the normality of residuals, the Kolmogorov-Smirnov test was used. The normality happens when the asymptotic significance of the Z-statistic of K-S is higher than a significance level (α) of 5% or a restricted one of 1%.
- To prove the absence of heteroscedasticity, the Glesjer test was used. Heteroscedasticity does not occur when the probability of the t-statistic for all independent variables is higher than a significance level (α) of 5%.
- To ascertain the absence of autocorrelation, the runs test based on the mode was used. Autocorrelation does not exist when the asymptotic significance of Z-statistic is higher than α of 5%.
- To detect the nonexistence of multicollinearity, the variance inflation factor (VIF) was compared with the cut-off point of 10. Multicollinearity does not exist when the VIF of each independent variable is lower than 10.

Furthermore, to examine the regression coefficients, β_1 , β_2 , and β_3 , t-statistic is used by comparing its probability with the significance level by indicating this following hint:

- If the probability of t-statistic is less than α of 5%, the null hypothesis is declined.
- If the probability of t-statistic is above or the same as α of 5%, the null hypothesis is acknowledged.

3. RESULTS AND DISCUSSION

This research employs 23 banks with a 9-year lifespan, bringing the total number of observations to 207. Moreover, 207 related to four variables was statistically described in Table 3.

- For *LDR*, minimum, maximum, average, and standard deviation values are 40.22%, 113.30%, 82.4998%, and 12.88862, singly.

Table 3. Descriptive statistics outcome of the research variables

Source: Modified output of IBM SPSS 20.

Variable	N	Minimum	Maximum	Mean	Std. deviation
<i>LDR</i> (%)	207	40.22	113.30	82.4998	12.88862
<i>LNGBV</i> (decimal)	207	32.58	34.10	33.4095	0.50900
<i>LNTA</i> (decimal)	207	2.28	14.08	10.8292	1.76711
<i>G_NPL</i> (decimal)	207	0.0021	0.2484	0.029312	0.0235578

Table 4. The outcome of the classical assumption tests

Source: Modified output of IBM SPSS 20.

Classical assumption test	Description			
Kolmogorov-Smirnov normality test on errors	Z Kolmogorov-Smirnov (K-S)			1.446
	Asymptotic significance (2-tailed)			0.031
Glesjer heteroscedasticity test $ RES = f(LNGBV, LNTA, G_NPL)$	Independent variable	<i>LNGBV</i>	<i>LNTA</i>	<i>G_NPL</i>
	Coefficient	-1.806	-0.439	-37.192
	Standard error	1.066	0.322	23.550
	t-statistic	-1.694	-1.364	-1.579
	Probability	0.092	0.174	0.116
Variance inflation factor (VIF) multicollinearity detection	Independent variable	<i>LNGBV</i>	<i>LNTA</i>	<i>G_NPL</i>
	VIF	1.068	1.172	1.116
Runs autocorrelation test on the mode-based error	Number of runs			3
	Z-statistic			0.099
	Asymptotic significance (2-tailed)			0.921

- For *LNGBV*, minimum, maximum, average, and standard deviation values are 32.58, 34.10, 33.4095, and 0.50900, individually.
- For *LNTA*, minimum, maximum, average, and standard deviation values are 2.28, 14.08, 10.8292, and 1.76711, one-to-one.
- For *G_NPL*, minimum, maximum, average, and standard deviation values are 0.0021, 0.2484, 0.029312, and 0.0235578, separately.
- For the multicollinearity detection outcome, the values of VIF for *LNGBV*, *LNTA*, and *G_NPL* are 1.068, 1.172, and 1.116, respectively. Since each value exceeds 10, multicollinearity does not exist in the regression model.
- For the autocorrelation test outcome, the asymptotic significance (2-tailed) of the Z-statistic of KS shows 0.921. Since this value exceeds α of 5%, errors are random. As a consequence, there is no autocorrelation problem in the regression model.

Table 4 shows the examining results of classical assumptions with the explanation as follows:

- For the normality test outcome, the asymptotic significance (2-tailed) of the Z-statistic of KS is 0.031. Since this value exceeds the delimited significance level of 1%, errors trace the normal distribution.
- For the heteroscedasticity test outcome, the probability of the t-statistic of *LNGBV*, *LNTA*, and *G_NPL* is 0.092, 0.174, and 0.116, respectively. Since each value exceeds the significance level (α) of 5%, the absolute error is not affected by *LNGBV*, *LNTA*,

and *GN_PL*. In other words, there is no heteroscedasticity.

- For the multicollinearity detection outcome, the values of VIF for *LNGBV*, *LNTA*, and *G_NPL* are 1.068, 1.172, and 1.116, respectively. Since each value exceeds 10, multicollinearity does not exist in the regression model.
- For the autocorrelation test outcome, the asymptotic significance (2-tailed) of the Z-statistic of KS shows 0.921. Since this value exceeds α of 5%, errors are random. As a consequence, there is no autocorrelation problem in the regression model.

Table 5 presents the regression model's estimation outcome with pooling data and shows the probability of the t-statistic of 0.0034, 0.0001, and 0.0092 for each regression coefficient, *LNGBV*, *LNTA*, and *NPL*, to examine the null hypothesis. Since the probability of the t-statistic is lower than α of 5%, this study discards all the null hypotheses. This circumstance means that research hypotheses 1b, 2, and 3 are recognized due to a positive regression coefficient.

Table 5. Pooled regression model estimation outcome: determinants of bank intermediary function

Source: Modified Output of E-Views 6.

Independent variable	Coefficient	Std. error	t-statistic	Probability
C	-110.5315	55.46360	-1.992866	0.0476
LNGBV	5.032876	1.696078	2.967362	0.0034
LNTA	2.031209	0.511735	3.969258	0.0001
G_NPL	98.56370	37.46490	2.630828	0.0092

In this study, firstly, government bond value is proven to affect bank intermediary function positively. It was proven that the government's bonds attract banks' buying intention, as Utari, Kurniati, and Surjaningsih (2011) explain. As a result, government bonds' issue to finance its budget does not compete with the bank's transitional role in obtaining money from and lend it back to society. Based on the evidence, this research refuses the crowding-out hypothesis supported by Christensen (2005), DeBonis and Stacchini (2013), Altaylıgil and Akkay (2013), Anyanwu, Gan, and Hu (2017), and Mwakalila (2020).

Secondly, bank size was proven to have a positive effect on bank intermediary function. This means that big banks have the experts managing asset portfolio so that they can properly diversify risks. For that reason, they can aggressively allocate funds to society. Furthermore, this circumstance supports the study of Vodová (2011), Chagwiza (2014), Rabab'ah (2015), Boako, Acheampong, and Ibrahim (2017), El-Chaarani (2019), and Tran (2019). Finally, it has

been proven that bad loans have a positive effect on bank intermediary function. This means that banks with high BL will find it difficult to manage their liquidity because of their higher LDR. Moreover, this case confirms the result of the study by Akbar and Mentayani (2010) and El-Chaarani (2019).

By showing a positive effect of government bonds on bank intermediary function, the crowding-out does not exist. The government does not need to worry about that because the commercial banks can use this opportunity by buying bonds as compensation to cover credit risk. Additionally, large banks tend to distribute more funds than small banks because they can manage the risk by forming their asset portfolios. This implies the certification of the banking officers in large banks is essential to guarantee the quality of risk management and governance. Moreover, the liquidity problem tends to belong to banks with high bad loans. To fix this problem, restructuring loans for their borrowers can become an alternative.

CONCLUSION

This paper explores the impact of the government bond value on the bank intermediary function with the samples and the data related to the research variables from the banks listed on the capital market of Indonesia between 2010 and 2018. This study infers that the government's bonds can increase the banks' channeling funds because the crowding out does not exist. As a control variable, bank size and bad loans possess a positive influence on this function.

Although three explanatory variables significantly affect bank intermediary function, this study still has some limitations, i.e., the number of explanatory variables used and the population's scope.

- Concerning the first limitation, the next scholars can add internal and external bank factors as other explanatory variables in their research model to overcome it. Examples of internal factors are the interest rate of bank deposits and loans, profitability, bank capital, capital adequacy ratio, operating expense to revenue ratio, and growth of total deposits. Meanwhile, examples of external factors are gross domestic product, inflation, unemployment, and economic development.

- Concerning the second limitation, next scholars can combine banks listed on the capital market in Indonesia and other Southeast Asian countries as their object. Furthermore, they can utilize the stratified random sampling by treating the country as strata to create a general inference internationally.

AUTHOR CONTRIBUTIONS

Conceptualization: Rosemarie Sutjiati Njotoprajitno, Bram Hadiano.

Data curation: Melvin.

Formal analysis: Rosemarie Sutjiati Njotoprajitno, Bram Hadiano.

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Writing – original draft: Bram Hadiano, Melvin.

Writing – reviewing & editing: Bram Hadiano.

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