



# Why Capital's Effect Differs in Bank Size?

Ahmad Aziz Putra Pratama

**Abstract:** Banks are trusted institutions. Therefore, bank management must use all of its operational tools to maintain the trust of the community. A strategic tool in sustaining that trust is adequate capital. Until now, banking activities remain the same, but with a different system. Novelty this research is a different effect of bank capital on lending behavior in each bank size category. This study used the fixed effect model in the 2004-2018 period. This study proved that smaller bank tends to implement aggressive strategies with lower capital and higher loan proportion, while larger bank manages to implement a defensive strategy with high capital and higher loan proportion.

**Keywords:** Bank capital, Loan growth, Bank size

## I. INTRODUCTION

The market concentration of the banking sector in Indonesia is highly concentrated. Banks, as intermediary institutions, play a strategic role in the economy. Financial institutions become a pillar in building an economic system. Banks are the place for various transactions, such as saving money, investing, payment transactions, money transfers or billing activities (Rose & Hudgins, 2013). Banks, as financial institutions with dominant public funding sources, make banks as a highly regulated industry (Thalib, 2016). When a bank gives some credit, it will be exposed to risk (Satria & Subegti, 2010). Banks in their operational activities have a lot to do with risk, so banks are institutions known as risk-taking entities (Junaidi, Sulastri, Isnurhadi, & Adam, 2019; Raharjo, 2014).

The loan has an important role in the operations of a bank. Indonesia still uses the credit business sector as their primary source of income (Junaidi et al., 2019; Raharjo, 2014; Setiawan & Pratama, 2019; Subandi & Ghozali, 2013; Thalib, 2016). Bank capital adequacy is a significant concern because it will affect the operational activities of a bank (Berrospide & Edge, 2010; Gambacorta & Marques-Ibanes, 2011; Kim & Sohn, 2017).

Capital is part of a very crucial thing. The size of capital indicates the level of the bank's ability to finance assets that contain risks (Gambacorta & Mistrulli, 2004). Sufficient capital will be better able to cover the value of the declining assets resulting from bank losses (Kim & Sohn, 2017).

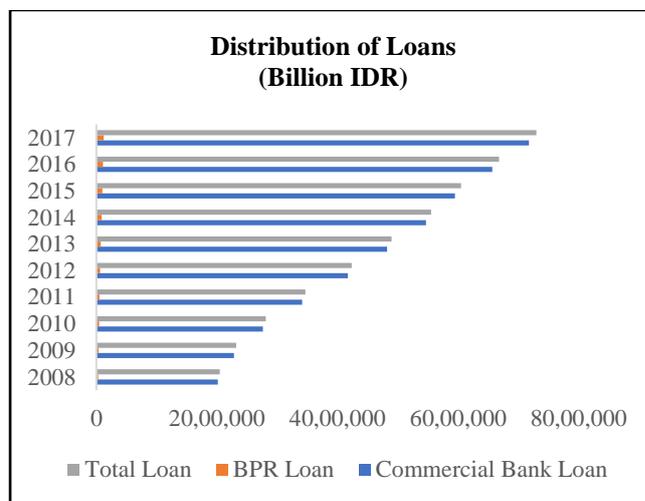


Figure 1: Distribution of loans in Indonesia during 2008-2017 period

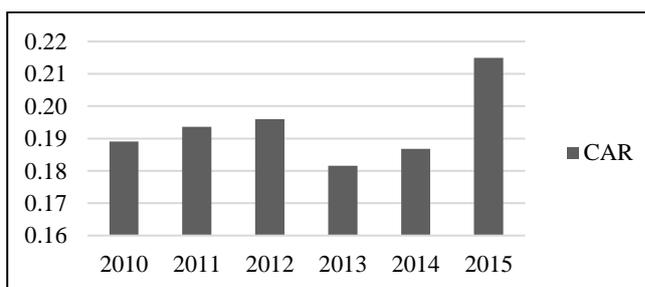


Figure 2: Average of CAR in the 2010-2015 period

Previous empirical study in Indonesia concerning determinant of bank loan (Satria & Subegti, 2010), the effect of bank capital on performance (Raharjo, 2014; Subandi & Ghozali, 2013; Thalib, 2016), bank risk (Kamaludin, Darmansyah, & Usman, 2015) and sustainability growth rate (Junaidi et al., 2019). Earlier research only examined the effect of bank capital on credit growth but did not measure detail how it affected in each bank category based on its size.

The novelty of this research examines the effect of bank capital on loan growth based on its size. This study proved two strands of theories on the relationship between bank capital and liquidity creation, the "financial fragility-crowding out" and the "risk absorption" (Diamond & Rajan, 2001; Gorton & Winton, 2000). The difference with other studies is the sample based on firm size. This category consist of a small, medium, and large bank.

## II. METHODOLOGY

Data used 40 banks listed on the Indonesia Stock Exchange (IDX) in the 2004-2018 period, with 589 observations.

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Purposive sampling criteria used in this study are banking public sector companies listed on the Indonesia Stock Exchange (IDX), based on conventional principles and not sharia, the financial statements provide complete data, presented in rupiah currency (IDR), and does not include banking companies with incomplete data.

This study used the Fixed Effect Model with STATA Statistics Data Analysis 14.2 Special Edition Version as a statistical tool. Kim & Sohn (2017) recommend Fixed Effects Estimators as superior alternatives. Roodman (2009) also recommends Fixed Effects Estimators as excellent alternatives to dynamic system Generalized Method of Moment (GMM).

**Table 1. Sample selection**

Sample	Total
Total Bank	43
Syariah bank (-)	3
<b>Total Sample</b>	<b>40</b>
All observation	600
Outlayer (-)	11
<b>Total observation</b>	<b>589</b>

Note: Measurement through purposive sampling

This study divides the sample into three categories that consist of a small bank, medium bank, large bank. Large banks with total assets above the 80th percentile, medium banks are the 50th to 80th percentiles, and small banks include all other banks less than 50th percentile in each period. As a result, 88 observations are categorized as large banks, 184 observations are categorized as medium banks, and 317 observations are categorized as small banks.

This research used loan growth (LOAN) as a dependent variable and bank capital (CAR) as an independent variable. Controlling variables used in this research are asset quality (NPL), liquidity level (LIQ), bank's performance (ROA), gross domestic product (GDP), and market interest (MI).

**Table 2. Operational definitions of variables**

Variable	Measurement
Loan growth	(Net loan <sub>t</sub> - net loan <sub>t-1</sub> )/net loan <sub>t-1</sub>
Bank capital	Bank capital/risk-weighted assets
Asset quality	Noncurrent loans/total loans
Liquidity level	Total liquid assets/total assets
Bank performance	Net income/total assets
Gross Domestic Product	The growth rate of real GDP
Market interest	Change in BI rate

The analysis model in this study was formulated as follows:

$$LOAN_{i,t} = \beta_0 + \beta_1 CAR_{i,t} + \beta_2 NPL_{i,t} + \beta_3 LIQ_{i,t} + \beta_4 ROA_{i,t} + \beta_5 GDP_{i,t} + \beta_6 MI_{i,t} + e_{i,t}$$

**III. RESULTS**

**Table 3. Panel data regression test results**

Dependent variable:	LOAN (Loan growth)
Bank category:	All Banks
Analysis model:	(1)
Intercept	<b>**3.311</b> (0.025)
CAR (Bank capital)	<b>***1.426</b> (0.001)
NPL (assets quality)	<b>***-2.921</b> (0.003)
LIQ (Liquidity level)	<b>**0.221</b> (0.029)
ROA (Bank performance)	<b>***2.639</b> (0.000)
GDP (Gross Domestic Product)	<b>**1.175</b> (0.032)
MI (Market interest)	<b>***-1.943</b> (0.001)
Fixed Effect	Yes
Observations	589
R-Squared	0,2773

Source: STATA Statistics Data Analysis 14.2 Special Edition Version

- \*\*\* Significant at 1% level
- \*\* Significant at 5% level
- \* Significant at 10% level

Based on the results of the regression test, the bank capital proxied with CAR has a significant positive effect on loan growth in all bank samples, small banks, and medium banks. The results showed that the higher the bank's capital, the greater the amount of credit that can be distributed. These findings are in line with research conducted by Berrospide & Edge (2010), Gambacorta & Mistrulli (2004), Moussa & Chedia (2016), Satria & Subegti (2010), Setiawan & Pratama (2019) which states that bank capital has a significant positive effect on bank lending.

Furthermore, bank capital also has a significant negative effect on loan growth in large banks. The results showed that the higher the bank's capital, the lesser the amount of credit that can be distributed. These findings are in line with research conducted by Diamond & Rajan (2001), Gorton & Winton (2000), Kim & Sohn (2017) which states that bank capital has a significant negative effect on bank's loan.



Table 4. Regression test results each bank's categories

Dependent variable:	LOAN (Loan growth)		
	Small	Medium	Large
Bank category:			
Analysis model:	(1)	(2)	(3)
Intercept	<b>*6.912</b> (0.072)	<b>***13.336</b> (0.000)	<b>***8.630</b> (0.001)
CAR (Bank capital)	<b>***1.321</b> (0.004)	<b>***2.046</b> (0.000)	<b>** -1.138</b> (0.018)
NPL (assets quality)	<b>** -2.712</b> (0.041)	<b>*** -8.374</b> (0.003)	<b>** -4.380</b> (0.017)
LIQ (Liquidity level)	<b>**0.169</b> (0.031)	<b>*0.211</b> (0.077)	<b>**0.369</b> (0.023)
ROA (Bank performance)	<b>***3.046</b> (0.008)	<b>*2.212</b> (0.091)	<b>**3.836</b> (0.016)
GDP (Gross Domestic Product)	<b>**1.046</b> (0.021)	<b>*1.778</b> (0.096)	1.836 (0.511)
MI (Market interest)	<b>* -1.786</b> (0.067)	-1,201 (0.112)	<b>* -1.836</b> (0.053)
Fixed Effect	Yes	Yes	Yes
Observations	317	184	88
R-Squared	0,1813	0,1775	0,1976

Source: STATA Statistics Data Analysis 14.2 Special Edition Version

\*\*\* Significant at 1% level

\*\* Significant at 5% level

\* Significant at 10% level

Banks in Indonesia are said to be healthy banks if they have successfully met Bank Indonesia's requirements. Capital adequacy ratio (CAR) can be used as a proxy of bank health. Based on Bank Indonesia regulations, banks must have a minimum CAR of 8% (POJK Number 11/POJK.03/2016). In Indonesia, capital adequacy ratio (CAR) in commercial banks 2010-2016 has a high average value of 19.37%, well above 8% of the minimum amount required by Bank Indonesia. Bank capital adequacy is a significant concern because it will affect the operational activities of a bank (Berrospide & Edge, 2010).

Capital adequacy is needed if, in the future, there is bad credit that will reduce the value of assets, then what is diminished on the liability side is bank capital itself (Setiawan & Pratama, 2019). Bank capital will be eroded because it is not possible the bank will reduce third party funds (deposits). Banks must reduce their capital rather than their deposits (Rose & Hudgins, 2013). If the bank reduces its deposits, the depositors will not trust the bank. From this point of view, banks are considered unable to manage their risks and depositors will suffer losses due to the declining value of their deposits. If the bank has a capital adequacy

exceeding the requirements, the bank is considered to be better able to deal with credit risk.

Smaller banks have difficulty competing with large banks and will extend loans with a high risk of uncertainty. Small banks will increase their capital to absorb the credit risk, while large banks tend to have relatively little capital reserves compared to small banks. Large banks can enjoy economies of scale. Their client base is more likely to include stable, financially sound, and well-established businesses, and in general, they have more diversified portfolios across regions and products.

Smaller banks, when they have high capital, tend to implement aggressive strategies in lending to enlarge their business ventures and get high profits, strengthen the CAR value to absorb risk from increasing the amount of loan. In contrast, large banks tend to be more defensive because of circulating loans is already too much. A large bank has a diversified portfolio and a better variability source of income and lowering dependency on lending business. If the bank increases the amount of credit extended, it will increase the risk borne by the bank. Large banks category will focus more on the owned capital structure rather than increasing the amount of credit channeled.

Assets quality variable, which is proxy by NPL, has a significant negative effect on lending growth in all bank samples. Asset quality reflects the ability of assets owned by banks in providing credit (Rose & Hudgins, 2013). Rabab'ah (2015) indicated that the rise in the proportion of the non-performing debt leads to a decline in the strength of the banking sector and the volume of the credit granted. The higher the level of NPL, the worse portfolio quality is. Banks reduce lending by more substantial degrees as loan quality worsens (Kim & Sohn, 2017). This result showed that the higher the nonperforming loan, the smaller of loan's growth. Bank liquidity level has a positive effect on loan growth in all bank samples. The liquidity level depicts the bank's ability to absorb liquidity shocks. In theory, the higher liquidity ratio indicates that the bank is in a better position to meet its stochastic withdrawals. More liquid banks can provide more lending by drawing on their stock of liquid assets (Moussa & Chedia, 2016). Bank performance variables proxy by ROA has a significant positive effect on the loan's growth in all bank samples. Banks with high profitability are likely to have strong balance sheets because profitability is related to the quality and quantity of capital ratios. Thus, a positive relationship between profitability and bank lending (Moussa & Chedia, 2016). The growth rate of real GDP is positive because of the inherent procyclicality of bank lending and increased loan demands. Alternatively, the effect of changes in the interest rate on bank lending to be negative because increases in market rates decrease loan demands.

#### IV. CONCLUSION

Several areas in banking have generated much debate and uncertainty with the rules of bank capital. This study proved two strands of theories on the relationship between bank capital and liquidity creation, the "financial fragility-crowding out" and the "risk absorption" theories.



The “financial fragility-crowding out” hypothesis predicts that the effect of bank capital on lending is negative because, unlike depositors, capital investors who cannot run on the bank are reluctant to provide loans. Thus, banks with a higher capital ratio might supply fewer loans by crowding out deposits.

Conversely, the effect of bank capital on lending is positive under the “risk absorption” theory because bank capital enhances the bank’s risk-bearing capacity. Bank management needs to pay attention to manage capital for measuring the ability of banks to provide loans. Banks that want to extend their credit need to pay attention to these capital variables. With considering this condition, banks have greater ability to extend their loans. By analyzing capital adequacy properly, banks can manage their risk very well. Investors can use capital reference in assessing the bank’s health.

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