



**Article history:**

Received: 2019-01-23

Revised: 2019-04-12

Accepted: 2019-08-04

**Keywords:**

Bank capital; *BUKU* category;  
Lending behavior; Lending growth

**JEL Classification:** G20, G21, G40

**Kata Kunci:**

Modal bank; Kategori *BUKU*  
Perilaku; Penyaluran kredit;  
Pertumbuhan kredit

✉ Corresponding Author:

**Ahmad Aziz Putra Pratama:**

Tel +62 31 503 3642

E-mail: [ahmad.aziz.putra-2018@feb.unair.ac.id](mailto:ahmad.aziz.putra-2018@feb.unair.ac.id)



This is an open access  
article under the CC-BY-SA license

## Capital and lending growth of banking sector in Indonesia: Study on the *BUKU* category

**Ahmad Aziz Putra Pratama**

Master of Science in Management, Department of Management, Faculty of Economics and Business, Airlangga University  
Jl. Airlangga No. 4-6, Surabaya, 60286, Indonesia

**Abstract**

Mostly, loans are an essential source of income for banks, and capital is used to absorb shocks during default risk. This study examines the effect of bank capital on lending growth in each Commercial Bank based on Business Activities (*BUKU*) category listed on the Indonesia Stock Exchange (IDX). This research used the fixed effect model. Data obtained from the company's financial report published in the 2010-2016 period. There is an inconsistency effect of bank capital on lending growth in each category. The results showed that bank capital has a significant positive effect on lending growth at all bank samples, *BUKU* 1, and *BUKU* 2. Furthermore, bank capital has a significant negative effect on lending growth at *BUKU* 3 and *BUKU* 4. Analysis results showed that behavioral lending differs based on their owned core capital. This study implied that *BUKU* 1 and *BUKU* 2 tend to implement aggressive strategies to deal with market competition, while *BUKU* 3 and *BUKU* 4 prefer to perform the defensive strategy on lending because they have various sources of income that not only depend on the loan. Finally, these findings are in line with policies that have been made by Financial Services Authority (FSA) regarding the categorization of the bank's size based on owned core capital.

**Abstrak**

Umumnya, penyaluran kredit merupakan sumber pendapatan penting bagi bank, dan sebagai modal guna menyerap risiko selama terjadi gagal bayar. Penelitian ini menguji pengaruh modal bank terhadap pertumbuhan kredit pada masing-masing kategori *BUKU* (Bank Umum berdasarkan Kegiatan Usaha) yang terdaftar di Bursa Efek Indonesia (BEI). Penelitian ini menggunakan fixed effect model. Data diperoleh berdasarkan laporan keuangan perusahaan yang diterbitkan pada periode 2010-2016. Terdapat inkonsistensi pengaruh modal bank terhadap pertumbuhan kredit pada masing-masing kategori. Hasil penelitian menunjukkan bahwa modal bank berpengaruh positif signifikan terhadap pertumbuhan kredit pada semua sampel bank, *BUKU* 1 dan *BUKU* 2. Selanjutnya, modal bank memiliki pengaruh negatif signifikan terhadap pertumbuhan kredit pada *BUKU* 3 dan *BUKU* 4. Hasil analisis menunjukkan bahwa perilaku penyaluran pinjaman berbeda berdasarkan modal inti yang bank miliki. Penelitian ini menunjukkan bahwa *BUKU* 1 dan *BUKU* 2 cenderung menerapkan strategi agresif untuk menghadapi persaingan pasar, sedangkan *BUKU* 3 dan *BUKU* 4 cenderung menerapkan strategi defensif terhadap penyaluran dana karena memiliki berbagai sumber pendapatan yang tidak hanya bergantung pada pinjaman. Akhirnya, temuan ini sejalan dengan kebijakan yang telah dibuat oleh Otoritas Jasa Keuangan (OJK) terkait kategorisasi ukuran bank berdasarkan modal inti yang dimiliki.

**How to Cite:** Pratama, A. A. P. (2019). Capital and lending growth of banking sector in Indonesia: Study on the *BUKU* category. *Jurnal Keuangan dan Perbankan*, 23(4), 489-502. <https://doi.org/10.26905/jkdp.v23i4.3401>

## 1. Introduction

Financial institutions become a pillar in building an economic system (Van den Heuvel, 2002). One of them comes from the banking sector. A developed country has more significant the role of banks (Latumaerissa, 2014). In a world of rapid change, banks have a considerable role in advancing the economy. Most sectors that are related to financial activities will require bank services (Rose & Hudgins, 2013). Globalization and the era of information and technology advancement are inseparable from banking because various business and social activities require organs that provide services in facilitating financial traffic (Setiawan & Pratama, 2019). Almost every daily financial transaction carried out by the public will involve the role of banks (Setiawan & Pratama, 2019). 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 (Raharjo, 2014; Junaidi et al., 2019).

The loan has an essential role in the operations of a bank (Bayoumi & Melander, 2008). The market concentration of the banking sector in Indonesia is highly concentrated. The most significant source of income for a bank business comes from the contribution of a large number of loans extended (Berger & Bouwman, 2013; Moussa & Chedia, 2016). Banks in Indonesia still use the credit business sector as their primary source of income (Subandi & Ghazali, 2013; Raharjo, 2014; Thalib, 2016; Junaidi et al., 2019; Setiawan & Pratama, 2019). As an intermediary institution, banks must be able to manage the availability of owned capital so that there is no shortage of funds in carrying out their business activities (Kim & Sohn, 2017; Atahau & Cronje, 2019). Bank capital adequacy is a significant concern because it will affect the operational activities of a bank (Berrospide & Edge, 2010; Cornett et al., 2011;

Gambacorta & Marques-Ibanes, 2011; Berger & Bouwman, 2013; Carlson, Shan, & Warusawitharana, 2013; Kim & Sohn, 2017).

During the crisis, Indonesian banks experienced a decline in capital and liquidity levels. That is because decreasing assets in large quantities so that the quality of assets held is low, which causes investment losses. Bank Indonesia (Central Bank in Indonesia) issued a policy that regulates the interaction between macroeconomics and microeconomics, known as macro prudential policy (Bank Indonesia regulation Number 20/4/PBI/2018). Bank Indonesia regulation Number 20/4/PBI/2018 stated that the regulation and supervision of macro prudential aims to prevent and reduce systemic risk and promote a balanced and quality intermediary function. Prevent and mitigate systemic risk and disruption of the intermediation function, and it is necessary to strengthen the intermediation function and control risk through the formulation of intermediation-based macro prudential instruments and liquidity that takes into account the economic cycle. In the crisis, banks will prefer to implement a defensive strategy by reducing the amount of credit given for not providing credit at all (Brei, Gambacorta, & von Peter, 2013).

The traditional monetary theory has mostly ignored the role of bank equity (Van den Heuvel, 2002). Bank-centered accounts of how monetary policy affects the real economy usually focus on the part of reserves and reserve requirements in determining the volume of demand deposits and, in the case of the bank lending channel, bank loans. Despite this evidence, the role of bank capital and capital requirements in the monetary transmission mechanism has received much less attention. The traditional interpretation of the “bank lending channel” focuses on the effects of reserve requirements on demand deposits, while no attention is paid to bank equity. So, bank capital is interpreted as an “irrelevant” balance-sheet item (Van den Heuvel, 2002; Gambacorta & Marques-Ibanes, 2011). It was

## Capital and lending growth of banking sector in Indonesia: Study on the BUKU category

Ahmad Aziz Putra Pratama

only recently that bank capital had been taken into account in the context of the “bank lending channel.”

Several areas in banking have generated much debate and uncertainty with the rules of bank capital. The impact of regulatory capital requirements on bank lending has been debated for some time (Gorton & Winton, 2000; Diamond & Rajan, 2001; Gambacorta & Mistrulli, 2004; Bayoumi & Melander, 2008; Berger & Bouwman, 2009; Brei et al., 2013). In the wake of the recent financial crisis, the topic has seen renewed attention as concerns arose that significant losses at banks would reduce their capital and restrain their lending, and as the regulatory community discussed increases in bank capital (Carlson et al., 2013).

From 2010 to 2016 period, CAR in Indonesia has an upward trend from 2010 (18.91%) to 2015 (21.50%), and the credit growth has a downward trend from 2011 (28.97%) to 2016 (6.63%). The fluctuation of CAR is moving unstable and entering the uptrend stage at the end of 2015 (21.50%). The average of CAR movements in 2010 (18.91%) increased periodically up to 2012 (19.59%). In 2013 (18.16%), the flow of CAR values fell sharply below the linear line. The decrease is so far, but it is not accompanied by values and events that cause a crisis. After 2013 (18.16%), CAR values began to rise and enter a new upward trend phase slowly. Moreover, bank lending growth came a downward trend at the end of 2014 (21.37%). CAR movement and lending growth had parallel changes in early 2010 to 2014 but moved in opposite directions in 2015 and 2016. The phenomenon is fascinating to study because it has two-way results and different conditions. Based on the facts of those movements, it is interesting testing the effect of capital proxy by CAR on the growth of bank credit.

Many studies proved that bank capital and lending have positive linear relationship (Gambacorta & Mistrulli, 2004; Berrospide & Edge, 2010; Satria & Subegti, 2010; Francis & Osborne, 2012;

Rabab’ah, 2015; Moussa & Chedia, 2016; Kim & Sohn, 2017; Setiawan & Pratama, 2019). Bank capital improves banking performance to generate more profit from lending policy (Kolari, Berney, & Ou, 1996; Subandi & Ghozali, 2013; Raharjo, 2014; Ekpu & Paloni, 2016; Thalib, 2016) and increase their ability to absorb risk (Kamaludin, Darmansyah, & Usman, 2015). Bank capital can maintain a sustainable growth rate and examine whether a structural change occurs following external shocks (Ivashina & Scharfstein, 2010; Acharya et al., 2011; Cornett et al., 2011; Gambacorta & Marques-Ibanes, 2011; Berrospide, 2013). However, research by Brei et al. (2013) and Carlson et al. (2013) capture the nonlinear effects of a change in the capital ratio on loan growth.

Prior study in Indonesia concerning determinant of bank loan (Satria & Subegti, 2010), the effect of bank capital on performance (Subandi & Ghozali, 2013; Raharjo, 2014; Thalib, 2016), bank risk (Kamaludin et al., 2015) and sustainability growth rate (Junaidi et al., 2019). Previous research only examined the effect of bank capital on credit growth but did not measure detail how it affected each bank category according to Commercial Banks based on Business Activities (*BUKU*). The several phenomena and problems that have been explained previously, it very interesting to examines the effect of bank capital on credit growth in each category of *BUKU* in Indonesia.

The novelty of this research examines the effect of bank capital on lending growth based on *BUKU* category companies listed on the Indonesia Stock Exchange (IDX). The difference with other studies is the sample based on firm size. *BUKU* can categorize the size of banks in Indonesia based on core capital. Firm size has different capital in hand. Financial Services Authority regulates the scope of business activities and the opening of office networks by the bank’s core capital, which aims to increase the resilience and competitiveness of national banks (POJK Number 6/POJK.3/2016).

The main finding of this strand of literature is that bank capital increases the capacity to raise uninsured forms of debt and, therefore, bank's ability to limit the effect of a drop in deposits on lending. However, there is an inconsistency effect of bank capital on lending growth in each category. There are differences in the behavior of bank capital management based on bank size. Bank capital has a significant positive effect on lending growth at BUKU 1 and BUKU 2, while bank capital has a significant negative effect on lending growth at BUKU 3 and BUKU 4.

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" (Berger & Bouwman, 2009; Gorton & Winton, 2000; Diamond & Rajan, 2001). Based on Indonesian Banking statistics (2018), *BUKU* 1 and *BUKU* 2 categories tend to have substantial capital in lending compared to *BUKU* 3 and *BUKU* 4 categories. They have difficulty competing with large banks and will extend loans with a high risk of uncertainty. *BUKU* 1 and *BUKU* 2 categories will increase their capital to absorb the credit risk. While *BUKU* 3 and *BUKU* 4 categories tend to have relatively fewer capital reserves compared to *BUKU* 1 and *BUKU* 2 categories, they can enjoy economies of scale and have a better reputation in the market. Banks that have a good reputation will increase customer confidence in saving money and can generate lower interest costs. Their client base is more likely to include stable, financially sound, well-established businesses, and in general, they have more diversified portfolios across regions and products. Thus, because *BUKU* 3 and *BUKU* 4 have large sizes and dominate the market, they have many substantial client information and offer different outcomes based on customer needs. These results are in line with the policies that have been made by Financial Services Authority (FSA). Also, these findings suggest that a bank must consider managing its capital before making a lending decision. Empirical stud-

ies on this research can be used as a consideration of the central bank to establish policies relating to bank capital adequacy, lending, and liquidity that must be owned.

## 2. Hypotheses Development

### Bank capital and lending growth

This study hypothesis can be explained based on two strands of theories on the relationship between bank capital and liquidity creation, the "financial fragility-crowding out" and the "risk absorption" theories, referred to by (Berger & Bouwman, 2009). 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 capital is used to absorb risks (Berrospide & Edge, 2010). This risk means credit, market, and operational risks. Moreover, capital may also reduce liquidity creation because it "crowds out" deposits (Berger & Bouwman, 2009). Banks with high liquidity ratios use capital to invest in liquid assets more so than do banks with low liquidity ratios, and vice versa (Kim & Sohn, 2017). Diamond & Rajan (2001) finds that the expansion of the bank's liquidity creation comes from the vulnerable capital structure. Banks make money by collecting liquid funds from deposits and convert to invest in illiquid assets. However, early withdraw for depositors fill with uncertainty. If there are any consumption shocks, banks might have to sell off illiquid assets to rigid honor. For this possibility, the lower capital ratio, which is called a fragile capital structure, will encourage banks to raise the supervision strength of the borrower, constantly absorb depos-

its, and expand the loan business. As a result, banks create more liquidity (Gorton & Winton, 2000).

### Bank capital and BUKU category

This study starts from the assumption that the effect of bank capital on lending might differ depending upon other bank-specific characteristics, given that this effect differs depending upon the level of the capital ratio itself. The size of banks in Indonesia based on core capital can be categorized by BUKU can be seen in Table 1.

Based on Indonesian Banking statistics (2018), BUKU 1 and BUKU 2 categories tend to have large capital in lending compared to BUKU 3 and BUKU 4 categories. They have difficulty competing with large banks and will extend loans with a high risk of uncertainty. BUKU 1 and BUKU 2 categories will increase their capital to absorb the credit risk, while BUKU 3 and BUKU 4 categories tend to have relatively fewer capital reserves compared to BUKU 1 and BUKU 2 categories.

In small banks (referred to BUKU 1 and BUKU 2), according to Berrospide & Edge (2010), Gambacorta & Mistrulli (2004), Kim & Sohn (2017) proved that the value of capital adequacy ratio (CAR) has a significant positive effect on lending growth. The greater the amount of capital, the higher of financial ability to anticipate the emergence of losses caused by large amounts of credit given to debtors. Bank capital has a psychological impact on increasing banking confidence in providing credit. This arises because banks have more ability to overcome the risk of bad credit that may occur in the future due to investments in risk assets. Berger & Bouwman (2013) emphasizes the role of capital as a buffer to absorb shocks to earnings.

In large banks (referred to BUKU 3 and BUKU 4), higher capital ratios may allow banks to create more liquidity (Berger & Bouwman, 2009). The more liquidity that is created, the higher is the likelihood

and severity of losses associated with having to dispose of illiquid assets to meet the liquidity demands of customers. Large banks are generally subject to greater regulatory scrutiny and market discipline than small banks, which may affect their capacity to absorb risk. A large bank has diversified portfolios and better variability sources of income, so lowering dependency on lending business and prefer to maintain their capital structure. Based on the explanation above, the research hypotheses are:

$H_1$ : there is an effect of bank capital on lending growth.

### Controlling variables on lending growth

This study uses the additional bank-specific characteristic variables considered in the literature as essential control variables that affect bank lending. This research used four control variables, such as liquidity level, firm size, bank performance, and loan quality. The liquidity level depicts the bank's ability to absorb liquidity shocks. More liquid banks can provide more lending by drawing on their stock of liquid assets (Moussa & Chedia, 2016). On the other hand, higher liquid assets reduce the proportion of loans granted (Rabab'ah, 2015). According to the "too big to fail" theory, large banks have incentives to take more risk and supplying more credit (Kim & Sohn, 2017). However, large banks can diversify their portfolios in various activities. From this perspective, the size effect can be negative (Berger & Udell, 2006; Kim & Sohn, 2017). Banks with high profitability have strong balance sheets because profitability is related to the quality and quantity of capital ratios. In contrast, higher profitability might supply fewer loans to improve the quality of assets. Loan quality reflects the ability of assets owned by banks in providing credit (Rivai et al., 2013; Rose & Hudgins, 2013; Latumaerissa, 2014). The higher level of NPL, the worse portfolio quality is. Banks reduce lending by more substantial degrees as loan quality worsens (Kim & Sohn, 2017).

### 3. Method, Data, and Analysis

The quantitative approach is used because the data is presented in the form of numbers or nominal with systematic measurement through purposive sampling at 40 banks listed on Indonesia Stock Exchange (IDX) in the 2010-2016 period with 238 observations. 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.

Measurements were made based on the company's financial statements to examine the effect of bank capital on lending growth in each BUKU

category. Research conducted to test hypotheses with statistical tools and measured data to produce general inference. This study used the Fixed Effect Model with STATA Statistics Data Analysis 14.2 special edition version as an analytical tool. Kim & Sohn (2017) recommend fixed effects estimators as superior alternatives. The Fixed Effects Method has been extensively used in the literature (Berrospide & Edge, 2010; Cornett et al., 2011; Francis & Osborne, 2012).

The analysis model in this research used the Fixed Effect Model. Testing the Fixed Effect Model is performed to determine the effect of bank capital on lending growth that controlled by liquidity level, firm size, bank performance, and loan quality. The analysis model in this study was formulated as follows:

**Table 1.** BUKU category based on core capital

Category	Core Capital	Observation
BUKU 1	< IDR 1.000.000.000.000	80
BUKU 2	IDR 1.000.000.000.000 - IDR 5.000.000.000.000	70
BUKU 3	IDR 5.000.000.000.000 - Rp30.000.000.000.000	61
BUKU 4	> Rp30.000.000.000.000	27

Source: POJK Number 6/POJK.3/2016

**Table 2.** Operational definitions of variables

Variable	Operational Definition		Measurement
<i>Lending growth</i>	The real growth rate of net loans	LOAN	$\frac{Net\ Loan_{i,t} - Net\ Loan_{i,t-1}}{Net\ Loan_{i,t-1}}$
<i>Bank capital</i>	Value of capital adequacy ratio	CAR	$\frac{Bank\ Capital_{i,t}}{Risk\ Weighted\ Assets_{i,t}}$
<i>Liquidity level</i>	The ratio of liquid asset to total assets	LIQ	$\frac{Total\ Liquid\ Assets_{i,t}}{Total\ Assets_{i,t}}$
<i>Firm size</i>	The logarithm of total assets	SIZE	$Log\ Total\ Assets_{i,t}$
<i>Bank performance</i>	Return on total assets	ROA	$\frac{Net\ Income_{i,t}}{Total\ Assets_{i,t}}$
<i>Loan quality</i>	Noncurrent loans to loans	NPL	$\frac{Non\ Current\ Loans_{i,t}}{Total\ Loans_{i,t}}$

## Capital and lending growth of banking sector in Indonesia: Study on the BUKU category

*Ahmad Aziz Putra Pratama*

$$LOAN_{i,t} = \beta_0 + \beta_1 CAR_{i,t-1} + \beta_2 LIQ_{i,t-1} + \beta_3 SIZE_{i,t-1} + \beta_4 ROA_{i,t-1} + \beta_5 NPL_{i,t-1} + e_{i,t} \quad (1)$$

### 4. Results

This study used secondary data of 40 commercial public banks, which obtained through the 2010-2016 financial statements on the site of [www.idx.co.id](http://www.idx.co.id). This research used 238 observations (exclude outlier data). Table 3 showed a statistical description of the research sample data. Table 4 informs the results of the correlation matrix between variables tested in the model. Table 5 and Table 6 show the regression results from panel data processing, and parameter values can be estimated, which shows the effect of the independent variables on the dependent variable.

The variable of lending growth (LOAN) has an average of 22.53% shows that the high level of credit disbursed by banks every year. The bank capital variable (CAR) has an average of 19.37% shows the bank capital in this study can be categorized as healthy banks because it has value more than 8% (POJK Number 11/POJK.03/2016). Based on Table

4, the bank capital significantly positively correlated (at the five percent level) with lending growth and liquidity level. The variable bank liquidity level (LIQ) has an average of 28.01% implies that the banks have sufficient liquidity to manage risk. The average firm size variable (SIZE) is 13.3392. Bank performance variable (ROA) has an average of 0.94% indicates that banks in Indonesia have relatively low performance. The loan quality variable (NPL) has an average of 0.0235 less than 5% (POJK Nomor 1/POJK.03/2019), which implies that the average bank in this research sample has a better loan quality.

Determination of the best panel data regression model with the Common Effect Method, Fixed Effect, or Random Effect through testing Chow Test, Hausman Test, and Lagrange Multiplier Test. Based on the results of the Chow Test to choose between Common Effect and Fixed Effect conclude that Fixed Effect Model is better than Random Effect. So, this study used the Fixed Effect as a regression model.

Based on the results of the regression test, the bank capital proxy by CAR has a significant positive effect on lending growth in all bank samples

**Table 3.** Descriptive statistics results

Variable	N	Minimum	Maximum	Mean	Standard Deviation
LOAN	238	-0.3641	1.9981	0.2253	0.2894
CAR	238	0.0802	0.8749	0.1937	0.0861
LIQ	238	0.1094	0.7004	0.2801	0.1018
SIZE	238	11.3994	15.0016	13.3392	0.8219
ROA	238	-0.1173	0.0390	0.0094	0.0177
NPL	238	0.0000	0.1228	0.0235	0.0193

**Table 4.** Correlations matrix

Variable	LOAN	CAR	LIQ	SIZE	ROA	NPL
LOAN	-					
CAR	<b>0.40</b>	-				
LIQ	<b>0.16</b>	<b>0.42</b>	-			
SIZE	<b>-0.22</b>	<b>-0.34</b>	<b>-0.49</b>	-		
ROA	<b>0.16</b>	0.02	<b>-0.15</b>	<b>0.34</b>	-	
NPL	<b>-0.38</b>	<b>-0.21</b>	-0.06	0.05	<b>-0.50</b>	-

(coefficient 0.766 with a significance <0.01), *BUKU 1* (coefficient 1.321 with significance <0.01) and *BUKU 2* (coefficient 2.046 with a significance <0.01). The significance value of bank capital as an independent variable is below a significant level. It means  $H_0$  is rejected, and  $H_1$  is accepted.

Furthermore, *BUKU 3* (coefficient -1.138 with significance <0.10) and *BUKU 4* (coefficient -2.670 with significance <0.05) has a significant negative effect on lending growth. The significance value of bank capital as an independent variable is below a significant level. It means  $H_0$  is rejected, and  $H_1$  is accepted.

## 5. Discussion

### Effect of bank capital on lending growth in all bank samples

Based on Bank Indonesia regulations, banks must have a minimum CAR of 8% (POJK Number 11/POJK.03/2016). Capital is part of a very crucial

thing for a bank because its capital adequacy judges the health and security of a bank. Banks that have sufficient capital will be better able to cover the value of the declining assets resulting from bank losses (Kim & Sohn, 2017). Declining bank's profit occurred due to the amount of losses incurred by banks from investing in risk assets (Carlson et al., 2013). Capital is used as a buffer for the bank's operational activities against possible losses from the occurrence of bad loans (Ivashina & Scharfstein, 2010). Banks that have high capital will be better able to anticipate losses caused by increasing the amount of lending (Van den Heuvel, 2002). With better anticipation of losses, banks will be more daring to extend larger amounts of credit (Carlson et al., 2013). If the bank has capital adequacy exceeding the requirements, the bank is considered to be better able to deal with credit risk.

Raising sufficient capital and retaining enough capital to protect the interest of customers, employees, owners, and the general public is one of the

**Table 5.** Panel data regression test results

Dependent variable:	LOAN (Lending growth)				
Bank category:	<i>All Bank</i>	<i>BUKU 1</i>	<i>BUKU 2</i>	<i>BUKU 3</i>	<i>BUKU 4</i>
Analysis model:	(1)	(2)	(3)	(4)	(5)
<i>Intercept</i>	*2.925 (0.062)	-1.912 (0.219)	***13.336 (0.000)	***8.630 (0.001)	-0.577 (0.907)
<i>CAR (Bank capital)</i>	***0.766 (0.007)	***1.321 (0.004)	***2.046 (0.000)	*-1.138 (0.088)	**-2.670 (0.047)
<i>LIQ (Liquidity level)</i>	-0.271 (0.369)	-0.069 (0.848)	0.503 (0.507)	-0.369 (0.441)	0.195 (0.732)
<i>SIZE (Firm size)</i>	*-0.202 (0.077)	0.159 (0.187)	***-1.018 (0.000)	***-0.579 (0.001)	0.091 (0.788)
<i>ROA (Bank performance)</i>	***4.376 (0.001)	4.046 (0.105)	0.289 (0.963)	1.836 (0.500)	-6.141 (0.388)
<i>NPL (loan quality)</i>	***-5.308 (0.000)	-2.712 (0.121)	***-8.374 (0.003)	**-4.380 (0.017)	-0.577 (0.907)
<i>Fixed Effect</i>	Yes	Yes	Yes	Yes	Yes
<i>Observations</i>	238	80	70	61	27
<i>R-Squared</i>	0.220	0.260	0.198	0.276	0.451

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



great challenges in the management of financial service providers. Moreover, capital has become the centerpiece of supervision and regulation (Rose & Hudgins, 2013). Capital adequacy is needed if, in the future, there is bad credit that will reduce the value of assets, then what is reduced 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 capital adequacy exceeding the requirements, the bank is considered to be better able to deal with credit risk.

### Effect of bank capital on lending growth in each BUKU category

This research showed that bank capital has a significant positive effect on lending growth at all bank samples, *BUKU 1*, and *BUKU 2* categories. The effect of bank capital on lending is positive under the “risk absorption” theory because bank capital enhances the bank’s risk bearing capacity (Berger & Bouwman, 2013). Based on Indonesian Banking statistics (2018), *BUKU 1* and *BUKU 2* categories tend to have large capital in lending compared to *BUKU 3* and *BUKU 4* categories. They have difficulty competing with large banks and will extend loans with a high risk of uncertainty. *BUKU 1* and *BUKU 2* categories will increase their capital to absorb the credit risk. Capital performs such indispensable functions as providing a cushion of ultimate protection against risk and promoting public confidence in the long term viability of a financial firm. In the first place, the capital provides a cushion against the risk of failure by absorbing financial and operating losses until management can address the institution’s prob-

lems and restore its profitability. Second, the capital provides the funds needed to charter, organize, and manage a financial firm before other sources of funds come flowing in. Third, capital promotes public confidence and reassures creditors concerning an institution’s financial strength. Capital must also be strong enough to encourage borrowers that a lending institution will be able to meet their credit needs even if the economy turns down. Fourth, the capital provides funds for the development of new services and facilities. Most financial service providers eventually outgrow the facilities they start with. An infusion of additional capital will permit a financial firm to expand into larger quarters or build additional branch offices to keep pace with its expanding market and follow its customers. Fifth, capital serves as a regulator of growth, helping to ensure that growth is sustainable in the long run.

Furthermore, the results of this study also proved that bank capital has a significant negative effect on lending growth at *BUKU 3* and *BUKU 4* categories. These findings showed that the higher the bank’s capital, the smaller of lending growth. Capital negatively affects lending growth because banks choose to strengthen their capital structure rather than investing in the form of loans. 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 (Berger & Bouwman, 2013). Investors are likely to become more reluctant to provide loans when banks possess inadequate liquid assets, and when an increase in bank capital alone cannot boost the bank’s risk-bearing capacity sufficiently. However, once banks accumulate sufficient liquid assets, capital investors likely become less reluctant to supply loans, and the increase in bank capital improves bank’s risk absorbing capacity significantly (Kim & Sohn, 2017).

There is an inconsistency effect of bank capital on lending growth in each category. Small 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 (Ekpu & Paloni, 2016). Their client base is more likely to include stable, financially sound, and well-established businesses (Kolari et al., 1996), and in general, they have more diversified portfolios across regions and products. *BUKU 1* and *BUKU 2* categories 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, *BUKU 3* and *BUKU 4* categories tend to be more defensive because of circulating loans is already too much. A large bank has diversified portfolios and better variability sources 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. Thus, *BUKU 3* and *BUKU 4* categories will focus more on the owned capital structure rather than increasing the amount of credit channeled. This result showed that behavioral lending differs based on their owned core capital. These findings are in line with policies that have been made by Financial Services Authority (OJK) regarding the categorization of the bank's size based on core capital. With this categorization, commercial banks are always encouraged to manage their capital to maintain stability and performance.

### Effect of controlling variables on lending growth

Bank liquidity level has a positive effect on lending growth at *BUKU 2* and *BUKU 4* categories,

while at *BUKU 1* and *BUKU 3* categories and all bank samples have a negative effect, but no significant at all. In theory, the higher liquidity ratio indicates that the bank is in a better position to meet its stochastic withdrawals (Chagwiza, 2014). On the other hand, the size of the liquid assets held by the bank is one of the factors affecting the size of bank lending because the high liquidity ratio reduces the proportion of loans granted (Rabab'ah, 2015).

The firm size variable has a significant negative effect on lending growth at *BUKU 2*, *BUKU 3*, and all bank samples. *BUKU 1* and *BUKU 2* categories have a positive effect on lending growth but not significant. According to the "too big to fail" theory, large banks have incentives to take more risk amid high expectations of a government bailout to prevent systemic risk, thereby enabling the supplying of more credit (Kim & Sohn, 2017). The large banks benefit from economies of scale, which reduces the cost of production and information gathering (Moussa & Chedia, 2016). However, large banks can diversify their portfolio by investing in various types of securities and involving themselves in multiple activities, whereas small banks tend to pursue traditional lending activities (Berger & Udell, 2006; Kim & Sohn, 2017).

Bank performance variables proxy by ROA only have a significant positive effect on lending 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). In contrast, higher profitability can imply a more significant risk of assets. In this respect, banks with high profitability might supply fewer loans to improve the quality of assets.

The loan quality variable, which is proxy by NPL, has a significant negative effect on lending growth in all bank samples, *BUKU 2* and *BUKU 3*.

*BUKU 1* and *BUKU 4* have no significant effect on lending growth. 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 level of NPL, the worse portfolio quality is. Banks reduce lending by more substantial degrees as loan quality worsens (Kim & Sohn, 2017).

## 6. Conclusion, Limitations, and Suggestions

### Conclusion

The novelty of this research examines the effect of bank capital on lending growth based on the *BUKU* category listed on the Indonesia Stock Exchange (IDX). The difference with other studies is the sample based on firm size based on *BUKU* category. There is an inconsistency effect of bank capital on lending growth in each *BUKU* category. This study proved that bank capital has a significant positive effect on lending growth at *BUKU 1* and *BUKU 2* categories and all bank samples, but has a significant negative effect on *BUKU 3* and *BUKU 4* categories. These findings indicate that there are different effects bank capital on lending growth in each category of *BUKU*, and having two directions are either positive or negative. But if the entire sample is used, bank capital has a significant positive effect on lending growth. 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 lend-

ing 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 more exceptional 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. Investors can use this information as a reference in determining investment choices in the banking sector.

### Limitations and suggestions

The limitation of this study lies in the use of samples that only banks listed on the Indonesia Stock Exchange (IDX). The next research may include non-go public and private banks. The better sample might represent population characteristics. The higher level of confidence desired, the more samples are needed. The further research will be even better if dividing the sample studied based on the total assets of the bank. This is important because capital does not indicate the actual size. Bank size is actually measured using the total assets which are a combination of their owned capital and funds arising from the third party (deposits). Using total assets will be a strong reference in dividing bank size based on internal funding and external funding to measuring the effect of bank capital on lending growth. Further research development may add factors that affect lending growth from the external side of banking such as macroeconomic factors. The macroeconomic environment is more adaptable to the banking sector. The existence of macroeconomic variables cannot be avoided because macroeconomic variables do not only affect one or two banks, but all companies can be affected by the macroeconomic.

## References

- Acharya, V. V., Shin, H. S., & Yorulmazer, T. (2011). Crisis resolution and bank liquidity. *Review of Financial Studies*, 24(6), 2166–2205. <https://doi.org/10.1093/rfs/hhq073>
- Atahau, A. D. R., & Cronje, T. (2019). Does focus strategy work? A study of bank loan portfolios in Indonesia. *Journal of Asia Business Studies*, 13(3), 450–471. <https://doi.org/10.1108/jabs-11-2017-0202>
- Bank Indonesia. (2018). *Peraturan Bank Indonesia Nomor 20/4/PBI/2018 Tentang Rasio Intermediasi Makroprudensial dan Penyangga Likuiditas Makroprudensial bagi Bank Umum Konvensional, Bank Umum Syariah, dan Unit Usaha Syariah*.
- Bayoumi, T., & Melander, O. (2008). Credit Matters: Empirical evidence on U.S. macro-financial linkages. In *International Monetary Fund* (No. 08).
- Berger, A. N., & Bouwman, C. H. S. (2009). Bank liquidity creation. *Review of Financial Studies*, 22(9), 3779–3837. <https://doi.org/10.1093/rfs/hhn104>
- Berger, A. N., & Bouwman, C. H. S. (2013). How does capital affect bank performance during financial crises? *Journal of Financial Economics*, 109(1), 146–176. <https://doi.org/10.1016/j.jfineco.2013.02.008>
- Berger, A. N., & Udell, G. F. (2006). A more complete conceptual framework for SME finance. *Journal of Banking and Finance*, 30(11), 2945–2966. <https://doi.org/10.1016/j.jbankfin.2006.05.008>
- Berrospide, J. M. (2013). Bank liquidity hoarding and the financial crisis: An empirical evaluation. *SSRN Electronic Journal*, 1–41. <https://doi.org/10.2139/ssrn.2207754>
- Berrospide, J. M., & Edge, R. M. (2010). The effects of bank capital on lending/ : What do we know, and what does it mean/ ? *Finance and Economics Discussion Series*, 1–48.
- Brei, M., Gambacorta, L., & von Peter, G. (2013). Rescue packages and bank lending. *Journal of Banking and Finance*, 37(2), 490–505. <https://doi.org/10.1016/j.jbankfin.2012.09.010>
- Carlson, M., Shan, H., & Warusawitharana, M. (2013). Capital ratios and bank lending: A matched bank approach. *Journal of Financial Intermediation*, 22(4), 663–687. <https://doi.org/10.1016/j.jfi.2013.06.003>
- Chagwiza, W. (2014). Zimbabwean commercial banks liquidity and its determinants. *International Journal of Empirical Finance*, 2(2), 52–64.
- Cornett, M. M., McNutt, J. J., Strahan, P. E., & Tehranian, H. (2011). Liquidity risk management and credit supply in the financial crisis. *Journal of Financial Economics*, 101(2), 297–312. <https://doi.org/10.1016/j.jfineco.2011.03.001>
- Diamond, D. W., & Rajan, R. G. (2001). Liquidity risk, liquidity creation, and financial fragility: A theory of banking. *Journal of Political Economy*, 109(2), 287–327. <https://doi.org/10.1086/319552>
- Ekpu, V., & Paloni, A. (2016). Business lending and bank profitability in the UK. *Studies in Economics and Finance*, 33(2), 1–22. <https://doi.org/http://dx.doi.org/10.1108/SEF-04-2015-0097>
- Francis, W. B., & Osborne, M. (2012). Capital requirements and bank behavior in the UK: Are there lessons for international capital standards? *Journal of Banking and Finance*, 36(3), 803–816. <https://doi.org/10.1016/j.jbankfin.2011.09.011>
- Gambacorta, L., & Marques-Ibanes, D. (2011). The bank lending channel: Lessons from crisis. *Economic Policy*, (1), 135–182. <https://doi.org/10.1111/j.1468-0327.2011.00261.x>

## Capital and lending growth of banking sector in Indonesia: Study on the BUKU category

Ahmad Aziz Putra Pratama

- Gambacorta, L., & Mistrulli, P. E. (2004). Does bank capital affect lending behavior? *Journal of Financial Intermediation*, 13(4), 436–457. <https://doi.org/10.1016/j.jfi.2004.06.001>
- Gorton, G., & Winton, A. (2000). Liquidity provision, bank capital, and the macroeconomy. In *Journal of Money, Credit and Banking*, 49(1), 5-37. <https://doi.org/10.1111/jmcb.12367>
- Ivashina, V., & Scharfstein, D. (2010). Bank lending during the financial crisis of 2008. *Journal of Financial Economics*, 97(3), 319–338. <https://doi.org/10.1016/j.jfineco.2009.12.001>
- Junaidi, S., Sulastri, S., Isnurhadi, I., & Adam, M. (2019). Liquidity, asset quality, and efficiency to sustainable growth rate for banking at Indonesia Stock Exchange. *Jurnal Keuangan dan Perbankan*, 23(2), 308–319. <https://doi.org/10.26905/jkdp.v23i2.2699>
- Kamaludin, Darmansyah, & Usman, B. (2015). Determinan non performing loan (NPL) pada industri perbankan (Bukti empiris perusahaan Go Publik di Bursa Efek Indonesia). *Jurnal Aplikasi Manajemen*, 13(4), 547–556.
- Kim, D., & Sohn, W. (2017). The effect of bank capital on lending: Does liquidity matter? *Journal of Banking and Finance*, 77, 95–107. <https://doi.org/10.1016/j.jbankfin.2017.01.011>
- Kolari, J., Berney, R., & Ou, C. (1996). Small business lending and bank profitability. *Journal of Entrepreneurial Finance*, 5(1), 1–15.
- Latumaerissa, J. R. (2014). *Manajemen bank umum*. Jakarta: Mitra Wacana Media.
- Meh, C. (2011). Bank Balance Sheets, deleveraging and the transmission mechanism. *Bank of Canada Review*, 23–34.
- Moussa, M. A. Ben, & Chedia, H. (2016). Determinants of bank lending: Case of Tunisia. *International Journal of Finance and Accounting*, 5(1), 27–36. <https://doi.org/10.5923/j.ijfa.20160501.04>
- POJK. (2016). *Peraturan Otoritas Jasa Keuangan Nomor 11/POJK.03/2016 Tentang Kewajiban Penyediaan Modal Minimum Bank Umum*.
- POJK. (2016). *Peraturan Otoritas Jasa Keuangan Nomor 6/POJK.3/2016 Tentang Kegiatan Usaha dan Jaringan Kantor Berdasarkan Modal Inti Bank*.
- POJK. (2019). *POJK Nomor 1/POJK.03/2019 Tentang Penerapan Fungsi Audit Intern pada Bank Umum*.
- Rabab'ah, M. (2015). Factors affecting the bank credit: An empirical study on the Jordanian commercial banks. *International Journal of Economics and Finance*, 7(5), 166–178. <https://doi.org/10.5539/ijef.v7n5p166>
- Raharjo, P. G. (2014). Faktor determinan marjin bunga bersih Bank Pembangunan Daerah di Indonesia: Suatu studi data panel. *Jurnal Keuangan Dan Perbankan*, 18(1), 105–119.
- Rivai, V., Basir, S., Sudarto, S., & Veithzal, A. P. (2013). *Commercial Bank Management: Manajemen Perbankan dari Teori ke Praktik*. 1<sup>st</sup> edition. Jakarta: Rajawali Press.
- Roodman, D. (2009). How to do xtabond2: An introduction to difference and system GMM in Stata. *Stata Journal*, 9(1), 86–136.
- Rose, P. S., & Hudgins, S. C. (2013). *Bank Management & Financial Services*. 9<sup>th</sup> edition. New York: McGraw-Hill Education.
- Satria, D., & Subegti, R. B. (2010). Determinasi penyaluran kredit bank umum di Indonesia periode 2006-2009. *Jurnal Keuangan dan Perbankan*, 14(3), 415–424.

- Setiawan, R., & Pratama, A. A. P. (2019). Modal, tingkat likuiditas bank, NPL dan pertumbuhan kredit perbankan Indonesia. *Matrik: Jurnal Manajemen, Strategi Bisnis dan Kewirausahaan*, 13(1), 96–107. <https://doi.org/https://doi.org/10.24843/MATRIK:JMBK.2019.v13.i01.p10>
- Subandi, & Ghozali, I. (2013). Determinan efisiensi dan dampaknya terhadap kinerja profitabilitas industri perbankan di Indonesia. *Jurnal Keuangan Dan Perbankan*, 17(1), 123–135.
- Thalib, D. (2016). Intermediasi, struktur modal, efisiensi, permodalan dan risiko terhadap profitabilitas bank. *Jurnal Keuangan dan Perbankan*, 20(1), 116–126. <https://doi.org/10.26905/jkdp.v20i1.155>
- Van den Heuvel, S. J. (2002). Does bank capital matter for monetary transmission? *Federal Reserve Bank of New York Economic Policy Review*, (1), 259–265.
- Xie, W. (2016). The empirical study on the relationship between bank liquidity creation and capital —Based on empirical data from 2004 to 2014 in Chinese Banks. *Modern Economy*, 7(4), 426–433. <https://doi.org/10.4236/me.2016.74047>
-