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Ownership concentration and bank risk (A study on banking sectors in Indonesia)

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A B S T R A C T

The purpose of this study is to test empirically the relationship between ownership concentration and risk taking by banks which are proxied by the CAR and LDR (liquidity ratio). The study was motivated by the limited previous studies that analyze the structure of ownership in financial institutions and the weaknesses in sampling. Our analysis focused on Indonesia because this country has implemented the Basel Accord II standards successfully. This regulatory compliance is expected can control banking risk. Using data from 2009 until 2013 and panel data. We found that the ownership concentration become important determinants of bank liquidity. These findings are expected to provide policy guidance for regulators, especially relating to the ownership structure of the bank. However, the ownership concentration proved to be involved in the management decision to risk taking in banks.

A B S T R A K

Penelitian ini bertujuan untuk menguji secara empiris hubungan antara konsentrasi kepemilikan dan pengambilan risiko oleh bank yang diproksikan dengan CAR dan LDR (rasio likuiditas). Pada dasarnya, penelitian ini dimotivasi oleh penelitian sebelumnya khususnya penelitian yang menganalisis struktur kepemilikan di lembaga keuangan dan kelemahannya dalam sampling. Analisisnya berfokus pada Indonesia karena negara ini telah berhasil menerapkan Basel Accord II. Kepatuhan terhadap peraturan ini diharapkan dapat mengendalikan risiko perbankan. Adapun, penelitian ini menggunakan data dari 2009 sampai 2013 dan panel data. Hasil analisisnya, ditemukan, bahwa konsentrasi kepemilikan menjadi penentu penting likuiditas pada suatu bank. Temuan ini diharapkan dapat memberikan panduan kebijakan untuk regulator, terutama yang berkaitan dengan struktur kepemilikan bank. Namun, konsentrasi kepemilikan terbukti terlibat dalam keputusan manajemen untuk mengambil risiko di bank.

1. INTRODUCTION

Most studies related to the ownership structure and the company's performance, especially in times of crisis, such as Shiefer and Vishny (1997) and La Porta et al. (1999), proved that the ownership structure has significant effect in creating value and the company's performance. Further studies conducted after the Asian crisis period by some researchers such Firth et al. (2008), investigated the relationship between ownership and governance mechanisms and agency costs. For another example, Ge W, Jeong-Bon Kim, Byron Y. Song (2012) proved the internal governance has improved credit quality; and so did Conelly, Limpaphayom, and Nagarajan (2012). They examined the relationship between the quality of corporate governance practices and the Thai companies' value that has a complex ownership structure.

However, not many studies on the same fields had determined the level of risk taking, especially in banking industries. For example, Chalermchatvichien et al. (2014) proved that concentrated ownership is a determinant of capital adequacy ratio (Capital Adequacy Ratio) and liquidity of banks. In addition, the possible effects of Basel III can also create the costs, benefits, and the consequence is that this needs to be discussed again and again.

This study attempts to verify whether the con-

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centration of ownership has an effect on the risk of the bank or not. Risk is proxied by the ratio of bank capital adequacy or capital adequacy ratio (CAR) and loans to third parties or loans to deposit ratio (in this study, it is termed as DPK).

Previous researchers examined the relationship between ownership structure using company data and risk taking in the countries in East Asia. In this case, their studies have still some limitations in terms of determining the sample companies. For example, Chalermchatvichien et al. (2014) used the criteria of the 10 companies with the largest asset in analyzing the relationship between the concentration of ownership and bank risk-taking.

In contrast to research Chalermchatvichien et al. (2014), another study used 68 banks from 11 countries in East Asia. Yet, the present study has something different. First, this study chose the banks in Indonesia as an object of study. Indonesia, especially this is categorized as a developing country in which they still have high capital adequacy ratio (CAR) that is at 18% (June 2013) and well above the minimum requirement of 8% (regulatory Basel II). Besides that, the ratio of non-performing loans (NPL) is still low, 1.9% (Bank Indonesia 2013). Banks in Indonesia also have one of the best records in Asian countries in implementing Basel II, both in terms of the standard implementation and the level of regulatory convergence**.**

Second, the previous studies used the initial observation period of global crisis (2005-2009), while the study was conducted from the beginning of the crisis, especially after the implementation of Basel II. The use of data since the introduction of Basel II (after 2008) is intended to look at the impact of the post-crisis and the implementation of Basel II. It is also intended to see a direct relationship between the dependent variable (the capital adequacy ratio and the ratio of bank liquidity). The test is also done on the grounds that due to an Indonesian companies as listed in the stock market which have a unique ownership structure. Therefore, it must be more attractive to examine the role of the ownership structure of the behavior of managers in taking risk in banking institutions.

It is expected that this study contributes to the literature in some areas. First, it can contribute to the literature by examining the banking capital requirements in accordance with Basel Accord and bank governance. The second section discusses the review of literature and the development of hypotheses. The third section presents information about the selection of samples and data, followed by empirical results, and the last part is the conclusion.

2. THEORETICAL FRAMEWORK AND HYPOTHESES

Corporate Governance and Ownership Concentration

Corporate Governance (CG) is a concept associated with monitoring the management in the process of making good decisions. According to La Porta et. al. (2000), CG has monitor the mechanism that aims to protect investor assets from exploitation by insiders. In addition, Shleiver and Vishny (1997), argue that CG is a set of mechanisms that can protect the minority party (outside investors or minority shareholders) of a takeover by managers and control the shareholders (insider) with an emphasis on legal mechanisms.

With the companies whose ownership is concentrated, there are two groups of shareholders. They are the majority and minority shareholders. Agency problem will arise if the companies listed on the stock exchange are one of the business units of a particular group. This happens if the majority shareholder may collude with management to take over the assets of the company at the expense of minority shareholders.

However, the agency problem between managers and the majority shareholder will not be so serious if the management is appointed by the controlling shareholder. For this case, Jensen and Meckling (1976) states that concentrated ownership can minimize agency problems arising from the separation between ownership and control functions.

Based on the agency's perspective, there are two arguments, namely convergence argument and the entrenchment argument. For the former, shareholders may control the manager to make decisions appropriate to their interests by taking a lower risk. For latter, the y argue that more shareholders who act on behalf of depositors will have greater power to control manager. On the contrary, the smaller shareholdings will be weaker in controlling managers to take risks. In the end, a more concentrated ownership has strong control that can suppress agency conflict (shareholder with management).

The research results support the convergence argument, such as of research Demsetz et al. (1985) and Shleifer & Vishny (1997). Their results can be concluded that the control by concentrated ownership is an attempt to reduce risk.

Based on the entrenchment argument, it can be explained that more concentrated ownership could harm minority shareholders or depositors. However, Demsetz et al. (1985) considers that the shareholders will act on both arguments depending on

their risk-taking incentives.

In the perspective of the structure of ownership in Indonesian banks, most banks are owned by families and individuals or groups. Thus, this can increase the concentration of ownership. Business decisions on these types of companies are more determined by a small number of owners of the bank, but are able to control the management in taking risks. This structure is supported by the policy even sole proprietorship (sole proprietorship) or single presence policy (Bank Indonesia 2006). Such structures can potentially do the moral hazard that is taking a higher risk.

Risk and Risk Management

Risk and banks are two things that cannot be separated, because the banking business continues to deal with various forms of risk. If the bank cannot manage risk properly, it can result in failure and bankruptcy of the bank. Bank Indonesia, the definition of risk is the potential loss due to the occurrence of certain events.

In reference to Bank Indonesia Regulation No. 5/8 / PBI / 2003 and its revision No. 11/25 / PBI / 2009 concerning Application of Risk Management for Commercial Bank, there are 8 risks that must be managed banks, namely: credit risk, market risk, risk operational, liquidity risk, compliance risk, legal risk, reputation risk and strategic risk. In this paper will be devoted to analyzing the implementation of risk management that has been agreed in the Basel Committee for Banking Supervisors (BCBS). Basel (BIS) issued guidance regarding the calculation of the capital adequacy ratio (Capital Adequacy Ratio), which includes the management of credit risk management, market, and operational.

This study also examines the liquidity risk that occurs when the Bank is not able to provide liquidity. This risk can be affected by the funding structure, asset liquidity, liabilities to the counterparty, and credit commitments to borrowers. Bank liquidity risk is measured by several indicators, such as primary reserve ratio (Statutory minimum and Cash), secondary reserve (liquidity reserves), and the ratio of loans with deposits (Loan Deposit Ratio). We use LDR as a proxy for liquidity risk in this study.

Basel II and its Implementation in Indonesia

Central bankers and leaders of the G-10 in 1974 established the Basel Committee for Banking Supervisors (BCBS). This BCBS is intended to close the gap between banking regulations in the countries of the world and is not intended to be the world banking authority.

The secretary of BCBS is located in Basel, Switzerland. In July 1988, the BCBS set up the capital adequacy accord (BCA I). BCA-I is a standard methodology for calculating the amount of risk-based capital owned by the bank. Determination of the minimum capital amount is determined by calculating the ratio of risk-weighted assets (RWA) amounted to 8% of risk weighted assets (www.bi.go.id).

Later on, in July 2004, the Basel II established minimum capital that was more complex than Basel I, which only covered credit risk. Yet, BCA II includes credit risk, market risk, and operational risk, with capital adequacy ratio (CAR) remained 8%. Subsequently, in January 2013 BCA III framework implemented gradually until full implementation in January 2019 with the CAR to 10.5%

The focus of Basel II in Indonesia is the development and improvement of the quality of risk management by national banks in accordance with Bank Indonesia Regulation (PBI) No. 5/8 / PBI / 2003 dated May 19, 2003 on Risk Management for Commercial Banks. The implementation of Basel II is expected to reduce the negative impact on competition between banks. This is due to differences in the ability and readiness of banks in implementing and developing risk management and infrastructure.

Previous Research and Development Hypothesis

One of the purposes of regulatory capital is to reduce risk taking incentives by the owners by forcing owners to better put their personal wealth in the bank (Kim and Santomero 1994). Based on the theory of corporate governance that affect the ownership structure of risk-taking by the owner (Jensen and Meckling 1976), Shleifer and Vishny (1997) proved that the shareholders with voting rights and greater cash flow rights have the power and incentive to affect the behavior of corporate managers than minority shareholders.

Further research focuses on the relationship between ownership and governance structure of companies in East Asia conducted by several researchers. For example, La Porta et. al. (2000) and Clessens et al. (2000), proves that the East Asian companies have concentrated ownership structures that tend to control the company effectively. Beltratti research results and Stulz (2011) support that concentrated ownership would reduce leverage, thus reducing the risk of the bank. In this perspective, the concentration of ownership drives corporate performance to be better. In contrast to the

perspective proposed by Chalermchatvichien et al (2014), it was found that the banks in East Asia with a more concentrated ownership structures tend to take more risks. Following perspective by Chalermchatvichien et al. (2014), in this study will be tested how the ownership structure affects the behavior of individuals to risk taking by Indonesian banks.

It is still consistent with Basel II, the present research uses CAR and LDR as a proxy for the bank's risk compared to proxy of other risks such as beta (see Dolde and Knopf 2006), Non Performing Loan (NPL), or Z-score (see Iannota et al. 2007; Shehzad et al. 2010). According to Basel II, the banks are required to maintain the CAR higher if they have a risky asset (indicated by the high LDR). Thus, the banks are said to have a high risk if their CAR is low (below the minimum limit the provisions of Basel II) and has a high LDR (outside the limits of the provisions of Basel II).

It is predicted that that the concentration of ownership in Indonesian banks has a positive correlation with risk taking. This means that the higher the level of concentration of the bank, the more the level of bank risk-taking. This prediction is based on the argument by some proponents; first, Saunders, Strock, and Travlos (1990) and second, Chalermchatvichien et al. (2014) found that banks with greater ownership concentration influences the behavior of managers to take risks higher than the concentration of ownership is lower. When a shareholder has significant strength (concentrated), there is a tendency that the actions of managers to avoid the risk will be limited by the shareholders.

Second, it deals with the weak law enforcement in Indonesia, especially in the capital markets that can result in increasing moral hazard by controlling shareholders rather than exercise control to reduce risk (Taswan 2009 in Taswan 2012).

Based on the above arguments, the research hypotheses use CAR as a proxy for risk as the following.

H1a: the concentration of ownership has a negative effect on the capital adequacy ratio (CAR)

The above hypothesis can describe that the relationship between concentration of ownership and the CAR is negative. This means the concentrated ownership of the bank will lower the value of CAR. CAR Low indicates a lack of ability of banks to underwrite credit or productive assets at risk. In addition, the bank has a poor ability to fund operations and contribute significantly to the profitability of banks. (www.bi.go.id).

The next hypothesis related to the Loan to Deposit Ratio as a proxy for risk. LDR value is high (exceeding 92%) indicating a high risk of banks to meet short-term liabilities (liquidity). To cover loans to third parties, banks typically create policies using resource assets. Consequently, this policy may be harder for the banks to meet CAR minimum. Therefore, the relationship between ownership concentration and the LDR is expected to have an inverse relationship with the relationship between concentration of ownership and the CAR. The hypothesis can be stated that the relationship of ownership concentration and the LDR as a proxy for risk is as follows.

H1b: concentration of ownership has a positive effect on loans to deposits ratio (LDR)

Furthermore, this study re-examines the models used by Chalermchatvichien et al. (2014) that use several variables of the companies' characteristics as control variables, namely: size, leverage, market performance, and revenue growth of banks.

First, it is the size of the company (SIZE). Ahmed et al. (2008) proves that size does not affect the Bank's CAR. Their research was supported by the findings of Chalermchatvichien et al. (2014) that the measure does not affect the Bank's CAR but negatively affect the LDR and Stability Net Funding Ratio (NSFR). Thus, the nature of the relationship between the size of banks and the risk is ambiguous. The size of the larger banks will have more ability to diversify risk, but if they are not able to efficiently manage their assets would pose a risk in line with the increase in assets.

Second, leverage (LEV) is the ratio of debt divided by equity. Debt to equity ratio (DER) is used to measure the level of risk inherent in the structure of the debt. DER high shows that the claims of other parties (creditors) are relatively larger than the equity or assets, which can result in non-fulfillment of all liabilities (non-full cover) at the time of liquidation.

Third, Tobin's Q (Tobin) is a measure of market performance as measured by the ratio of market value of equity plus the book value of liabilities divided by the book value of the asset. The greater value of Tobin's Q indicates that the company's prospect is better. This can affect the bank's risk and encourage them to lower the capital (CAR). In addition, the bank may also be increasing loans to third parties (LDR).

Fourth, it deals with the bank's annual revenue growth (GROWTH). High revenue growth is expected to reduce the risks faced by banks to maintain the economic stability of the banking system.

3. RESEARCH METHOD

Selection of Data

To get representative data, the sample selection was done by means of purposive sampling method with the following criteria: (1) all commercial banks are listed on the Indonesia Stock Exchange (BEI), and (2) Bank publishes Financial Statements for 2008-2013. This study uses the data from the year 2008 due to the Basel II implemented on January 1, 2008 as stipulated by Bank Indonesia. The financial data is taken from the data stream, www.idx.co.id, www.bi.go.id, and the website of the bank concerned.

Explanatory Variables

Variables consist of the dependent variables, independent variables, and control variables. The dependent variables are the capital adequacy ratio (CAR) and the loan to deposits ratio (LDR). Independent variable is the concentration of ownership, the control variables include firm size, leverage, Tobin 's Q, revenue growth, and dummy years.

Dependent Variables: CAR and LDR

Capital Adequacy Ratio (CAR)

Bank risk-taking is determined through the CAR and LDR. Both of these variables are used because in accordance with the provisions or primary focus of Basel II emphasizes banks to maintain a capital adequacy and liquidity.

Basel II requires banks to maintain the CAR as a buffer in the face of investment in risky assets. CAR is the ratio of capital to risk-weighted assets (RWA) is guided by Bank Indonesia regulations related to the Minimum Capital Fulfillment of Obligations (CAR). Here is a formula that shows how to calculate a bank's CAR.

$$CAR = \frac{Amount\ \ of\ \ Capital}{Risk-Weighted\ Assets\ (Termed\ \ as\ ATMR)} \quad (1)$$

From the formula above, it can be justified that CAR or the ratio of capital to risk-weighted assets affects the amount of capital and risk-weighted assets owned by the bank. If the result of the calculation shows that the capital adequacy ratio below the minimum level set by Bank Indonesia and Basel II (8% (Basel II), then the bank will be more cautious in giving credit, so it will affect the potential for bank profits earned from loans.

Loan to Deposit Ratio (LDR)

As referred to Bank Indonesia Circular Letter No. 6/23 / DPNP dated May 31, 2004 Appendix 1e, LDR can be measured from the total amount of loans granted shared with third party funds. The loan amount is to determine the bank profits. If the bank can lend while funds collected, they will lead to losses for banks. Bank Indonesia set a standard LDR value between 78% -92%.

$$CAR = \frac{Total\ \ Loans}{Total\ \ loans\ \ /Total\ \ Deposits\ \ to\ a\ Third\ \ Party\ +Equity} \quad (2)$$

Based on the measurements and explanations above, LDR is a ratio used to determine the level of bank liquidity and also measuring devices for banking intermediation. LDR can also be used to assess the bank's management strategy that the bank's conservative management tends to have relatively low LDR; whereas aggressive bank management has a high LDR or exceeding the tolerance limit.

Independent Variables: Ownership Concentration (OC)

The ownership structure reflects the distribution of power and influence among the shareholders on the company's operations. One of the characteristics of the ownership structure is measured as the percentage of ownership of largest shareholders. This measure is also used by some previous studies, among others, Laeven and Levine (2009) and Chalermchatvichien et al. (2014). They use the size of the cash flow rights of the largest shareholders approximately 10% and 20% of the total shares.

OC = Percentage of the Reviews Largest Owner (3)

Control Variable

Control variables are variables controlled or held constant so that the relationship of independent variables on the dependent variable is not influenced by factors that are not extensively studied.

When referring to the research by Leaven and Levine (2009), this study examined the characteristics of the bank, which may affect the bank's CAR and LDR. Terebut control variable is the size of the company (SIZE), leverage (LEV), the market performance (Tobin's Q), and the revenue growth (GROWTH).

1. The size of the company (SIZE)

The company size (SIZE) is a scale to classify the size of the company. The variables measured by the natural logarithm of the total assets of banks

2. Leverage (LEV)

It is the bank leverage, measured by the It ratio of debt divided by equity. The higher ratio indicates a greater risk to be faced by banks and a lower proportion of the equity or assets. Meanwhile, lower ratios decrease the performance of the bank in the future.

3. Market performance (Tobin's Q)

It is a measure of market performance, measured by the ratio of market value of equity plus the book

Table 1
Population and Sample

Criteria of Sample	Total
All banks listed in ISE	32
Reduced from the banks which are not listed in ISE since 2008	(4)
Reduced from the banks which are listed but not active (during observation period)	(1)
Total sample	27
Total observation= 27 bank x 6 period of observation (2008-2013)	162
Reduced from : incomplete data and not active	(10)
Total of last sample	152

Source: Data streams, IDX, Bank Indonesia and the concerned bank website.

Table 2
Descriptive Statistics

	CAR	LDR	OC	SIZE (000)	LEV	TOBIN	GROWTH
Mean	0.164	0.782	0.567	98.153	0.602	1.078	0.193
Med	0.150	0.810	0.570	27.035	0.500	1.030	0.165
Max	0.460	1.130	0.990	733.099	2.565	1.658	1.889
Minim	0.080	0.400	0.150	1.357	0.002	0.875	-0.225
Std. Dev.	0.057	0.136	0.207	149.582	0.459	0.129	0.255
Obs	152	152	152	152	152	152	152

Source: The output of e-Views.

value of liabilities divided by the book value of the asset. Klapper and Love (2002) explains that Tobin's Q has the advantage over the market return as a measure of performance. This is because Tobin's Q shows the economic volatility that occurred in developing countries and as a measure of evaluation of the implementation of Good Corporate Governance. The greater the value of Tobin's Q (or better prospects for the company), the lower the risk of bank.

4. Revenue growth (GROWTH)

Bank earnings performance is measured by growth in bank earnings for the fiscal year *i t.* High revenue growth will reduce the risk faced by the bank to maintain economic stability and the banking system.

Regression model to explain the relationship between concentration of ownership and risk taking behavior Bank is as follows:

$$Bank\ Risk_{iit} = \beta_0 + \beta_1 OCI_{it} + Dummy\ Years_t + \varepsilon \quad (4)$$

$$Bank\ Risk_{ii}t = \beta_0 + \beta_1 OC_{it} + \beta_2 SIZE_{it} + \beta_3 Lev_{it} + \beta_4 Tobin_{it} + \beta_5\ GROWTH_{it} + Dummy\ Years_t + \varepsilon \quad (5)$$

Where:

Bank Risk$_{it}$: in this case, it uses two alternative measures, the CAR and LDR. CAR is measured by capital divided by risk-weighted assets of the company for the fiscal year *i t,* and LDR is measured from loans divided by total deposits of the company for the fiscal year *i t.*

OC_{it} is the ownership concentration of the bank for the fiscal year *i t.*

$SIZE_{it}$ is the size of the bank for the fiscal year *i t.*

Lev_{it} is leveraged bank i for the fiscal year *t.*

$Tobin_{it}$ is the bank's market performance for the fiscal year *i t.*

$GROWTH_{it}$ is the performance of the bank's revenue for the fiscal year *i t.*

Dummy Year is to account for possible variations over time, with 2008 as the base year.

ε is the error.

The data were processed to test the assumption by means of classical regression model that is built for BLUE (Best, Linear, Unbiased, and Efficient Estimator) that include autocorrelation test, multicollinearity, heterocedascity. The study also presents the descriptive statistics and Goodness of Fit Test, partial test (t-test), simultaneous test of significance (F test). Furthermore, the test was done using the Common Pooled Least Square or Ordinary Least Square (OLS).

4. DATA ANALYSIS AND DISCUSSION

Analysis of Descriptive Statistics

The population consists of 36 banks listed on the Indonesia Stock Exchange in 2009-2013. Table 1 shows the final 27 samples with a total of 152 observations.

Table 2 describes the average and median of ownership concentration ownership (OC) is 0.57, which is higher than the findings by Chalermchatvichien et al. (2014); and Leaven & Levine (2009).

Table 3
Correlation Analysis

Corr t-Stat	CAR	LDR	OC	SIZE	LEV	TOBIN	
CAR	1.000						

LDR	-0.201	1.000					
	(-2.511)	-----					
OC	-0.106	0.181	1.000				
	(-1.313)	(2.259)	-----				
SIZE	-0.145	-0.058	0.069	1.000			
	(-1.801)	(-0.722)	(0.852)	-----			
LEV	-0.084	-0.127	-0.181	-0.097	1.000		
	(-1.033)	(1.579)	(-2.259)	(-1.201)	-----		
TOBIN	0.050	0.042	0.023	0.316	-0.264	1.000	
	(0.617)	(0.523)	(0.287)	(4.084)	(-3.353)	-----	
REV	0.156	0.023	-0.139	-0.122	-0.032	-0.102	1.000
	(1.936)	(0.291)	-1.726	(-1.507)	(-0.401)	(-1262)	-----

Source: The e-Views output.

That is, the ownership of banks in Indonesia is more concentrated than the average ownership of banks in East Asia. This evidence is consistent with research La Porta et al. (2000) who found that the level of concentration of companies in Indonesia average of 58%. A high level of concentration is one of them caused by weak law enforcement.

The average CAR is 0.16 (median 0.15) and the average LDR was 0.78 (median 0.81) higher than the findings by Chalermchatvichien (2014). This suggests that banks in Indonesia hold CAR that is quite high (16%) compared to those in East Asia (14%). Next is the bank's management that appears to have a less aggressive strategy (LDR, wich is under the provisions of Bank Indonesia (78% -92 %).

The total value of assets used to measure the size of the company showed an average (median) was 98 billion (27 billion). DER values have an average (median) of 0.6 (0.5) that means that the average (median) number of bank loans is 60% (50%) with a value of 40% equity (50%). Market performance as measured by Tobin's Q show that the average bank in Indonesia has a value greater than 1 (1.07). This indicates that most of the banks listed on the Stock Exchange has been able to generate profits with returns greater than the cost of the asset. Revenue growth of banks in Indonesia has an average (median) approaching 20%.

Table 3 shows the correlation matrix for the variables where the OC is not significantly and negatively correlated with the CAR. This suggests that the more concentrated ownership will not encourage greater or smaller capitalization. Meanwhile, OC positively and significantly is associated with LDR. That is, the higher the ownership concentration the greater the capital than the given third-party funds. From this evidence, it can also be seen that the coefficient between independent variables is low (under rule of thumb 0.7); this means that there is no multicollinearity in the regression model.

Analysis of Multivariate Results

Table 4 provides us with evidence that CAR or LDR as the dependent variable shows two models. Model 1 and 2 are used to examine the direct relationship between ownership structure and bank risk. The first model is the base model, the second model to test H1a and H1b.

On the panel A, H1a cannot be verified because of the concentration of ownership has a negative but significant coefficient for all models. This suggests that concentrated ownership is a variable that cannot explain the increased risk (by proxy CAR). The findings are not consistent with the predictions and does not support research Chalermchatvichien et al. (2014).

The above is due to the ownership concentration which does not have significant effect on CAR that is a factor of the high level of CAR. Bank as a company is highly regulated by the regulator (Bank Indonesia or the Financial Services Authority). This regulation requires them to meet the minimum CAR of 8% (based on Basel II). The average CAR of banks in Indonesia is 16% that already meet this provision. This reflects the high level of CAR risks faced by banks is low and shows that good governance mechanisms (Konishi and Yasuda 2004). Thus, concentrated ownership of the

Table 4
Regression Analysis: The Effect of Ownership Concentration

Panel A – Proxy of Risk: CAR

Variables	Prediction	CAR (OLS)	
		Model 1	Model 2
Constant		0.178***	0.291***
		(14.53)	(6.77)
OC	-	-0.024	-0.012
		(-1.35)	(-0.68)
Size	?		-0.007***
			(-3.84)
Lev	-		-0.024***
			(-3.99)
Tobin' Q	+		0.035*
			(1.98)
Growth	+		0.003
			(0.39)
Year dummies included		Yes	Yes
Adjusted R2		40.58%	44.10%
F-statistic		13.20***	9.97***

Panel B – Proxi of Risk: LDR

Variables	Prediction	LDR (OLS)	
		Model 1	Model 2
Constant		0.706***	0.446***
		(20.45)	(3.89)
OC	+	0.137***	0.182***
		(2.69)	(3.16)
Size	?		0.004
			(0.80)
Lev	+		0.038**
			(2.15)
Tobin's Q	-		0.132***
			(2.70)
Growth	-		-0.019
			(-1.09)
Year dummies		Yes	Yes
Adjusted R2		71.41%	72.19%
F-statistic		45.61***	30.50***

Notes: ***significant at level 1%, **significant at level 5%.

predicted positive effect on the bank's risk in the study was not proven.

Some evidences deal with the regression influence of the control variable are the size of the company (SIZE) and borrowing (leverage) and significantly negatively is associated with the CAR, while the market performance (Tobin's Q) positively and significantly is associated with CAR. Revenue growth (GROWTH) does not have significant coefficients. It can be concluded that according to predictions by the increasing size of the company, high leverage, and the poorer market performance will increase the risks faced by the bank indicated by the low value of the CAR.

Unlike the panel A, panel B uses LDR as the dependent variable. It shows a positive and significant coefficient as the basic model by including control variables. This significant and positive correlation means that the more ownership concentration of the banks, the more credit is given to third parties. So, this result is still consistent with predictions. This is also consistent with the view that owners tend to take risks rather than managers and creditors (Galai and Masulis 1976; Demsetz and Lehn and 1985). For that reason, the greater the cash flow, the greater the incentive and the power to increase the risk-taking of banks compared to the small shareholders (Jensen and Meckling 1976; and John, Litov, and Yeung 2008).

The test result of the control variables for the model using LDR as the dependent variable

Table 5
Regression Analysis – the Effect of Ownership Concentration on the Initial Years

Panel A – Proxy of Risks: CAR

Variables	CAR	
	Model 1	Model 2
Constant	0.168***	0.302***
	(12.51)	(6.06)
OC (early year)	-0.004	-0.003
	(-0.24)	(-0.17)
Size		-0.008***
		(-4.24)
Lev		-0.008***
		(-4.09)
Tobin's Q		0.025
		(1.30)
Growth		0.013
		(1.03)
Year dummies included	Yes	Yes
Adjusted R2	33.05%	41.53%
F-statistic	9.53***	8.81***

Panel B – Proxy of Risks: LDR

Variables	LDR	
	Model 1	Model 2
Constant	0.7130***	0.4089***
	(21.54)	(3.35)
OC (early year)	0.0829*	0.1286**
	(1.73)	(2.31)
Size		0.0026
		(0.44)
Lev		0.0377**
		(2.22)
Tobin's Q		0.1921***
		(4.12)
Growth		0.0132
		(0.63)
Year dummies included	Yes	Yes
Adjusted R2	76.67%	73.79%
F-statistic	57.82***	31.98***

Notes: ***significant at level 1%, **significant at level 5%.

shows that borrowing (leverage) and market performance (Tobin) positively and significantly are associated with LDR. On the contrary, the other control variables such as firm size (SIZE) and earnings growth (GROWTH) do not have significant coefficients. In this condition, the bigger size of the bank and the higher leverage, the greater the risks faced by the bank. This is indicated by the high value of the LDR. As for the variable of market performance, it is significantly positively associated with LDR. This evidence is not consistent with the prediction by the researchers that the two variables are negatively related. There is a possibility, why the value of the bank can increase the risk of the bank. It is due to increasing the value of the bank that eventually can encourage management to aggressively lend to third parties (LDR). Thus, when the level of LDR is higher, it will increase banks' liquidity risk.

In general, almost all the models indicate that the use of different risk proxies produce different findings. For example, CAR and LDR as proxies for bank risk seem to have trade-offs, in accordance with the correlation table that the correlation between the two is negative and significant. Thus, in interpreting the results of the study, the researchers must be careful, especially in linking the findings to the agency theory. Whether the results of this study support the convergence argument or inconsistent with the entrenchment argument? As proposed by Demsetz et al. (1997) and Sheifer & Vishny (1997).

Table 6
Additional Analysis: The Effect of Financial Crisis

Variables	Model 2	
	CAR	LDR
Constant	0.269***	0.480**
	(6.39)	(2.56)
OC	-0.014	0.143*
	(-0.78)	(1.89)
Crisis	0.006	0.001
	(0.40)	(0.01)
OC*Crisis	-0.011	-0.046
	(-0.44)	(-0.56)
Control Variable	Yes	Yes
Adjusted R2	49.90%	44.49%
F-statistic	16.56***	13.52***

Notes: ***significant at level 1%, **significant at level 5%.

Sensitivity Analysis
Endogeneity: Reverse Causality

To investigate the possibility of a causal relationship between the ownership concentration and bank risk taking, it uses an endogenous variable. It means that the bank's risks determine the ownership structure. The basic consideration is the structure and characteristics of governance in Asia, particularly in Indonesia, are the possibility of reverse causality that is plausible.

The ownership structure of banks in Indonesia is attached and rarely changes from time to time. This is probably caused by the presence of most of the major shareholders are members of the founding family or members of industry groups (institutions) who maintain control from the very beginning the bank was established.

However, the CAR and LDR can fluctuate from time to time, especially around the financial crisis. If the ownership structure changes due to changes in CAR and LDR, the study can observe more variation associated with the fluctuation. In addition, an additional analysis should be done to minimize the possibility of reverse causality, by the following:

(1) Identifying banks with CAR and LDR which change from time to time, while the ownership concentration has remained constant. That is, the ownership concentration can not be affected by the CAR and LDR. The result shows that only about 3% of the sample of banks shows changes in higher concentrations when the CAR decreased.
(2) It deals with the possibility that the sample is prone to endogeneity and reverse causality. Thus, the researchers examined changes in the concentration of ownership of any bank in any given year to the concentration of ownership in the early years of the sample. The logic is that the ownership concentration in the early years which was not caused by CAR or LDR liquidity in subsequent years. If the results of these tests found no significant association, it can be concluded this study did not produce the effect of changing the direction of causality for LDR, CAR, and ownership structure.

Table 5 shows the results of the regression on the impact of ownership concentration when the initial public offering (IPO). Panel A uses CAR as the dependent variable, while panel B uses LDR as the dependent variable. Ownership concentration in the early years has the same coefficient with coefficient of ownership concentration as shown in Table 4 for the second panel. Therefore, reverse causality is not possible in this study, and the results of this study are strong (robust).

The Effect of Financial Crisis

The financial crisis beginning in late 2008 resulted in the economic crisis in most of the world. Mainly, it was due to the credit crisis that was skyrocketing (boom) until mid-2007, followed by the subprime mortgage crisis and some security products. The crisis was also raising concerns about the solvency and liquidity of banks (Ivashina & Scharfstein 2009). According to Bank Indonesia (2010) that banks as the financial sector cannot be separated from the impact of the global financial crisis. For example, in October 2008, the three major state-owned banks such as PT Bank Mandiri Tbk., PT Bank BNI Tbk, and PT Bank Rakyat Indonesia Tbk received liquidity support from the Government of each Rp 5 trillion. This study tries to explore if this crisis is likely to alter the relationship between ownership structure, bank capital (CAR), and liquidity (LDR) Bank.

The sample was taken during the period 2008-2013, in which the banking crisis began in late 2008 and continued until 2009. The year 2009 was the first year the bank felt the impact of the financial crisis which is classified as a period of crisis by using a binary variable (dummy): The value for 2009 and the value zero otherwise. These variables were interacted to determine the interactive effects of shocks and financial crises. The variable coefficient describes the impact of ownership concentration of capitalization and liquidity.

As shown in Table 6, Panel A and Panel B use CAR and LDR as the dependent variables. Both crisis as an independent variable and the moderating variable cannot prove ownership concentration relationship with CAR and LDR because there is no significant coefficients. This shows that the financial crisis does not change the relationship between the ownership concentration and the CAR.

5. CONCLUSION, IMPLICATION, SUGGESTION, AND LIMITATIONS

It can be generalized that the ownership concentration does not affect the capitalization (CAR). However, this factor can increase the risk of liquidity (LDR).

In addition, it can also be implied that there is a significant effect of the risk of ownership concentration on the bank. This study contributes to banking practitioners and regulators associated with the policy direction of bank ownership, especially the ownership concentration. The ownership structure is proved to be involved in management decisions to take risks. There are some limitations in this study. For further research, there are some suggestions due to the limitations.

First, a proxy for risk is limited to the CAR and LDR. For that reason, it is necessary to enter a proxy for risk Basel III, namely liquidity coverage ratio (LCR) and net stable funded ratio (NSFR) to determine the impact of the rules of Basel III, as adopted in 2013, although the new provision would be required for implementation in 2018.

Second, the independent variable is only the ownership concentration and this is inadequate for explaining the impact on risk. Therefore, further research may add other variables related to ownership structure, such as foreign ownership, government ownership, and family ownership. Besides the above, it is also necessary to use other measures such as the voting right which is not the ultimate ownership (La Porta et al. 1999; 2000), or using a dummy variable concentration.

Finally, the study found that ownership concentrations affect the banks' risks. Therefore, it is imperative that the regulators make policies that restrict ownership concentration to reduce the likelihood of negative effects for minority shareholders or depositors.

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