www.bircu-journal.com/index.php/birci
Budapest International Research and Critics Institute-Journal (BIRCI-Journal)
Humanities and Social Sciences
ISSN 2615-3076 Online)
ISSN 2615-1715 (Print)
Budapest Institute

Effect of Corporate Governance and Capital Adequacy Ratio to Risk in Banks in Asean- 3

Rizky Mulia[1], Farah Margaretha Leon[2], Josephina Endang Purba[3]
[1,2]*Faculty of Economics and Business, Trisakti University, Jakarta, Indonesia*
rizky122012003071@std.trisakti.ac.id, farahmargaretha@trisakti.ac.id, yosephina@trisakti.ac.id

Abstract

The purpose of this study is to analyze the effect of corporate governance and the capital adequacy ratio on bank risk. The aspects of corporate governance used are the size of the risk committee, the frequency of meetings of the risk committee, the audit committee, the size of the board of directors, the independence of the board of directors, and institutional ownership, as well as the capital adequacy ratio. Risk variables consist of Credit Risk, Liquidity Risk, and solvency risk. This study also uses asset growth, income diversification, deposit ratio, and government ownership as control variables. The object of research is the banks listed on the Indonesia Stock Exchange, the Malaysia Stock Exchange, and the Thailand Stock Exchange during the 2016-2020 period. This study used purposive sampling method so that 53 banks were obtained as samples. The analytical method used is panel data regression analysis. The results of this study indicate that corporate governance and capital adequacy ratio have significant effect on risk, while the audit committee has no effect on risk. The results of this study provide information that the size of the risk committee, the frequency of risk committee meetings, the size of the board of directors, and institutional ownership can encourage banks to take risks to improve the welfare of shareholders. To control risk, bank managers need to maintain a capital adequacy ratio to absorb risk and investors can encourage the role of independent parties such as risk committees and independent directors to provide input on risk management.

Keywords
capital adequacy ratio; bank risk; credit risk; liquidity risk; solvency risk; corporate governance

I. Introduction

Banks in running their business are required to provide added value by shareholders, but in the process there is always a risk that accompanies it, therefore according to Lee, Isa, Ahmad & Bacha (2020) banks need to have the right risk management function because this helps in determine the appropriate level of risk and is expected to maximize the value of the bank. In the banking business, apart from being faced with credit risk, banks are also faced with operational risk and market risk, where in facing unexpected losses from these risks, banks provide capital to cover them. These risk management guidelines were provided by the Basel Committee on Banking Supervision (BCBS) with the primary objective of stabilizing the international banking system and strengthening the soundness of the international banking system, however there is limited empirical evidence on the effectiveness of risk management and corporate governance .

By their nature, banks are always associated with risk, and the higher the risk of a business decision, the higher the return. Bank risk-taking behavior at the micro level

affects the tendency of bank failures and at the macro level affects the sustainability of the banking system (Hunjra, Hanif, Mehmood & Nguyen, 2020) .

The global financial crisis resurfaced with the Covid-19 pandemic which had a significant impact on all sectors including the financial sector. Sihombing (2020) state that Covid-19 pandemic caused everyone to behave beyond normal limits as usual. The outbreak of this virus has an impact especially on the economy of a nation and Globally (Ningrum, 2020). The problems posed by the Covid-19 pandemic which have become a global problem have the potential to trigger a new social order or reconstruction (Bara, 2021). *Lockdown* policies for most countries, social distancing, and quarantines have had economic consequences for ASEAN banks because most economic activities, either directly or indirectly, are carried out through the banking sector. (Wójcik & Ioannou, 2020) . One of the steps taken by banks to protect themselves from systemic risks that occurred previously was to strengthen *corporate governance,* such as the role of the *board of directors,* committees under *the board of directors,* and risk management. In relation to corporate governance and bank risk management in Indonesia, the Financial Services Authority (OJK) also conveys that financial service actors must continuously improve the implementation of *Governance, Risk* & *Compliance* to identify and anticipate new risks, (OJK, 2020).

It is undeniable that banks must take risks to generate value, but banks must also think about the optimal level of risk that can be borne. A little risk may only produce meaningless value for *shareholders,* but taking too much risk will indeed provide value for *shareholders,* but there is a greater risk behind it. Thus, *corporate governance* acts as a *check and balance* against management's desire to engage in excessive risk-taking practices (SP Lee et al., 2020) .

The implementation of *good governance* and good *risk management,* apart from having the aim of protecting the interests of *stakeholders* and *shareholders,* also aims for business growth and *continuous sustainability.* Differences in bank ownership structure can affect the effectiveness of *risk management procedures* and the quality of *good governance.* Private *-Owned Banks* are driven by the principle of profit and wealth maximization, while *State-Owned Banks are* guided by the principles of socio-economic development for political purposes (Abid, Ali, Hussain & Khuong, 2021) . The difference in objectives between POB and SOB provides space to explore the different effects of *corporate governance* on POB and SOB on risk-taking behavior.

Ongoing financial liberalization in Asia where the banking sector serves as a catalyst to encourage economic activity in other sectors by providing loans to finance investment projects and routine transactions (Hunjra et al., 2020) . The characteristics of the Asian economy are weak investor protection, poor law enforcement mechanisms and the quality of regulations, as well as political interference (Abid et al., 2021) . The existence of these conditions further strengthens the need for a *corporate governance structure* for banks in Asia to ensure financial stability and performance.

A number of studies previous about *corporate governance* and *capital adequacy ratio* showing mixed results. as the results of research by Abid *et al* . (2021) which shows that the *risk governance mechanism* has a significant negative effect on risk-taking behavior, research results Aslam & Haron (2021) which shows that the *corporate governance mechanism* has a significant positive effect on risk-taking behavior, the results of research by Hunjra *et al* . (2020) which shows that diversification and the CAR mechanism have a significant positive effect on risk-taking behavior, the research results of Otero *et al* . (2019) and Ben Zeineb & Mensi (2018) which show that institutional ownership has a positive effect on risk-taking decisions, and results study by Akbar *et al* .

(2017) which shows mechanism *corporate governance* could take effect positive significant and negative significant to bank risk.

Based on the phenomenon, background, and *research gap* mentioned above, a research was conducted with the aim of analyzing the effect of *corporate governance* and *capital adequacy ratio* on banks in ASEAN-3. Indonesia, Malaysia, and Thailand are the 3 (three) ASEAN countries selected in this study, because these countries are the pioneers of the establishment of ASEAN and have good disclosure practices (*Karyani* Dewo, Santoso & Frensidy, 2020) . Result of study this expected could give view for managerial and investors in the form of understanding about characteristic *corporate governance* and capital structure that can influence bank risk and description appropriate *risk*- appetite with characteristic *corporate governance* and capital structure.

II. Review of Literature

2.1 Influence Size Committee Risk to Bank Risk

The existence of a risk committee can improve risk governance, because the risk committee on a separate board-level is considered independent in providing views and input related to the process of identifying, managing, and mitigating various risks faced by the bank. The size of the risk committee represents the investment of board resources in the supervisory process. risk management. According to agency theory , a large risk committee can lead to group conflict which can lead to poor communication of information, lower quality of information, fragmentation, and suboptimal decision making (Abid et al ., 2021) . In contrast, resource dependence theory suggests that large risk committees increase monitoring effectiveness because large risk committees represent a diversity of opinions, expertise, and a strong decision-making process (Malik, Nowland & Buckby, 2021) .

The results of the research by Abid et al . (2021) , Malik et al . (2021) , and SP Lee et al ., (2020) show that a large risk committee size has a significant negative effect on risk-taking behavior. This shows that the large size of the risk committee reflects strong governance, which can reduce risk-taking decisions by banks. Based on the discussion above, the following hypothesis is proposed:

H1: Size committee risk takes effect to bank risk

2.2 Influence Frequency Meeting Committee Risk to Bank Risk

The frequency of risk committee meetings also shows how responsive and alert members of the risk committee are to the potential risks that are being and will be faced by the bank. More frequent meetings can provide an opportunity for the risk committee to consider and discuss ideas on managerial monitoring, risk mitigation strategies, and risk management policies (Abid et al ., 2021) . Research related to the frequency of risk committee meetings conducted by l Abid et al ., (2021) and Saada (2015l) show that the frequency of risk committee meetings has a significant negative effect on bank risk-taking decisions. Research by Battaglia & Gallo, (2015) shows that the frequency of risk committee meetings has a positive relationship with bank market performance, indicating that a high frequency of risk committee meetings is a mechanism for effective risk communication, strong monitoring, in-depth consideration, and risk management oversight. the strong one. Based on the discussion above, the following hypothesis is proposed:

H2: Frequency meeting committee risk take effect to bank risk

2.3 Influence Audit Committee against Bank Risk

The existence of the Audit Committee shows that the bank is committed to implementing the principles of transparency and accountability, related to the Agency Theory is that the existence of the Audit Committee is expected to suppress the opportunistic behavior of managers from risk-taking behavior that is not in accordance with the interests of shareholders . The large size of the audit committee will have the ability and experience of diverse members so as to increase the role of the audit committee in supervising bank operations. Previous research on audit committee size and risk-taking behavior has shown mixed results. Research by Abdeljawad, Oweidat & Saleh (2020) shows that the size of the audit committee has a significant negative effect on risk-taking behavior. Research by Aslam & Haron (2021) shows that the size of the audit committee has a significant positive effect on risk-taking behavior. Based on the above discussion, the following hypothesis is proposed:

H 3:Influential Audit Committee to bank risk

2.4 Influence Size Board of Directors to Bank Risk

The relationship between the size of the Board of Directors (BoD) and Agency Theory is that the larger the size of the BoD, the greater the capability of the BoD in supervising and monitoring management, decision making, asset allocation, and reducing agency problems (Alipour, Ghanbari, Jamshidinavid & Taherabady, 2019) . The larger the size of the board of directors , it is expected to be able to suppress the risk-taking behavior of banks by management. Previous studies on the size of the board of directors and the risk-taking behavior of banks have shown mixed results. Research by Hunjra et al . (2020) shows that the size of the BoD has a significant negative effect on risk-taking behavior, while research by Aslam & Haron (2021) and Abou-El-Sood (2019) shows that the size of the BoD has a significant positive effect on bank risk-taking decisions. The results of these mixed studies require further research on this issue. Based on the discussion above, the following hypothesis is proposed:

H4: Size Board of Directors take effect to bank risk

2.5 Influence Independence Board of Directors to Bank Risk

Agency theory asserts that independent directors will help alleviate agency problems by monitoring and controlling management behavior. Independent directors have incentives to act as monitors in disciplining management because they must protect their reputation as independent decision makers (Fama & Jensen, 1983) . Studies on the independence of the BoD on risk-taking behavior show varying results. Research by SP Lee et al ., (2020) , Hunjra et al . (2020) , and Aslam & Haron (2021) show that BoD independence has a significant negative effect on bank risk-taking behavior. Research by Abid et al . (2021) show that the independence of the BoD has a significant positive effect on the risk-taking behavior of banks. The results of these diverse studies require further research on this issue. Based on the above discussion, the following hypotheses are proposed:

H5: Independence Board of Directors take effect to bank risk

2.6 Influence Ownership Institutional to Bank Risk

According to Abid et al ., (2021) , a large concentration of ownership and institutional ownership can motivate shareholders to monitor managers in risk decision making, but conversely the presence of ownership concentration can also allow managers to take risky decisions to maximize shareholder welfare. Institutional investors tend to be

active participants in corporate governance , they can monitor corporate strategies to ensure responsiveness and exercise significant voting rights, and they can exert a significant positive influence on risk decision making (Otero et al ., 2019) . On the other hand, Setiyono & Tarazi (2018) argue that the presence of institutional investors as second-stage block holders tends to reduce risk taking and improve performance.

According to research Abid et al. (2021) and Otero et al. (2019), majority ownership by institutions has a significant positive effect on risk-taking decisions. Research by Ben Zeineb & Mensi (2018) shows that institutional ownership has a significant negative effect on risk-taking behavior. Based on the assumption that ownership concentrated by institutions is more concerned with profit so that it is more aggressive and will put aside risk, as well as various research results, the following hypothesis is proposed:
H6: Ownership institutional take effect to bank risk

2.7 Influence Capital Adequacy Ratio (CAR) to Bank Risk

Regulation of capital increases bank stability by increasing the ability to absorb risk and bear risk, but on the other hand, strict capital regulation encourages banks to compensate for losses with optimal choices to increase risk (Hunjra et al ., 2020) . Research by Hunjra et al . (2020) , Thi et al . (2019) , and Abou-El-Sood (2019) show that CAR has a significant positive effect on bank risk-taking decisions. Research by Ashraf, Arshad & Hu (2016) and Maji & De (2015) shows that CAR has a negative and significant effect on bank risk. Based on the assumption that the more fulfilled the CAR, the lower the risk faced by banks and the various research results, the following hypothesis is proposed:
H7: Capital Adequacy Ratio (CAR) has an effect to bank risk

2.8 Influence Growth Assets, Diversification Income, Deposit Ratio, and Ownership Government to Bank Risk

According to SP Lee et al. (2020), the bigger the bank, the better access to wholesale funding, better able to diversify the composition of assets, and is expected to have lower risk compared to small banks. Good bank assets are expected to experience growth every period, the growth of bank assets reflects management behavior in managing risk. Very fast asset growth can affect the bank's risky investment portfolio (Ngoc Nguyen, 2019) . One of the bank's incomes is fee-based income, namely income other than interest earned by the bank for the services provided by the bank. According to Abid et al . (2021) with high fee-based income, it is expected that banks will reduce their focus on obtaining interest income from lending.

Deposits are an element in the bank's financial statements that are used to be channeled in the form of credit as the bank functions as an intermediary institution, with the increasing number of deposits; banks need to be careful in distributing credit so that the funds distributed can be returned. According to Abid et al . (2021) , risk-taking incentives are reduced if the bank has a high charter value , where the proxy for charter value is the ratio of deposits to assets.

Decision making in state-owned banks (SOB) can be influenced by political incentives rather than professional and objective judgment. The risk management structure will not achieve the objectives of risk management, because it will not function objectively and independently, because the existence of organs related to risk management is only a symbol to build legitimacy (Abid et al ., 2021) . According to Lassoued, Sassi & Attia (2015), large risk-taking decisions by state-owned banks are due to the possibility that managers make decisions to finance government companies or implement social projects

dictated by the government's political interests. Based on this discussion, the following hypothesis is proposed:
H8: Growth assets, diversification income, deposit ratio, and ownership government take effect to bank risk

III. Research Method

3.1 Variable Study

Research design The method used is through hypothesis testing, to test the effect of the independent variables, namely *corporate governance* (risk committee size, risk committee meeting frequency, audit committee, board of directors size, *board of director* independence , and institutional ownership). and CAR on the dependent variable , namely bank risk. In addition, control variables are added, namely asset growth, income diversification, *deposit ratio* , and government ownership. The measurement of each variable in this study can be described as follows:

Table 1. Definition Operational Variable

Type Variable	Variable Name	Symbol	Definition Variable Operational	Reference
Variable Dependent	*Credit Risk*	CR	$\frac{Loan\ Loss\ Provisons}{Total\ Pinjaman}$	Abid *et al* . (2021)
	Liquidity Risk	LR	$\frac{Total\ Pinjaman}{Total\ Simpanan}$	Abid *et al* . (2021)
	Solvency Risk	Z-RISK	$1/LN\ Z-Score$ $Z-Score=\frac{\overline{ROA}+\overline{CtAR}}{\sigma ROA}$ Description : $\overline{ROA}$ = *Moving average Return on Assets* 3 years $\overline{CtAR}$ = *Moving average Capital to Asset Ratio* 3 years σROA = Standard deviation of ROA	Abid *et al* . (2021) SP Lee *et al* . (2020) Otero *et al* ., (2019) Akbar *et al* . (2017)
Variable Independent	Size Committee Risk	RC size	Amount Member Committee Risk	Abid *et al* . (2021)
	Frequency Meeting Committee Risk	RC meet	Frequency Meeting Committee Risk in 1 year	Abid *et al* . (2021)
	Audit Committee Size	AUD size	Amount Member Audit Committee	Aslam & Haron (2021)
	Size *Board of Directors*	BDsize	Amount Member *Board of Directors*	Abid *et al* . (2021)

Type Variable	Variable Name	Symbol	Definition Variable Operational	Reference
	Independence *Board of Directors*	ENG	$\frac{Jumlah\ Anggota\ Independent\ Director}{Jumlah\ seluruh\ Anggota\ Board\ of\ Director}$	Abid *et al* . (2021)
	Ownership Institutional	INST _ own	Portion owned shares _ by institutional investors	Abid *et al* . (2021)
	Capital Adequacy Ratio	CAR	$\frac{Modal\ Tier\ 1 + Modal\ Tier\ 2}{ATMR}$	Hunjra *et al* . (2020)
Variable Control	Growth Asset	AGr	$\frac{Total\ Aset_t - Total\ Aset_{t-1}}{Total\ Aset_{t-1}}$	Ngoc Nguyen (2019)
	Diversification Income	Inc_ Div	$\frac{Pendapatan\ Non\ Bunga}{Total\ Pendapatan\ Operasional}$	Abid *et al* . (2021)
	Deposit Ratio	DEP	$\frac{Total\ Simpanan}{Total\ Aset}$	Abid *et al* . (2021)
	Ownership Government	SOB	Portion Ownership by government center or government area or institution government	Iannotta *et al* . (2013) AX Lee & Hooy (2020)

3.2 Data and Sample

The data used in this study is panel data which is a combination of *cross sectional* and *time series data* on banks listed on the *Stock Exchange* in ASEAN-3 (Indonesia, Malaysia, and Thailand) during the 2016-2020 period. In this study, it consists of 3 (three) types of variables, namely the independent variable, the dependent variable, and the control variable. The collection of data obtained indirectly (secondary data) is the collection method used in this study. Sources of data from this study were obtained through Indonesia Stock Exchange website (https://www.idx.co.id), Bursa Malaysia website (https://www.bursamalaysia.com), and *Stock Exchange of Thailand* (https://www.set.or.th), as well as from *the websites* of each sampled company.

In this study, the data collection method used was *purposive sampling.* The selection of this method is based on considerations that focus on certain goals. In other words, the sample for this study is a company that has met certain predetermined criteria. The sample in this study covers 265 financial reporting periods, consisting of 53 banks from 62 bank populations listed on the Stock Exchange in ASEAN-3 for 5 years (2016-2020 periods). Indonesia, Malaysia, and Thailand are ASEAN countries selected in this study, because based on ADB (2021) , these countries have good ASEAN Corporate *Governance Scorecard scores* . Table 2 shows criteria taking sample:

Table 2. Criteria Taking Sample

Information	Amount
Banking company Conventional Stock Exchanges listed on the ASEAN-3 Stock Exchange for the 2016-2020 Period : Indonesia (42), Malaysia (9), Thailand (11)	62

Information	Amount
Companies that don't available report finance with information complete in 2016-2020 period : Indonesia (1), Malaysia (0), Thailand (2)	(3)
Companies that have closed year book besides December in 2016-2020 period : Indonesia (0), Malaysia (4), Thailand (0)	(4)
The *delisting company* in 2016-2020 period : Indonesia (2), Malaysia (0), Thailand (0)	(2)
Decent company made sample : Indonesia (39), Malaysia (5), Thailand (9)	**53**

IV. Discussion

4.1 Results

a. Analysis Statistics Descriptive

Descriptive statistics are used to provide an overview or description of the data seen from the minimum, maximum, average (mean), and standard deviation values. from every variable . Based on results analysis descriptive Table 3, can explained that there is minimum, maximum , average, and values standard deviation where amount observation symbolized with the letter N as much as 265 with acquisition score each like on Table 3.

Table 3. Combined Descriptive Statistical Analysis Results of 3 Countries

Variable	N	mean	Minimum	Maximum	Std. Dev.
RCsize	265	4.766038	2000000	10,000000	1.733684
RCmeet	265	8.815094	2000000	34,000,000	5.347025
AUDsize	265	3.758491	3,000000	8.000000	1.004805
BDSize	265	6.784906	2.000000	19.00000	3.895773
IND	265	0.556724	0.307690	1.000000	0.126697
INST_own	265	0.706749	0.000000	0.999997	0.264274
CAR	265	0.216878	0.090100	0.664300	0.076935
AGr	265	0.093864	-0.340859	1.145407	0.161475
Inc_Div	265	0.135773	0.006838	0.580514	0.087839
DEP	265	0.750455	0.490013	0.883848	0.079511
SOB	265	0.112401	0.000000	0.798535	0.230511
CR	265	0.016661	0.000000	0.271472	0.023940
LR	265	0.867524	0.371846	1.661173	0.172334
Z-RISK	265	0.275530	0.145615	1.401792	0.136305

Results analysis statistics descriptive if seen from variable risk show that The results of descriptive statistical analysis data show that based on 265 observations, the *credit risk variable* has a minimum value of 0 with a maximum value of 0.271472, has an average

value of 0.016661, and a standard deviation of 0.023940 . The *liquidity risk* variable has a minimum value of 0.371846 with a maximum value of 1.661173, has an average value of 0.867524, and a standard deviation of 0.172334. *solvency risk* variable has a minimum value of 0.145615 with a maximum value of 1.401792, has an average value of 0.275330, and a standard deviation of 0.136305 .

Table 4. Results of Descriptive Statistical Analysis of the Indonesian Sample

Variable	N	mean	Minimum	Maximum	Std. Dev.
RCsize	195	4.533333	2000000	10,000000	1.590133
RCmeet	195	8.076923	2000000	34,000,000	5.597241
AUD size	195	3.815385	3,000000	8.000000	1.068176
BDSize	195	4.953846	2.000000	11.00000	2.120816
IND	195	0.577135	0.333330	1.000000	0.115554
INST_own	195	0.752968	0.000000	0.999997	0.265671
CAR	195	0.228356	0.090100	0.664300	0.085660
AGr	195	0.104312	-0.340859	1.145407	0.168998
Inc_Div	195	0.114496	0.006838	0.580514	0.083125
DEP	195	0.752559	0.490013	0.883848	0.081131
SOB	195	0.116777	0.000000	0.798535	0.248654
CR	195	0.018703	0.000000	0.271472	0.027304
LR	195	0.843617	0.371846	1.609483	0.173008
Z-RISK	195	0.292238	0.145615	1.401792	0.152330

Table 5. Results of Descriptive Statistical Analysis of the Malaysian Sample

Variable	N	mean	Minimum	Maximum	Std. Dev.
RCsize	25	5.480000	3,000000	10,000000	1.805547
RCmeet	25	9.840000	4000000	20000000	3.472271
AUD size	25	3.880000	3.000000	6.000000	1.053565
BDSize	25	9.280000	7.000000	12.00000	1.541644
IND	25	0.633349	0.454550	0.875000	0.103977
INST_own	25	0.607828	0.377700	0.867800	0.158800
CAR	25	0.183222	0.156850	0.232620	0.017616
AGr	25	0.036319	-0.100494	0.085242	0.035808
Inc_Div	25	0.179830	0.026140	0.366560	0.086240
DEP	25	0.773653	0.683440	0.846683	0.056531
SOB	25	0.053760	0.000000	0.293400	0.110040
CR	25	0.004674	0.000470	0.019463	0.004407
LR	25	0.860872	0.770190	0.918416	0.046084
Z-RISK	25	0.196148	0.146442	0.240494	0.029080

Analysis statistics descriptive is also done to each country as shown on Tables 4,5 and 6 and could explained results statistics if seen from variable risk show that the average *credit risk for 2016-2020 at banks in Indonesia is* 0.018703 , in Malaysia it is 0.004674, and in Thailand it is 0.014473, so that on average the *credit risk value* in Malaysia is the lowest and the *credit risk* the highest. high is in Indonesia . The average *liquidity risk for 2016-2020 at banks in Indonesia is* 0.843617 , in Malaysia is 0.860872, and in Thailand is 0.974819, so that on average, *liquidity risk* in Indonesia is the lowest and in Thailand the highest. The average *solvability risk in 2016-2020 for banks in Indonesia is* 0.292238 , in

Malaysia is 0.196148, and in Thailand is 0.247228, so that the average *solvency risk value* in Malaysia is the lowest and the *solvency risk value* in Indonesia is the highest .

Table 6. Thai Sample Descriptive Statistical Analysis Results

Variable	N	mean	Minimum	Maximum	Std. Dev.
RCsize	45	5.377778	3,000000	10,000000	2.048158
RCmeet	45	11.44444	4000000	29,00000	4.092985
AUD size	45	3.444444	3,000000	5.000000	0.545875
BDSize	45	13.33333	9.000000	19.00000	2.771609
IND	45	0.425711	0.307690	0.642860	0.093841
INST_own	45	0.561424	0.123600	0.970100	0.239720
CAR	45	0.185840	0.139040	0.297500	0.027929
AGr	45	0.080560	-0.070150	1.083843	0.165146
Inc_Div	45	0.203494	0.067613	0.302506	0.063031
DEP	45	0.728451	0.505965	0.822708	0.079662
SOB	45	0.126017	0.000000	0.594900	0.193310
CR	45	0.014473	0.003578	0.029698	0.006021
LR	45	0.974819	0.781594	1.661173	0.175304
Z-RISK	45	0.247228	0.153040	0.419744	0.055363

b. Multiple Linear Regression Analysis

In this study, panel data multiple regression test was used as data analysis. In research using panel data, three models can be used, namely the *common effect model* , *fixed effect model* and *random effect model* , and the appropriate model is selected through three stages of testing, namely the Chow test, Hausman test and *Lagrang e Multiplier* . There are three regression models in this study, where the test results of the Model 1, Model 2, and Model 3 regression models are all *fixed-effect models* . Multiple regression test is designed to test whether RCsize, RCmeet, AUDsize, BDsize, IND, INST_own, and CAR have an effect on CR, LR, and Z-RISK, and the control variables are AGr, Inc_Div, DEP, and SOB. The equation model generated by multiple regression test is as follows:

Model 1

CR = -0.026080 -0.000375**RCsize** + 0.0000498**RCmeet** 0.000406**AUDsize** + 0.000939**BDsize** -0.005510**IND** + 0.010073**INST_own** + 0.001982**CAR** -0.013276**AGR** + 0.060766**INC_DIV** + 0.033301**DEP** + 0.024618**SOB**

Model 2

LR = 2.186428 -0.002433**RCsize** +0.000760**RCmeet** -0.001255**AUDsize** + 0.009885**BDsize** -0.009750**IND** + 0.160702**INST_own** - 0.578513**CAR** -0.068302**AGr** -0.334707**INC_Div** -1.622338**DEP** - 0.798012**SOB**

Model 3

Z-RISK = 0.341519 + 0.006736**RCsize** + 0.001856**RCmeet** - 0.005668**AUDsize** + 0.004759**BDsize** -0.099723**IND** + 0.022430**INST_own** -0.229759**CAR** + 0.044539**AGr** + 0.172034**INC_Div** -0.194849**DEP** + 0.736081**SOB**

c. Hypothesis Test (Uji T)

The purpose of the t-test is to find out how much the independent variable contributes in explaining the dependent variable. Statistical hypothesis testing is done by looking at the probability value in the analysis results using Eviews 9. Hypothesis testing can also be done based on a significance level of 0.05 (α = 5%). If the probability value > 0.05 then the hypothesis is considered accepted or rejected according to the criteria, and the hypothesis is rejected (the regression coefficient is not significant). This means that several independent variables have no significant effect on the dependent variable. If the probability value is 0.05, then the hypothesis (significant regression coefficient) is accepted. This means that several independent variables have a significant effect on the dependent variable.

Table 7. 3 Models Regression T Test Results

Variable Independent	Model 1 (CR)		Model 2 (LR)		Model 3 (Z-RISK)	
	Coefficient	**Prob.**	**Coefficient**	**Prob.**	**Coefficient**	**Prob.**
Constant	-0.026080	-	2.186428	-	0.341519	-
RCsize	**-0.000375**	**0.0293 ***	-0.002433	0.4027	**0.006736**	**0.0002 ***
RCmeet	0.0000498	0.4906	0.000760	0.4802	**0.001856**	**0.0010***
AUDsize	-0.000406	0.4203	-0.001255	0.8188	-0.005668	0.1467
BDsize	**0.000939**	**0.0000***	**0.009885**	**0.0058***	0.004759	0.1063
IND	**-0.005510**	**0.0423***	-0.009750	0.7896	**-0.099723**	**0.0017***
INST_own	**0.010073**	**0.0369***	**0.160702**	**0.0026***	0.022430	0.3578
CAR	0.001982	0.8568	**-0.578513**	**0.0000***	**-0.229759**	**0.0004***
AGr	**-0.013276**	**0.0000***	**-0.068302**	**0.0067***	**0.044539**	**0.0030***
Inc_Div	**0.060766**	**0.0000***	**-0.334707**	**0.0000***	**0.172034**	**0.0027 ***
DEP	**0.033301**	**0.0001 ***	**-1.622338**	**0.0000 ***	**-0.194849**	**0.0010 ***
SOB	0.024618	0.2288	**-0.798012**	**0.0053 ***	**0.736081**	**0.0344 ***

Source: Output *e-views* 9

4.2 Discussion

a. H 1 Risk Committee Size Affects Bank Risk

Based on Table 7 , the results of the regression analysis show that the size of the Risk Committee has a negative and significant effect on *Credit Risk* with a probability value of 0.0293 < 0.05 (alpha 5%) and the coefficient value is -0.000375 . These results are in line with the results of a study by SP Lee *et al* . (2020) and Abid *et al* . (2021) . The larger the size of the risk committee means that the risk committee has a variety of capabilities and expertise from its members, and will produce strong decisions, which will improve the committee's ability to provide advice and input to the BoD to control management's risk-taking behavior. Size Committee The risk (RCsize) has score coefficient absolute smallest _ in model 1, so that could concluded that Size Committee Risk is variable that has least influence _ to *Credit Risk.*

The results of the regression analysis show that the size of the Risk Committee has a positive and significant effect on *Solvability Risk* with a probability value of 0.0002 <0.05

(alpha 5%) and the coefficient value is 0.006736 , but there is no effect on *Liquidity Risk* , this result is in line with the results of research by Akbar *et al* . (2017) . The risk committee tends to increase the effectiveness of the company because it plays an important supervisory role which reduces conflicts of interest between managers and *shareholders.* As a result, managers begin to act in the interests of *shareholders,* thereby taking more risk to increase the welfare of *shareholders.*

b. H 2 Frequency of Risk Committee Meetings Affects Bank Risk

Based on Table 7 , the results of the regression analysis show that the Frequency of Risk Committee Meetings has a positive and significant effect on *Solvability Risk* , with a probability value of 0.0010 . <0.05 (alpha 5%) and the coefficient value of 0.001856 , these results are in line with the results of research by Akbar *et al* . (2017) , and has no significant effect on *Credit Risk* and *Liquidity Risk* . According to Hussain *et al* . (2018) *Board of Directors* meetings and their committees are a means by which members *of the board of directors* obtain company-specific information in carrying out their supervisory functions, so that the risk committee has many opportunities to discuss ideas on managerial monitoring, risk mitigation strategies, and risk management policies.

It is hoped that the more regular frequency of coordination between the risk committee and management will gain a broader view of risk management, so that management will not be too careful in making risky decisions so that the business does not run, but also will not be too free to take risky decisions that have the potential to harm bank. According to Akbar *et al* . (2017) , the risk committee has members who are experts in their fields, from a strategic point of view the bank understands that there are more benefits to be gained from taking risk, therefore the bank will take the necessary risk (*necessary risk*) and will not take excessive risk (*excessive risk*). Frequency of Risk Committee Meetings (RC meet) have score coefficient absolute smallest _ in model 3, so that could concluded that Frequency of Risk Committee Meetings is variable that has least influence _ to *Solvency Risk.*

c. H 3 Audit Committee Affects Bank Risk

Based on Table 7 , the results of the regression analysis show that the Audit Committee has a negative but not significant effect on *Credit Risk* (probability value of 0.4203 > 0.05 (alpha 5%) and coefficient value of -0.000406) , *Liquidity Risk* (probability value of 0.8188 > 0.05 (alpha 5%) and coefficient value of -0.001255), and *Solvability Risk* (probability value of 0.1467 <0.05 (alpha 5%) and a coefficient value of -0.005668), this result is in line with the results of research by Elamer, Alhares, Ntim & Benyazid (2018) and not in accordance with the results of research by Aslam & Haron (2021) . These results indicate that a large audit committee size has not been able to reduce risk-taking behavior by banks, possibly this is due to a lack of coordination between the audit committee and the risk committee, which should have played a role in reducing risk-taking behavior, this can be seen in Table 14, where the size of the risk committee only has a significant negative effect on *credit risk* , while the size of the risk committee and the frequency of risk committee meetings have a significant positive effect on *solvency risk* .

d. H 4 *Board of Director* Size Affects Bank Risk

Based on Table 7 , the results of the regression analysis show that the size of the *Board of Directors* has a positive and significant effect on *Credit Risk* (probability value of 0.0000 < 0.05 (alpha 5%) and coefficient value of 0.000939) and *Liquidity Risk* (probability value of 0.0058 < 0.05 (alpha 5%) and the coefficient value is 0.009885) , but

there is no effect on *Solvability Risk* . The results of this study are in line with the results of research by Abou-El-Sood (2019) which explains that the larger the size of the BoD, the less motivated to maintain management. This is due to the presence of " *free riders* " on the *board of directors* , thus causing an increase in *agency costs* . *Free-riders* on *the board of directors* only increase the size *of the board of directors* , their presence is considered unable to carry out supervisory duties properly, so as to suppress *agency problems, shareholders* as *principal* issue additional *agency costs* . Management will take risky decisions in the hope of getting a high *return* to cover *agency costs* .

The results of this study are also in accordance with the results of research by Aslam & Haron (2021) , which explains that the larger the size of the *board of directors* , the more expertise and knowledge they will have, so they will be bolder in taking risks to generate profits. Associated with the existence of *free-riders* , it is possible that *these free-riders* have a correlation with influential *stakeholders , so that their presence cannot be reduced, so that in order to increase their expertise and knowledge in the supervisory function, shareholders* increase the number of competent *directors , so that the size of the board of directors increases.* become bigger. With the expertise, knowledge, and experience of many *directors* , management will be more willing to take risks. Size *Board of Directors* (BDsize) has score coefficient absolute smallest _ in model 2, so that could concluded that Size *Board of Directors* is variable that has least influence _ to *Liquidity Risk* .

e. H 5 Independence *of the Board of Directors* Affects Bank Risk

Based on Table 7 , the results of the regression analysis show that the independence of the *Board of Directors* has a negative and significant effect on *Credit Risk* (probability value of 0.0423 <0.05 (alpha 5%) and coefficient value of -0.005510) and *Solvability Risk* (probability value of 0.0017). < 0.05 (alpha 5%) and the coefficient value is -0.099723, but has no effect on *Liquidity Risk* . These results are in accordance with the results of the study of SP Lee *et al* . (2020) , Hunjra *et al* . (2020) , and Aslam & Haron (2021) . The existence *of independent directors* can reduce risk-taking behavior because of their duty to monitor and discipline management and their presence which tends to be more conservative in risk-taking. In addition, they need to maintain their reputation as *independent directors* , and there is no obligation for them to submit to the views and opinions of management because *independent directors* have no conflict of interest compared to *non-independent directors* . *Independent directors* increase oversight by *the board of directors* to control management, because they tend to make low-risk decisions. This also shows that the *independent director* also plays a role in making wise decisions to reduce risk.

f. H 6 Institutional Ownership Affects Bank Risk

Based on Table 7, the results of the regression analysis show that institutional ownership has a positive and significant effect on *Credit Risk* (probability value of 0.0369 < 0.05 (alpha 5%) and coefficient value of 0.010073) and *Liquidity Risk* (probability value of 0.0026). < 0.05 (alpha 5%) and the coefficient value is 0.160702), but has no effect on *Solvability Risk.* These results are in line with the results of research by Ben Zeineb & Mensi (2018) , Otero *et al* . (2019) and Abid *et al* . (2021) . This is probably due to the concentrated ownership by institutions that are more concerned with profit so that more influential *voting power will encourage banks to be more aggressive and will put aside risk.* This result seems to have a correlation with the results of the hypothesis test of the *board of directors size variable* , where the institution as the majority shareholder will

place their chosen people in the bank structure, so that the BoD will encourage managers to take risky decisions that can improve shareholder welfare.

g. H 7 *Capital Adequacy Ratio* (CAR) Affects Bank Risk

Based on Table 7 , the results of the regression analysis show that the *Capital Adequacy Ratio* (CAR) has a negative and significant effect on *Liquidity Risk* (probability value of 0.0000 < 0.05 (alpha 5%) and coefficient value of -0.578513) and *Solvability Risk* (probability value of 0.0004 < 0.05 (alpha 5%) and the coefficient value is -0.229759), but has no effect on *Credit Risk* . These results are in line with the results of research by Maji & De (2015) and Ashraf, Arshad & Hu. (2016) , which explains that the higher the bank's capital is above the minimum CAR, the stronger the bank will be in absorbing risk and reducing the risk of bank failure , so the higher the CAR will reduce the risk faced by the bank. These results indicate that banks will always maintain CAR above the minimum CAR and in order to maintain the ability to absorb risk, banks will increase their capital in order to accommodate RWA.

h. H 8 Growth Assets, Income Diversification, Deposit Ratio, and Government Ownership affect Bank Risk

Based on Table 7 , the results of the regression analysis show that Asset Growth has a significant negative effect on *Credit Risk* (probability value of 0.0000 < 0.05 (alpha 5%) and the coefficient value is -0.013276), *Liquidity Risk* (probability value of 0.0067 <0.05 (alpha 5%) and the coefficient value is -0.068302), these results are in line with the results of research by SP Lee *et al* . (2020) . This shows that with high asset growth, the larger the size of the bank and the more access to portfolio diversification to reduce risk, there is no need for banks to invest in high-risk portfolios. Asset growth has a significant positive effect on *Solvability Risk* (probability value of 0.0030 <0.05 (alpha 5%) and a coefficient value of 0.044539), this is in line with the opinion of Ngoc Nguyen (2019) , the faster the growth of bank assets, the bank will invest in risky portfolios to increase profits. Regarding the opposite results in these 3 (three) risks, it is possible that the increase in deposits received by banks will tighten lending to maintain liquidity and credit quality, so that banks look for ways to invest in other non-traditional instruments that are more risky.

Based on Table 11-14, the results of the regression analysis show that Income Diversification has a significant positive effect on *Credit Risk* (probability value of 0.0000 < 0.05 (alpha 5%) and the coefficient value of 0.060766), these results are in line with the results of research by Hunjra *et al* . (2020) , which explains that the increase in *credit risk* even though banks have diversified their income is due to the high percentage of *defaults* as a result of the instability of the economic situation. Diversification Income (Inc_Div) have score coefficient absolute biggest _ in model 1, so that Diversification Income is variable that has biggest influence _ to *Credit Risk.*

Income Diversification has a significant positive effect on *Solvability Risk* (probability value of 0.0027 <0.05 (alpha 5%) and the coefficient value is 0.172034) , this is in line with the results of research by Alkhouri & Arouri (2018) , which explains that the benefits of diversifying bank income are reduced by bank exposure to the volatility of non-traditional activities. Income diversification has a significant negative effect on *Liquidity Risk* (probability value of 0.0000 < 0.05 (alpha 5%) and a coefficient value of -0.334707), this explains that, the bank's steps to provide a variety of services, are able to attract public interest to increase the placement of funds in banks, where these services increase non - interest income and can reduce liquidity risk due to increase in third party funds.

Based on Table 7 , the results of the regression analysis show that the *Deposit Ratio* has a significant negative effect on *Liquidty Risk* (probability value of 0.0000 < 0.05 (alpha 5%) and coefficient value of -1.622338) and *Solvability Risk* (probability value of 0.0010 <0.05 (alpha 5%) and the coefficient value is -0.194849). These results are in line with the results of research by Abid *et al* . (2021) . High *Deposit* Ratio show that bank have *charter* high *value* , where *charter value* is score now from expected future profits , so that _ will discipline banks in reducing risk-taking incentives. *Deposit Ratio* have score coefficient absolute biggest _ in model 2, so that could concluded that *Deposit Ratio* is variable that has biggest influence _ to *Liquidity Risk.*

Deposit Ratio has a significant positive effect on *Credit Risk* (probability value of 0.0001 < 0.05 (alpha 5%) and coefficient value of 0.033301), this seems to have a relationship with Income Diversification and *Liquidity Risk variables* , where banks have succeeded in increasing the placement of public funds in banks. , however, *Credit Risk* continued to increase as a result of the high *default percentage* as a result of the unstable economic situation.

Based on Table 7, the results of the regression analysis show that Government Ownership has a significant positive effect on *Solvability Risk* with a probability value of 0.0344. <0.05 (alpha 5%) and the coefficient value of 0.736081, these results are in line with the results of research by Abid *et al* . (2021) and Otero *et al* . (2019) . This result may be due to the fact that state banks are motivated by political incentives rather than economic motivation or are attracted to social projects that actually have the government's political interests. The government as the majority shareholder can influence managers in making decisions that have political interests and have *moral hazard* , resulting in increased bank risk. Ownership The government (SOB) has score coefficient absolute biggest _ in model 3, so that Ownership Government is variable that has biggest influence _ to *Solvency Risk.*

Ownership has a significant negative effect on *Liquidity Risk* with a probability value of 0.0053 < 0.05 (alpha 5%) and the coefficient value is -0.798012. These results indicate that government-owned banks are able to reduce *Liquidity Risk* , this is because government-owned banks are more protected by the government and have advantages and advantages from the government compared to private banks, in the form of ease of accessing funds both from the *money market* and from government agencies for cover the liquidity shortage (Nguyen, 2020) .

V. Conclusion

Based on the results of the research conducted, it can be concluded that the size of risk committee negative effect and significant to *credit risk* but also has a significant positive effect on *solvency risk.* The frequency of risk committee meetings has a positive and significant effect on *solvency risk.* The Audit Committee has no influence on *credit risk, liquidity risk* and *solvency risk.* The size *of the board of directors* has a significant positive effect on *credit risk* and *liquidity risk.* Independence *the board of directors* has a significant negative effect on *credit risk* and *solvency risk.* Ownership institutional takes effect positive and significant to *credit risk* and *liquidity risk. Capital Adequacy Ratio* takes effect positive and significant to *liquidity risk* and *solvency risk.*

Influence variable control to risk namely asset growth has a negative and significant effect on *credit risk* and *liquidity risk,* but has a positive and significant effect on *solvency risk* . Income diversification has a positive and significant effect on *credit risk* and *solvency risk* , but has a negative and significant effect on *liquidity risk* . That

diversification most influential income to *credit risk. Deposit ratio* has a negative and significant effect on *liquidity risk* and *solvency risk,* but has a positive and significant effect on *credit risk* that the most influential *deposit ratio* to *liquidity risk.* Government ownership has a negative and significant effect on *liquidity risk,* but also has a positive and significant effect on *solvency risk,* besides that ownership most influential government to *solvency risk.*

Implications

Size, risk committee meeting frequency, *board size of directors,* and institutional ownership are factors that can influence banks to take risks. Big risk taking must be balanced with a strong capital structure, therefore managerial must be able to maintain *Capital Adequacy Ratio* (CAR) and can ask for views from the risk committee and *independent director* to get input in the context of risk management. Management risk can also be done by management with notice big diversification income for control *credit risk* in the middle instability situation economy , improve *deposit ratio* with increase third party deposit third for control *liquidity risk* , as well as management at state bank will more susceptible to *solvency risk* , for that's for more selective in work project government without rule out benefit economical for banks.

For investors who have plans to invest in banks in Indonesia, Malaysia, and Thailand, they can consider how the average risk of banks in the country they are going to be can consider. When viewed in terms of *credit risk* and *solvency risk* , banks in Malaysia have the lowest average risk, while banks in Indonesia have the highest average risk. Bank *liquidity risk* in Indonesia has the lowest average risk, while banks in Thailand have the highest average risk.

Limitations and Suggestions

A number of limitations in study this This research only discusses the variables that affect risk in the form of the size of the risk committee, the frequency of meetings of the risk committee, the audit committee, the size of *the board of director* , independence *board of director* , institutional ownership, and *Capital Adequacy Ratio* (CAR). The limited observation period is only until 2020, in which year the global crisis of the Covid-19 pandemic occurred, so the possibility of significantly increasing risk variables , and the number of bank samples that were not balanced between Indonesia, Malaysia, and Thailand.

From the results of research and discussion as well as research limitations, suggestions that can be recommended for further research are to add independent variables so that it can be seen how these other variables influence bank risk-taking behavior, such as *gender diversity* and *financial expertise of independent director* as research by Abou-El-Sood (2019) and SP Lee *et al* . (2020) .

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