INDONESIAN BANKS RISK-TAKING: THE EFFECT OF LIQUIDITY RISK, CAPITAL BUFFER AND BOPO: Z-SCORE MEASURE APPROACH

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Written by :

DHANESWORO ARSOJOTEGTO YUWONOPUTRO

NIM. 12010115130120

FACULTY OF ECONOMICS AND BUSINESS
DIPONEGORO UNIVERSITY
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APROVAL OF UNDERGRADUATE THESIS

Author Name	:	Dhanesworo Arsojotegto Yuwonoputro
Student ID Number	:	12010115130120
Faculty/Department	:	Economics and Business/Management
Thesis Proposal Title	:	**INDONESIAN BANKS RISK-TAKING: THE EFFECT OF LIQUIDITY RISK, CAPITAL BUFFER AND BOPO: Z-SCORE MEASURE APPROACH**
Supervisor Lecture	:	Muhamad Syaichu, SE., MSi

Semarang, July 18, 2019

Supervisor Lecture,

(Muhamad Syaichu, SE., MSi)

NIP. 197103292000031001

APPROVAL OF EXAMINATION

Author Name	:	Dhanesworo Arsojotegto Yuwonoputro
Student ID Number	:	12010115130120
Faculty/Department	:	Economics and Business/Management
Thesis Proposal Title	:	**INDONESIAN BANKS RISK-TAKING: THE EFFECT OF LIQUIDITY RISK, CAPITAL BUFFER AND BOPO: Z-SCORE MEASURE APPROACH**

Has passed the exam on July 30, 2019

Examiners :

1. Muhamad Syaichu, SE., MSi (....)
2. Dr. Harjum Muharam, SE., ME (....)
3. Erman Denny Arfianto SE., MM (....)

STATEMENT OF ORIGINALITY

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(Dhanesworo A.Y)

NIM. 12010115130120

ABSTRACT

This study was aimed to examine the effect of liquidity risk, capital buffer and BOPO on banks risk-taking in Indonesia. This study used loan to deposit ratio, non-performing loan, liquidity gap, capital buffer and BOPO as independent variable and banks risk-taking proxied by Z-Score as dependent variable.

This study used secondary data retrieved from banking companies' annual reports listed on Indonesia Stock Exchange Index (IDX) in 2013-2017. Sample used in this study were 110 samples consist of 22 Indonesian banks taken using purposive sampling method. This study used multiple linear regression as analysis method.

The results of this study indicate that non-performing loan and BOPO have a positive and significant effect on banks risk-taking. Capital buffer has a negative and significant effect on bank risk-taking, while loan to deposit ratio has a positive and insignificant effect on banks risk-taking and liquidity gap has a negative and insignificant effect on banks risk-taking.

Keywords : Bank Risk-Taking, Liquidity Risk, Loan to Deposit Ratio, Non-Performing Loan, Liquidity Gap, Capital Buffer, BOPO, Z-Score

MOTTO

And it may be that you dislike a thing which is good for you, and that you like a thing which is bad for you. Allah knows but you do not know.

(Q.S Al-Baqarah : 216)

Success is not final, failure is not fatal: it is the courage to continue that counts.

(Winston Churchill)

I hereby present and dedicate this undergraduate thesis for:

Mr. Teguh Yuwono & Mrs Tatik Indarti

As my beloved parents

PREFACE

Alhamdulillah, all praise and gratitude the author prays to Allah S.W.T for all His grace and blessing that has been given to the author so that the author could finish writing thesis entitled **"INDONESIAN BANKS RISK-TAKING: EFFECT OF LIQUIDITY RISK, CAPITAL BUFFER AND BOPO: Z-SCORE MEASURE APPROACH"**. This thesis is proposed as one of the conditions to complete the Undergraduate Program (S1) at Management Department, Faculty of Economics and Business, Diponegoro University.

The author realizes that during the process and until the completion of this thesis can be completed properly thanks to guidance, prayer, assistance, advice, and support, from various parties. Therefore, the author would like to express his deepest gratitude to:

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The author is realizes that this undergraduate thesis is not perfect. Therefore, criticism, suggestions, and constructive advices are greatly expected and welcomed by the author for this thesis to be better. Hopefully, this undergraduate thesis can be useful and beneficial to various party and especially those who need it

Semarang , 18 July 2019

Yours Truly,

Dhanesworo Arsojotegto Yuwonoputro

NIM. 12010115130120

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDIX

CHAPTER I

INTRODUCTION

1.1 Research Background

Banking sector has a strategic position as a prominent financial institution, such as supporting operations of the payment system, implementing monetary policy and achieving financial system stability, therefore, banking sector has a great role in country's economy that is to support the economy by lending money to other parties that can make a better use of it. In other words bank indirectly helped generate new business that also developed the country. However, bank is also one form of business that also profit oriented.

Bank as a business is oriented to gain profits, which can be obtained from various ways including interest, transaction fees and financial advice. But normally, the most prominent method is by charging interest on funds/capital it lends out to customers (credit). Bank obtains profit from the difference between the level of interest the bank pays for deposits or other source of funds and the level of interest that bank charges in its lending activity. When banks lend money to customers mostly it is in form of credit, in this case banks have a system to define the creditworthiness of customer so banks can decide whether to lend them the money (credit) or not.

Credit that is given to customer can gives profit to banks due to the interest it puts on credit, however if the customer can’t give back the credit then the cash flow within the bank would be disturbed and raise the possibility of bank going bankrupt thus having net performing loans and this is one crucial risk that is vulnerable to bank. So this risk would exist as long as bank gave more credit to customer, hence there are risks in every form of banks activity. If the banks cannot manage their risk well then banks can possibly fail and eventually go bankrupt which also could affect the economic stability of a country.

There are various types of risk that banks face, but these are several main risks that faced by banks (Bank Indonesia Regulation No. 5/8/PBI/2003) such as credit risk, liquidity risk, market risk, operational risk, reputational risk, legal risk, strategic risk and compliance risk. Banks have shown some tendencies in facing various risks that could happen in banking industry, these tendencies are called risk-taking. Banks risk-taking refers to which extent bank is willing to take risks, whether it is more risk-taking or less risk-taking in determining managerial decisions. A high risk-taking of a bank can lead to the bank being insolvent. Insolvency is a condition when an organization can no longer meet its financial obligations to its lenders as debts become due and ultimately could result into a bank failure. Therefore bank’s probability of insolvency is highly related with bank risk, which is if the bank with high potential risk will tend to take more risk and the bank with low potential risk will tend to take lower risk.

Risk-taking happens during periods of low interest in which banks think, overconfident, that the climate will remain at favorable rates, and can also lead to excessive tendency to take risk. Consequently, Banks could not adapt enough to their expectations regarding the level of interest rates and hence, banks would likely give too many loans to less creditworthy borrowers. Risk-taking is fundamentally linked to the relationship between credit and currency. This connection refers to role of the bank as the creator of currency in connection with credit transactions and the respective roles of savings and monetary financing. Bank risk taking is considered as beneficial and lucrative to growth, but it can also be dangerous since it bears instability (Diatkine, 2002). Understanding bank risk taking behavior is important for various reasons. The excessive risk-taking by banks is often associated with bank failures that lead to bankruptcy and costly undermine the government.

Down to date, the study of risk-taking has been a widely discussed topic in recent years (Laeven & Levine, 2009), (Bhattacharyya & Purnanandam, 2010), (Naqvi & Acharya, 2010). A large literature has sought to identify the determinants of risk-taking in banks : regulation, Laeven & Levine (2009) resulting that the impact of bank regulations on bank risk depends critically on each bank's ownership structure. The effect of the same regulation on a bank's risk taking can be positive or negative depending on the bank's ownership structure. Black & Hazelwood (2012) resulting that with banks regulation called TARP (Troubled Asset Relief Program) the risk of loan originations increased at large TARP banks but decreased at small TARP banks. Duchin & Sosyura (2014) resulting that there is an increase in risk taking incentives as a result of government protection (significant and positive).

Literature of bank risk-taking with determinant of banking capital has been conducted by several researches. Bouheni & Rachdi (2015) resulting that interaction between capitalization and risk level is negative, which means that an increase in capital is followed by a decrease in banking risk-taking. Tracey, Schnittker, & Sowerbutts (2017) with result of that a negative bank capital shock causes an increase in risk-taking in the U.K. mortgage market. Maji & Hazarika (2018) find that absolute level of regulatory capital and bank risk are positively associated, although the influence of capital on risk is not statistically significant.

Literature of bank risk-taking with determinant of competition has been conducted by several researches. Boyd & Nicoló (2016) have stated that competition in the loan market can lead to lower interest rates and hence reduce bank risk-taking. Sarkar & Sensarma (2016) having result that infusing more competition in the banking sector restores the risks in banks' asset books. Maji & Hazarika (2018) find that competition has a significant and negative effect on bank risk.

Literature of bank risk-taking with determinant of the size of the bank has been conducted. Barrell et al. (2010) finds that the relationship between size and risk taking is consistent with the existence of implicit too big to fail insurance which induces moral hazard. Rahman et al. (2015) finds that bank size has a significant positive relationship with bank risk-taking which implies that larger banks take higher levels of risk.

Apart from other risks and determinants, liquidity risk has long been acknowledged as a significant threat to financial institutions management and financial system stability (Khan et al. 2016). Normally banks are suggested to maintain their liquidity buffer to manage the liquidity risk and also to ensure towards small liquidity shocks. Hong et al. (2014) showed that systematic liquidity risk was an important contributor to bank failures occurring over 2009–2010 in the aftermath of the 2007–2008 Global Financial Crisis (GFC). They revealed that liquidity risk could lead to bank failures through systematic and idiosyncratic channels. Maintaining and managing liquidity risk was proven important for a company especially banks in order to maintain their business activities.

Liquidity risk refers to the risk that comes from the incapability of banks to fulfil their obligations when the payments come due. Liquidity risk contributes great part when it comes into banking industries, thus having short on capitals/funds needed really affect banks in running their activities. Liquidity risk is a determining risk factor which threatens overall financial system stability through many sources (Drehmann & Nikolaou, 2013).

Liquidity risk can come from both sides of a bank's balance sheet, the liability and the asset side. Both sides of the balance sheet can be managed by banks to maintain liquidity. In terms of liabilities, there is uncertainty in the amount of deposit withdrawals. Large-scale deposit withdrawals can create a liquidity trap for banks (Jeanne & Svensson, 2007). While in terms of assets, liquidity risk can arise due to congestion or delay in cash flow from debtors (Diamond & Rajan, 2001). Besides these two aspects, bank also has to maintain the gap between assets and liabilities, because liquidity risk can arise due to the size and maturity of assets and liabilities (Plochan, 2007). The gap between assets and liabilities can be called a liquidity gap.

The financial ratio related to liquidity is the Loan to Deposit Ratio (LDR). The LDR is used to measure bank's ability to pay its obligations to depositors and can fulfil the proposed credit request. The higher the Loan to Deposit Ratio (LDR), the higher the bank’s tendency to avoid taking risk (assuming the bank is able to channel credit effectively). However, the lower the Loan to Deposit Ratio (LDR) indicates that banks are less effective in lending so that they can inflict the banks to take more risk. Dahir et al. (2017) in their research states that LDR has a significant and negative effect to bank risk-taking. On the other hand, Köhler (2015) states that LDR has a positive effect on bank risk-taking, indicating that bank with high loan growth rates is more risky.

Banks can experience illiquid conditions, when cash outflows (deposit withdrawals by customers, credit grants, etc.) far outweigh cash inflows. However banks often experience problem in loans (credit) because the customer do not pay for part or all of the credit that has been disbursed by the bank. Loan that is in default or close to being in default is called as Non-Performing Loans (NPL). This resulted in the bank's liquidity being threatened, because there were no incoming funds which became a source of bank liquidity, which would affect the bank's tendency to take more risk. Lestari (2018) in her research states that NPL has a negative effect to bank risk-taking. On the contrary, Zhang et al. (2016) states that NPL has a positive effect on bank risk-taking, suggesting that increase in NPLs raises riskier lending.

Another cause of liquidity risk is the maturity mismatch between assets and liabilities (Arif & Anees, 2012). Mismatches that occur will result in arising liquidity gaps. The liquidity gap provides an overview of future funding needs, by comparing the composition of assets and liabilities of the bank from time to time. In this way, banks can find out whether there is a maturity mismatch that can cause banks to run into liquidity difficulties.

Banks core activity was about the allocation of collected funds, thus liquidity of bank or how much capital/fund a bank was required to hold would be a key driver in banks profitability, thus inflicting the bank’s manager in making decisions regarding risk-taking. Regulations regarding bank risk and capital adequacy are regulated by an international committee called the Basel Committee. The Basel Committee has issued three policies, namely Basel I, Basel II, and finally Basel III. One of Basel III policies is the increase of buffers (capital buffer) to anticipate losses in the crisis period (capital conservation buffer), overcome losses in the event of excessive bank credit growth that has the potential to disrupt financial system stability (countercylical buffer), and additional capital to anticipate risks with systemic impacts (capital surcharge).

Capital buffer is measured by the difference between the bank's capital adequacy ratio (CAR) of a bank and the minimum CAR set by the Basel Committee, which is 8%. Capital buffer will be eroded first if there is a shock from uncertain risk in the future, thus functioning as the first line of defence. Khan et al. (2016) and Lindquist (2004) both in their researches state that capital buffer has negative effect to bank risk-taking. While Liljeblom et al. (2016) states that capital buffer has a positive effect on bank risk-taking.

Inefficiency is another factor that presumably can affect bank risk taking since the inefficiency (BOPO) can lead banks in taking more risky decisions. Berger & De Young (1997) and Kwan & Eisenbeis (1997) suggest that efficiency is a key factor influencing bank behaviour and should be included in multivariate analysis of the determinants of banks risk. Kwan & Eisenbeis (1997) find a negative relation between bank cost efficiency and risk taking, supporting the view that poorly performing banks are more aggressive in risk taking than high performing banks. But Altunbas et al. (2007) find that banks with inefficient cost are sounder as they hold more capital and are less risky than efficient banks.

This research was written by describing bank risk taking behaviour related to bank's probability of insolvency with Z-Score Index as a proxy. The greater the value of the Z-Score Index indicates that the bank is far from the risk or the bank is more stable. The Z-score model used in this research is the modified Z-score Index that is specifically directed to service firms such as banking.

Based on pervious described background, there could be known that there are some differences in research of related study or research gap. Research gap was found based on the previous research results. Based on the background that already explained, previous related research has found some different results such as follows;

Table 1.1

Research Gap

The Effect of Liquidity Risk, Capital Buffer and BOPO to Bank Risk-Taking

<table>
<tr><th colspan="2">Variable</th><th rowspan="2">Author</th><th rowspan="2">Result</th></tr>
<tr><th>Independent</th><th>Dependent</th></tr>
<tr><td rowspan="2">Loan to Deposit Ratio (LDR)</td><td rowspan="2">Risk-Taking</td><td>Dahir et al. (2017)</td><td>Liquidity Risk (LDR) has a significant and negative effect on the bank risk-taking</td></tr>
<tr><td>Köhler (2015); Khoury (2018)</td><td>Liquidity Risk (LDR) has a significant and positive effect on bank risk-taking</td></tr>
<tr><td>Non-Performing Loans (NPL)</td><td>Risk-Taking</td><td>Lestari (2018)</td><td>Non-performing Loans has a significant and negative effect on Bank Risk-Taking</td></tr>
</table>

Variable		Author	Result
Independent	Dependent		
		Zhang et al. (2016)	*Non-performing Loans* has a significant and positive effect on Bank Risk-Taking, suggesting that increase in NPL raises riskier lending
Liquidity Gap (NLG)	Risk-Taking*	Arif & Anees, (2012)	Liquidity gap has a significant and negative effect on bank profitability
		Ferrero et al. (2018)	Liquidity gap (maturity mismatch) between assets and liabilities plays an important role (positive effect) in the relationship between the slope of the yield curve and banks risk-taking.
		**Research related to the relationship between*	

Variable		Author	Result
Independent	Dependent		
		liquidity gap and risk-taking hasn't been much conducted	
Capital Buffer (BUFFER)	Risk-Taking	Khan et al. (2016); Lindquist (2004)	*Capital Buffer* has a significant and negative effect to Bank Risk-Taking
		Liljeblom et al. (2016); Zheng et al. (2012)	*Capital Buffer* has a significant and positive effect on Bank Risk-Taking
Inefficiency (BOPO)	Risk-Taking	Altunbas et al. (2007)	*Inefficiency* has a significant and negative effect on Bank Risk-Taking
		Khoury (2018); Isshaq et al. (2015)	*Inefficiency* has a significant and positive effect on Bank Risk-Taking

Based on the previous explanation, there are still various and different results regarding banks risk-taking and further research is needed. Therefore the author proposed this research titled: "Indonesian Banks Risk-Taking: The Effect of

Liquidity Risk, Capital Buffer and BOPO: Z-Score Measure Approach". The author expect this research to be a contribution to the literature in related studies, especially with the z-score method used in this study can provide clearer and more accurate results on the related literature.

1.2 Problem Statement

Based on previous background, the problem statement in this study is the evidence of differences in research results (Research Gap) conducted by researchers related to respectively, liquidity risk, capital buffer and BOPO on bank risk-taking.

Based on problem statement that has been stated before, the research questions proposed in this research are as follows:

1. Does *Loan to Deposit Ratio* (LDR) have an effect to Bank Risk-Taking?
2. Does *Non-Performing Loans* (NPL) have an effect to Bank Risk-Taking?
3. Does Liquidity Gap have an effect to Bank Risk-Raking?
4. Does Capital Buffer have an effect to Bank Risk-Taking?
5. Does BOPO have an effect to Bank Risk-Taking?

1.3 Research Purpose

This research aims to examine the relationship between liquidity risk, capital buffer and efficiency on Bank Risk-Taking. Based on the background and the formulation of the problems that have been stated, it can be determined the purpose of this study are as follows:

1. To analyse whether *Loan to Deposit Ratio* (LDR) affects Bank Risk-Taking.
2. To analyse whether *Non-Performing Loans* (NPL) affects Bank Risk-Taking.
3. To analyse whether Liquidity Gap affects Bank Risk-Taking.
4. To analyse whether Capital Buffer affects Bank Risk-Taking.
5. To analyse whether BOPO affects Bank Risk-Taking.

1.4 Objective of the Research

1.4.1 Objective for Academic

The results of this research are expected to be a source of reference for further research and increasing the reader's insight into liquidity risk on bank risk-taking, especially for bank managers.

1.4.2 Objective for Practical

The results of this study are expected to explain the understanding of the relationship between liquidity risk and bank risk-taking, so that this study can be a reference and a contribution towards risk management, especially on bank liquidity risk.

1.5 Systematics Writings

This research is arranged on five chapters consist of Introduction, Literature Review, Research Methodology, Result and Discussion, and Closing,

CHAPTER I: INTRODUCTION

This chapter will explain the background that contains the basis for selecting research theme, the formulation of the research problem, the purpose and benefits and the systematic writing.

CHAPTER II: LITERATURE REVIEW

This chapter will discuss the concept and theoretical foundation that support this research regarding the relationship between variables, previous studies as a basis of understand and reasons, hypothesis to be studied and theoretical description

CHAPTER III: RESEARCH METHODOLOGY

This chapter will demonstrate the method used in this research, consisting variables and their operational definitions, research population and sample, types and sources of data, data collection methods and data analysis method.

CHAPTER IV: RESULT AND DISCUSSION

This chapter will explain the description of the object of research, data analysis, and discussion of research results that have been done.

CHAPTER V: CONCLUSION

This chapter will define the results that can be concluded from the research that has been done, the limitations of the research and suggestions for the results of the research and also for further research.