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## Factors Affecting Commercial Bank's Net Interest Margin: Study Case in Indonesia, Thailand, and Philippines.

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### Abstract

The aim of this research is to investigate determinants factors of Commercial Banks's net interest margin in Indonesia, Thailand, and Philippines. This study uses quarterly panel data from 2010 until 2020. The OLS Equation Model was used to analyze the macroeconomic factors and banks' specific factors towards Net Interest Margin (NIM). The result showed that inflation rate as the only one factor from Macroeconomic factors and Overheard cost is one from Bank Specific factors which significantly affect Net Interest Margin in all of these countries. Other than that, valuable findings from this research show that determinants factors which have significant impact from bank specific characteristics in each country are different. In Indonesia, Higher Size of operations, Risk Aversion and Income Diversification are determinants factor that can lower net interest margin. Bank in Indonesia have to manage their credit risk well, because this factor can potentially lead to higher NIM. Commercial Banks in Thailand and Philippines show opposite result. Larger size of operations and higher risk aversion will lead to higher NIM. Market concentration plays a critical role to minimize NIM in Philippines. So, regulators should maintain this condition. Because higher competition potentially led to higher NIM in Philippines's bank.

**Keywords** : Commercial banks, Financial institutions and Services

**JEL Classification** : E43, E44, O16

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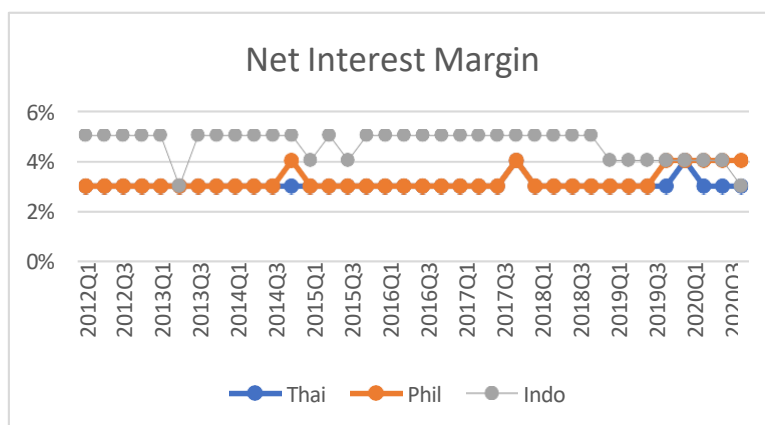
## 1. Introduction

Financial intermediation is channeling funds from unit in surplus to units in deficits. Financial intermediation such as Banks, plays critical role in the growth of economic in a country. Manlagnit (2015), said that overall economic success of a country is positively related to their financial sector development. Major revenue of Bank comes from interest rate spread (differences between rate and deposit rate). But those interest rate spread actually can be a major impact toward economic growth in their country. Interest rate spread is a common measure of how costly financial intermediation for a society. Countries with lower interest rate spread are believed to experience higher economic growth because they can manage their efficiency well. Higher interest rate spread would be a

sign that financial institutions on those country are inefficient. An inefficient bank would have more problem loans and higher operating costs (Calice & Zhou, 2018).

Higher spread on NIM will lead to higher default rate, no wonder higher spread has a negative significant impact toward economic growth and a sign of inefficiency (Islam & Nishiyama, 2016). High interest rate spread also reduces the incentive to invest and slows down not only industrial growth but also economic growth (Antwi, Banerjee, & Antwi, 2017). Previous research by Agapova and McNulty (2016) argued that low spreads on NIM are a good indicator that the financial system has been more efficient. So, that those spread can be a particularly good measure of efficiency. In the condition where financial system is not well developed, inefficient, bank's lending rate could be high and low deposit rate. In this case, the market has to accept rates by those uncompetitive and inefficient banking system. Most developing countries heavily rely on interest rate spread to get profit because developing countries still experience low familiarity of capital market as their source of external financing.

This study chooses Indonesia, Philippines, and Thailand because those three countries have been adopted Basel II since 2010 and also those three countries are classified as developing countries in ASEAN. So, we think that these three countries have the same characteristics. Basel II which is the revised and extended version of Basel I is based on three main pillars: minimum capital requirements, supervisory review and market discipline. Basel II is expected to produce significant benefits in helping banks to manage risk, stability and make a better risk assessment (Manlagnit, 2015).



**Figure 1.a.** Net Interest Margin Spread in 2012 until 2020 Source: Data Processing (2021)

Understanding net interest margin spread is important to inform policy makers to improve bank's efficiency. The study focuses on NIM Commercial Banks because NIM is one of the crucial no only for banking but also for economic growth in one particular country. A higher spread can also lower economic growth. Moreover, Ho & Saunders (1981) said that there is a strong positive relationship between higher spread and higher default rate. High interest rate spread attracts a lot of debate in both public, policy forum and also academicians. So, the purpose of this study is to investigate factors affecting interest rate spread among these three countries. This study will not only focus on macroeconomic factors because it will be difficult to improve due to a broader scope. But this study will consider both macroeconomics factors and bank specific factors. This study is expected to help banks to minimize interest rate spread by identifying possible factors that can contribute to interest rate spread.

## 2. Hypotheses Development

Interest rate volatility can cause several problems for financial intermediaries. Because interest-sensitive liabilities tend to grow faster than interest sensitive assets. So, it would be difficult for banks to "immunize" the effect of interest rate volatility on Net Interest Margin. The cost occurs due to the supply for deposit (inflows) tend to arrive at different time from loan

demand. So, bank will demand positive interest rate spread as the price for this uncertainty. Net Interest Margin determinant model can be derived from (Ho & Saunders, 1981) which said that pure spread is the differences between lending rate (iL) and Deposit Rate (iD). If uncertainty exists, banks set interest rate above interest rate of money market (iM).

$$iD = iM - a \text{ and } iL = iM + b$$

where a and b are margins for the provision of immediacy services. a represents fee for deposit and b represent fee for loan. For risk averse, bank pure spread can be determined as follow:

$$S = iL - iD = a + b$$

Net Interest Margin spread (S) in the Banking industry are influenced by macro and micro factors such as market power, operational cost, risk aversion, interest rate volatility, credit risk, and quality of management or efficiency. (Fungáčová & Poghosyan, 2011) found that the impact of common factors that influence NIM spread could differ due to the cross ownership of banks. But the influence of operational cost and risk aversion are homogeneous.

Bank's interest rate spread is calculated by the difference between lending rate and deposit rate. Interest rate spread or Net Interest Margin (NIM) is believed as a determinant of how costly banks from society's perspective. Understanding factors that have impact on net interest margin is important for Banks and Regulators to improve bank's efficiency. Starting point for analyzing determinant of net interest margin in bank is based on (Ho & Saunders, 1981). Their model depends on four basic components such as:

1. Degree of bank risk aversion (R)

Even in the highly competitive market, as long as bank's management is a risk averse type, there will always be a positive bank interest margin to face transaction uncertainty.

2. Degree of competition in banking industry ( $\alpha/\beta$ )

If bank faces inelastic demand and supply function in market in which they operates, they can have a monopoly power by charging a greater net interest margin. At the other hand, if they operate in highly competitive market or (low  $\alpha/\beta$ ), their ability to charge higher net interest margin will be limited.

3. Average size of bank Transactions (Q)

If deposit inflow is greater than loan demand, bank has to react by adjusting their fees. Fee for deposit has to be increased to discourage additional deposits and fee for loan has to be decreased to encourage loan demand and vice versa.

4. Interest rate risk ( $\sigma^2$ )

Bank is vulnerable of interest rate volatility. It could happen when loan and deposit mature at the different period of time. Suppose the deposit is made with some long-term interest rate. If these deposits mature at different point in time as long as a new loan demand, that bank will faces a reinvestment risk due to a short rate fall.

So, the function of interest rate spread (s) is

$$S = a + b = (\alpha/\beta) + R (\sigma^2) Q$$

But, in order to estimate pure interest margin, certain market and institutional imperfection has to be considered, such as implicit interest payments (IR), opportunity cost of holding required reserves (OR), and default risk on loans or Default Premium (DP). So, with those additional three imperfection, the function of bank net interest margin is as follow:

$$NIM_{i,t} = f(s(.), IR, OR, DP, U)$$

Where S(.) is a function derived from equation (i) that defines factors affecting pure spread. In addition, even groups of banks in particular country have heterogeneous credit inventories, but as long as they share similar attitude towards risk (R), market structure ( $\alpha/\beta$ ), size of transaction (Q)

and interest rate risk ( $\sigma^2$ ), their pure net interest margin will be the same. However, this model has been subsequently improved and extended by adding more factors explaining net interest margin in many previous research after Ho & Saunders (1981).

This study replicates empirical model from Calice & Zhou (2018) to investigate the determinant factors affecting interest rate spread in Indonesia, Malaysia, Thailand, Philippines and Vietnam. Previous research by Calice & Zhou (2018) analyzed the composition of Bank's Net Interest Margin in 160 countries around the world from 2005 until 2014. Previous study said that net interest margin was significantly higher in lower income countries. Besides that, the higher margin was followed by high overhead cost, higher credit risk and higher bank profitability due to the low competition from those countries. Previous study used many countries around the world with very wide differences and characteristics. So, our study want to narrow the scope of the country. We only used three countries where three of them are developing countries and in the same region of Asia pacific countries who still implement Basel II. Result from this study is expected to highlight factors that most affect bank's interest rate spread in each country. Based on Calice & Zhou (2018) determinant factors affecting interest rate spread are from two categories, Bank Level Variables and Macroeconomic Factors. Each category factors are as follow:

Bank Level Variables (B), consist of:

1. Size of Operations

The larger the bank's scope of operation, the larger the potential loss of loan. So, higher interest rate spread is required. But at the economies of scale's perspective, larger the bank's size, fixed cost associated with transaction are spread over a large base, enabling bank to charge lower interest rate spread. So, expected sign between Size and NIM can be negative and positive (Calice & Zhou, 2018).

2. Risk Aversion

As equity is more costly than other sources of external funding, a higher portion of equity in a bank's capital structure can be a sign of a bank's higher risk aversion. Higher risk aversion of banks will lead to higher interest rate spread. So, the expected sign of relation between risk aversion and net interest margin is positive (Calice & Zhou, 2018).

3. Opportunity Cost of Bank Reserves

Regulation of minimum required reserves or cash balance from banks that has to be deposited in the Central bank will vary across countries. Required reserves on central bank could be an opportunity cost for commercial banks. Those opportunity cost arises from interest rate that bank can probably earn by investing that amount money in required reserves to other investment product. Positive sign is expected between opportunity cost and net interest margin because banks must compensate those missing interest return by charging higher interest margin (Calice & Zhou, 2018) (Kwakye, 2010). Chirwa et al., (2004), also showed that reserve requirement was one of the major sources of higher interest rate spread on Malawi's banking system.

4. Overhead Cost

Overhead cost can capture cross-bank differences in their organization and operational scope. Large banks who have large numbers of employees will bear higher administrative and operational costs. So, they tend to pass this kind of cost to their customers by charging a higher interest rate margin. Higher overhead costs also indicate the inefficiency of a bank. So, positive sign is expected between overhead cost and net interest margin (Calice & Zhou, 2018).

5. Credit Risk

A higher probability of default from a customer will force the bank to charge a higher interest rate spread to compensate for this risk. Higher credit risk will lead to higher interest margins. So, positive signs are expected between credit risk and net interest margin (Calice & Zhou, 2018). Higher credit risk will lead to higher net interest margin because overhang of bad loans will cause banks to operate inefficiently in the future (Agapova & McNulty, 2016).

## 6. Income Diversification

The capability of a bank to be diversified in their scope will attract new customers in new segments. Diversified banks are able to offer a wider array of products and services and will benefit from fee-based income. By doing so, banks will get higher commission from cross selling and cross subsidization. So, the bank is expected to give lower interest rate margin. Negative sign is expected between income diversification and net interest margin (Calice & Zhou,2018).

### Country Level Macroeconomic and Structural Variables (S)

#### 1. Inflation

Macroeconomic instability will lead to uncertainty condition that need to be compensated by higher interest rate spread. Calice & Zhou (2018) measured macroeconomic instability by inflation rate proxied by Consumer Price Index (CPI). Chirwa et al., (2004) also proved that Inflation is one of the main drivers of wide interest rate spread in Malawis Banking System. Positive sign is expected between Inflation and Net Interest Margin.

#### 2. Interest Rate Risk

Based on the previous explanation, uncertainty could impact on market interest rates. High volatility of market interest rate will force banks to charge higher net interest rate spread, because banks are trying to hedge interest rate volatility by applying risk premium. Positive sign is expected between interest rate risk and Net Interest Margin (Calice & Zhou,2018).

#### 3. Competition

Based on theoretical model of Ho & Saunders (1981), highly competitive market structure (low concentration) will put a pressure on net interest margin. This study measures the degree of competition using the country level Learner Index. Higher competition in the Banking Industry in a particular country will lower the net interest margin and vice versa. So, a negative relationship is expected between competition and net interest margin.

#### 4. GDP

The more advance economic development in a particular country is, the more efficient their financial systems. A more efficient financial system will lead to a lower net interest margin. So, negative sign is expected between GDP and Net Interest Margin (Calice & Zhou,2018). Gelas (2006) also proved that GDP growth will lead to narrower interest rate spread in Latin America.

Based on previous research by Calice & Zhou (2018) toward East Asia Pacific countries, showed that variable size of operation, risk aversion, opportunity cost, income diversification and competition showed unfavorable condition because those factors were above average comparing to the world's average mean from those particular variables. Whereas, variable overhead cost, credit risk, inflation and interest risk showed a conducive situation because mean value from those variables are below world' average mean from those particular variables. But, previous research only focus on comparing many factors that may have an impact towards NIM. They didn't show factors affecting each country's NIM due to the time availability. So, this study wants to investigate many factors that have an impact on each country's NIM.

This study will not stop on determinants factors of NIM, but also, we will investigate further many factors that indirectly caused higher NIM by investigating probability factors that may have an impact on time deposit rate and loan rate simultaneously. Calice & Zhou (2018) suggest, in order to minimize NIM, banks have to reduce overhead cost and increase efficiency. But as far as we know there is no research that focuses on how to increase banks' efficiency. We will conduct further study to investigate determinant factors on loan rate and time deposit rate simultaneously.

## 3. Method, Data, and Analysis

We examine Net Interest Margin spread between Time Deposit Rate & Short-Term Rate in Public Listed Bank from three countries in South East Asia, such as Indonesia, Thailand, and Philippines. These three countries are in the same region and in the same classification as

developing countries whose adopted Basel II in banking regulation. Observation period was from 2012 until 2020. The amount of sample data from these three countries were 58 commercial banks in total. The detail for this were 35 commercial banks from Indonesia, 10 commercial banks from Thailand and 13 commercial banks from Philippines. All data were retrieved from S&P Capital IQ database and each country's central bank. We excluded Syariah banks and foreign banks to avoid bias because they have different regulations.

Based on previous research by Calice & Zhou (2018) towards 140 countries around the world, they broadly confirm that most of determinants in NIM is captured by bank level variables (Size of operations, Risk Aversion, Overhead, Opportunity cost, Credit Risk and Income Diversification, Where as, macroeconomic variables that have an impact are Inflation and competition. Based on those previous study, so our first Hypothesis are as follow:

H<sub>1a</sub> Bank's risk aversion has a positive impact towards net interest margin.

H<sub>1b</sub> Bank's Risk Aversion has a positive impact towards net interest margin.

H<sub>1c</sub> Opportunity Cost has a positive impact towards net interest margin.

H<sub>1d</sub> Overhead cost has a positive impact towards net interest margin.

H<sub>1e</sub> Credit Risk has a positive impact towards net interest margin.

H<sub>1d</sub> Income diversification has negative impact towards net interest margin.

$$NIM_{it} = \alpha + \beta_1 B_{i,j,t} + \gamma_1 S_{j,t} + \beta_2 g_{j,t} B_{i,j,t} + \gamma_2 g_{j,t} S_{j,t} + \theta g_{j,t} + \epsilon_{i,j,t} \quad (1)$$

**Table 1.** Definition of Variables from Equation 1

Variables	Symbols	Description (Quarterly Data)
Dependent Variables	NIM	Net Interest Margin
Independent Variables : Bank Level Variables (B)	Size of Operation	Log of Gross Loans
	Risk Aversion	Total Equity / Total Assets
	Opportunity Cost of Bank	Cash and Balance held at Central Bank / Total Assets
	Overhead	Operating Expenses / Total Assets
	Credit Risk	Loan Loss Reserves / Total Loans
	Income Diversification	Non-Interest Income / Total Revenue
Ind.Variables : Macroeconomic & Structural Variable	Inflation	Consumer Price Index
	Interest Rate Risk	Standard Deviation of Monthly Money Market Rate
	Competition	HHI
	GDP per Capita	Data from World bank

Source: Calice & Zhou (2018)

#### 4. Results

This study investigates factors affecting NIM in each country. So, data description from each variable will be presented separately in each country. Data description will help us to know commercial bank's characteristics among these three countries, followed by correlation test to check the relationship between each variable.

Table 2.a. describe some basic information about Commercial Banks in Indonesia. Indonesia has the highest risk aversion and overheard cost comparing with the two other countries. Highest risk aversion in Indonesia can also be supported by Indonesia's Regulation. Indonesia has the highest minimum CAR required among these three countries. In Indonesia, for banks in Buku 3 must have minimum CAR 10% until 11%. Whereas, Buku 4 banks must have minimum CAR 11% until 14% (Otoritas Jasa Keuangan, 2016). Whereas in Philippines is 10% and Thailand is 8.5%. Overheard cost in Indonesia is still the highest. This can be indicated that Commercial banks in Indonesia is less efficient. This result can be supported with the lowest score of Income Diversification of Indonesia's commercial banks comparing with Thailand and Philippines. Lower Income Diversification also represents that banks are less engaging in a cross-subsidization strategy. Another condition from Indonesia Banking Industry is they have the highest credit risk among the other two countries. Based on (Calice & Zhou, 2018), higher credit risk is also associated with higher margin because banks require higher profit to compensate those risk. So, by looking these descriptive statistics we can assume that higher margin in Indonesia is caused by lack of efficiency among commercial banks in Indonesia. Lack of efficiency here can be presented by higher overheard cost and unable to do cross subsidization strategy to increase income diversification. It means, banking industry in Indonesia is still highly depending on traditional activities (Lending & Borrowing activities).

**Table 2a.** Descriptive Statistics Indonesia

	Mean	Min	Max	Observations
NIM	0.047	0	0.1312	1296
GDP Growth	0.011	-0.154	0.122	1296
Inflation Rate	0.043	0.014	0.083	1296
Interest Rate Risk	0.096	0	0.656	1296
Risk Aversion	0.142	0.040	0.414	1279
Opportunity Cost of Bank Reserves	0.087	0.017	0.281	1230
Overheard Cost	0.008	0.001	0.022	1212
Credit Risk	0.12	0	41.62	1146
Income Diversification	0.207	0.032	0.414	1186
Size of Operations	7.502	5.256	10.738	1240
Herfindal Index	0.028	0.000	0.553	1278

Based on many previous research, less efficient banks should have higher margin and vice versa. But, there is an unique result from Thailand. On Table 2.c, we can see that Thailand has the highest net interest margin among Indonesia and Philippines. Although, overheard cost, risk aversion and credit risk are the lowest among the other two countries. So, it should be Commercial banks in Thailand are most efficient than other two countries.

**Table 2.b.** Descriptive Statistics Philippines

	Mean	Min	Max	Observation
NIM	0.035	0.004	0.074	213
GDP Growth	0.011	-0.157	0.166	213
Inflation Rate	0.029	0.005	0.067	213
Interest Rate Risk	0.108	0	0.471	213
Risk Aversion	0.127	0.093	0.190	213
Opportunity Cost of Bank Reserves	0.138	0.054	0.315	213
Overheard Cost	0.006	0.002	0.012	212
Credit Risk	0.043	0.006	0.785	213
Income Diversification	0.644	0.425	1.032	210
Size of Operations	8.504	7.332	9.345	213
Herfindal Index	0.080	0.007	0.252	211

This unique result can be explained by looking on table 4.c. Correlation between HHI score and size of operations is very high (0.937). Moreover, average bank's size in Thailand is also the highest. It can be concluded that Thailand Bank Industry tends to be monopolistic. It means largest

bank in Thailand is highly dominating banking industry in Thailand. (Claeys & Vander Venet, 2008) said that highlight concentrated banking system are less likely suffer from crisis. This argument can explain why Thailand's inflation rate is the lowest among the others.

**Table 2.c.** Descriptive Statistics Thailand

	Mean	Min	Max	Observation
NIM	0.050	0.038	0.066	348
GDP Growth	0.010	-0.154	0.122	348
Inflation Rate	0.008	-0.015	0.036	348
Interest Rate Risk	0.032	0	0.032	348
Risk Aversion	0.112	0.057	0.189	348
Opportunity Cost of Bank Reserves	0.065	0.002	0.180	348
Overheard Cost	0.005	0.002	0.009	344
Credit Risk	0.034	0.011	0.076	347
Income Diversification	0.627	0.369	6.325	347
Size of Operations	8.908	8.080	9.374	347
Herfindal Index	0.103	0.013	0.198	348

Table 3 explain regression result from equation 1 to investigate what factors that can affect Net Interest Margin in each country. Classical assumption test has been conducted to cure autocorrelation and heteroscedasticity. F test is used to choose the best fit model among OLS and FEM. The best model in these three regression model in each country is Fixed Effect Model.

**Table 3.** Regression Result

	Indonesia	Philippines	Thailand
Size of Operations	-0.004*** (0.002)	0.018*** (0.000)	0.017*** (0.002)
Risk Aversion	-0.029*** (0.030)	0.124*** (0.000)	0.052*** (0.003)
Opportunity Cost	0.022 (0.187)	0.000 (0.986)	-0.015** (0.014)
Overhead Cost	1.983*** (0.000)	0.573** (0.058)	1.887*** (0.000)
Credit Risk	0.000*** (0.001)	-0.000 (0.944)	-0.041** (0.014)
Income Diversification	-0.010*** (0.000)	0.003 (0.209)	-0.000 (0.371)
Inflation Rate	0.076*** (0.008)	-0.030 (0.041)	-0.124*** (0.000)
Interest Rate Risk	0.004 (0.177)	0.001 (0.393)	-0.003 (0.443)
HHI	0.005 (0.781)	-0.124** (0.010)	-0.053 (0.106)
GDP growth	0.011 (0.666)	0.001 (0.721)	-0.000 (0.878)
cons		-0.130*** (0.001)	-0.114** (0.010)
Number of Observation	1123	207	344
Number of Groups	36	12	10
Prob F Square	0.000	0.000	0.000
R Squared	0.1721	0.3926	0.4950



## 5. Discussion

In Indonesia's Commercial Banks, size of operation has negative significant impact towards net interest margin. Size of operation represents average lending transaction cost. In Indonesia, the bigger size of operation, the lower net interest margin. It represents the larger scope of lending operation, the larger the size of the bank. This result is supported by (Manlagnit, 2015) that size may positively influence efficiency level. High efficiency level can lead bank to lower net interest margin. Philippines and Thailand commercial's banks size of operations show positive significant impact towards Net Interest margin. It means, the bigger the scope of loan, they perceive the bigger risk they have to deal. So, net interest margin will be larger to cover that potential risk. This result aligns previous research by (Calice & Zhou, 2018a) towards majority countries in the world.

Risk aversion has negative significant impact towards net interest margin on Indonesia's Commercial banks. This represents the more risk averse the bank is, the lower net interest margin they can charge. This could happen because proxy for risk aversion is total equity / total asset. Larger equity the banks have, the more power they have. So, larger equity can lead to efficiency of bank, so they can charge lower interest margin. Other than that, Philippines and Thailand commercial's banks Risk Aversion and size of operations have positive significant impact toward Net Interest Margin. Because, risk averse bank tend to be reluctant to engage in riskier lending activities and larger bank tend to be more confident to charge higher loan rate and low deposit rate. This result also in line with previous research by (Antwi et al., 2017) towards banking sector in Ghana, the bigger the bank size, higher interest spread.

Opportunity cost only negatively significant on Thailand's commercial banks. Opportunity cost comes by bank central on each country's regulation. This is proxied by cash and balance that must be deposited central banks over total assets. Higher opportunity cost should lead to higher net interest margin. But this argument does not hold on Thailand's commercial banks. Higher opportunity cost that the central banks charge can be perceived that the larger that banks is. So, with the larger scope, bigger banks are capable to charge lower net interest margin.

Overhead cost has positive significant impact towards net interest margin in all of these three countries. This result is predictable due natural conditions about less efficient banks with higher cost will automatically charge higher margin. This result also supported by many previous researches such as (Calice & Zhou, 2018b) (Agapova & McNulty, 2016), (Islam & Nishiyama, 2016).

Indonesia's commercial banks show that Credit risk has positive significant impact toward net interest margin due to banks require higher profits to compensate risk. This result is a line with previous research by (Calice & Zhou, 2018b) towards banks around the world and (Tarus, Chekol, & Mutwol, 2012) towards commercial banks in Kenya. But different results from Thailand's commercial banks. Higher credit risk leads to lower net interest margin. This can happen by looking at the period of observation. There were many bad loan happened on 2020 due to global financial crisis caused by Covid 19 Pandemic. So, in order to help business to survive, Banking industry have to manage their interest rate spread by lowering loan rate during financial crisis.

Income Diversification has negative significant impact toward net interest margin in Indonesia's commercial banks. This result is predicted due to the banks who engage in more cross subsidization strategy (not only depending on traditional activity) will have lower interest rate spread. For example, banks able to lower loan rates to borrowers who also use other bank's service such as payment services or underwriting securities. This result also supported by many previous research such as (Calice & Zhou, 2018b), (Valverde & Fernandez, n.d.) and (Lepetit, Nys, Rous, & Tarazi, 2008). Inflation risk has positive significant impact toward net interest margin in both Indonesia's and Thailand's commercial banks. This result also supported by the argument that macroeconomic variables especially inflation play a critical role as a determinants factor of net interest margin. Higher inflation will lead to uncertainty condition and induce the need of banks to raise interest rate spread in order to compensate this condition. This result supported by previous research by (Antwi et al., 2017).

Higher market concentration leads to lower net interest margin on Philippines commercial banks. This result supported by based on Efficiency Hypothesis, an increase in efficiency makes banks set a more competitive price with a higher deposit rate. Based on the efficiency hypothesis, there is a positive relationship between market concentration and deposit interest rate (Gropp et al., 2014).

## **6. Conclusion, Limitations, and Suggestions**

### **Conclusion**

This research shows that every country has an unique characteristics even they come from the same region (South East Asia Country). Determinants factors in Indonesia that can minimize net interest margin such as Size of Operations, Risk Aversion and Income Diversification. So, in order to minimize interest rate spread without reducing bank's profitability, bank should able to do cross subsidization strategy and not depending only on traditional banking activity. Commercial banks in Indonesia also has to be familiar with capital market and investing in Bonds as a mean of investment. They also have to increase their off balance sheet activities. Other factors such as Higher size of operation and risk aversion, lead to lower net interest margin. This result indicate that larger and more credible banks are capable to minimize interest rate spread without reducing profit. Because larger size of operation indicate that those banks have larger gross loans. Larger risk aversion indicate larger equity. Those two characteristics can represent bigger bank's credibility and size. All commercial banks in these three countries should manage their overhead cost well. Because larger overhead cost will lead to larger net interest rate spread.

Characteristics of commercial banks in Philippines and Thailand shows that larger size of operation can lead to larger interest rate spread. Larger banks tend to charge higher interest margin due to their credibility and assume that they already got people's trust regardless their pricing. Higher Risk aversion on both Philippines and Thailand also lead to higher net interest margin due to their vigilance against uncertain conditions.

Higher market concentration in Philippines will lead to lower net interest margin. This can be a valuable findings as a base for Philippines's regulator to maintain market concentration on banking industry in Philippines to stay higher. Because if many new banks are born, the competition will get higher and net interest margin will be higher.

Macroeconomic factors that could be the one of determinant factor toward Interest rate spread in Indonesia and Thailand is inflation rate. Higher inflation will lead to higher cost and higher uncertainty condition that inevitable will lead banks to charge higher interest rate spread to survive. Further research should be conducted to investigate about off balance sheet activities in Indonesia Banking Industry.

### **Limitations, and Suggestions**

This research only uses commercial banks from Indonesia, Thailand and Philippines and exclude foreign banks as a sample. This research only focus on factors that cause higher Net Interest Margin Spread in Banking Industry, but not intended to solve those higher spread. So, based on the research result, we can understand the causing factors. Further research should be conducted to focus more on off balance sheet activities in Banking Industry in order to solve higher spreads.

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