

## **THE EFFECT OF FINANCING PORTFOLIO DIVERSIFICATION STRATEGY ON THE RISK OF NON-PERFORMING FINANCING IN THE INDONESIAN ISLAMIC BANKS**

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### **ABSTRACT**

The purpose of this study is to examine the effect of a financing portfolio diversification strategy on the risk of bad loans in Islamic banking in Indonesia for the 2018-2022 period. Exogenous variables in this study include financing portfolio diversification based on contract and type of usage. While, the endogenous variable is the risk of NPF in Islamic banks. The loan portfolio diversification variable is calculated using the Herfindahl-Hirschman Index (HHI). Whereas the NPF risk variable uses the NPF proxy. The population in this study are Islamic Commercial Banks and Sharia Business Units over the period from 2018 to 2022 totaling 30 Islamic banks by using a saturated sample technique, so that the 31 Islamic banks are all samples. In addition, this study uses time series data, so Ordinary Least Square (OLS) Regression Analysis is used in the data analysis method. The results of this study indicate that the diversification of the financing portfolio based on the contract has a positive and significant effect on NPF, while financing portfolio based the type of usage has a negative and significant effect on of NPF in Islamic Banks. This study is limited to Islamic commercial banks and Islamic business units in Indonesia. There are three types of financing, namely financing based on contract-, type of use and business sector and non business sector of credit beneficiary, but in this study only uses diversification of financing based on contracts and usage due to limited data and research time. The role of credit diversification based on contract and type of usage in reducing the risk of bad credit that may be useful for sharia banking, both sharia commercial banks and sharia business units in Indonesia, is related to the need for a financing portfolio diversification strategy policy to reduce the risk of bad credit in companies as well as for further researchers as an additional reference for research that uses the topic of factors that influence NPF Islamic banking. This study provides new insights about the role of credit diversification based on contracts and the type of use that can significantly affect the risk of bad credit in Islamic banking in Indonesia.

**Keywords:** sharia financing, financing diversification, profit loss sharing, NPF, Islamic bank



## THE INTRODUCTION

According to the Otoritas Jasa Keuangan (OJK) Islamic banks have the main function, as intermediary institutions. An intermediary institution is an institution that collects public funds in the form of savings and distributes them in the form of financing with the aim of improving the people's standard of living. Based on the Law Number 10 of 1998, credit is the provision of money or equivalent claims, on the basis of a loan agreement or agreement between a bank and another party that requires the borrower to repay the debt after a certain period of time. Financing is one type of Islamic bank activity that plays an important role in the turnover of capital carried out by a bank, because lending is the bank's main income.

Lending by banks will always be accompanied by risks, namely the risk of bad credit. The risk of bad credit occurs when the bank is unable to receive repayments of principal and/or interest (profit sharing) on credits provided. The main cause is that banks are too demanding to utilize their liquidity, which drives the banks to provide credits. In credit selection, banks are required to be careful in order to protect public funds entrusted to them (Darsono, et al, 2017). This credit risk is reflected in the Non Performing Financing (NPF) ratio. The higher the NPF level, the higher the credit risk that will be borne by the bank. High bank NPF forces banks to provide larger reserve funds, so that they can reduce the bank's capital reserves (Amin & Rafsanjani, 2017).

In Islamic Banking, there are 3 classifications of financing (credit): based on the financing contract, the intended use of the financing and the business and non-business sectors. Financing classification has different risk characteristics. Therefore, diversification is needed in managing the financing portfolio to minimize this risk. This study uses a financing portfolio diversification strategy based on the financing contract and the purpose of using the financing to see its effect on Non Performing Financing (NPF). Diversification based on financing contracts is used because it is unique in that

it only exists in Islamic banking. This is because financing in Islamic banking does not use interest, but uses financing contracts that are in accordance with Islamic law.

Various types of contracts are indicated to pose different risks for Islamic banks, so a diversification strategy is needed to manage the right financing portfolio (Duho, Et al., 2021). Types of contracts in credit conducted by Islamic banks consist of three types, namely production sharing contracts, buying and selling and leasing (Ulpah, 2020). Table 1 shows the types of contracts in credit and total non-performing credits in Islamic banking industry for the 2017-2022 period.

**Table 1. Financing Growth by Type of Contract in Islamic Banking Industry, 2017-2022 (in Percentage)**

Type of Contract	2017	2018	2019	2020	2021	2022
<b>Profit Sharing</b>	26.6	22.63	17.7	9.05	5.83	14.43
<b>Receivable/Acceptables</b>	8.73	3.98	5.63	8.78	8.89	15.31
<b>Leasing</b>	0,87	14.8	-0.075	-18.43	-20	6.62
<b>Total Credit Growth</b>	15.2	12.1	10.93	8.1	6.75	14.74
<b>Total NPF Growth</b>	7.34	-17.4	20.77	7.39	-11.01	13.77

Source: SPS, Otoritas Jasa Keuangan (Data processed)

Table 1 shows that lending to each type of contract in Islamic banking has fluctuated in the last 6 years. However, if you look at the movement pattern, the amount of credit disbursement for each contract increases, which is not always followed by an increase in NPF. Look at 2017 when financing for profit sharing increased dramatically and overall all financing increased but, the NPF level also continued to increase. Then in 2018, when all financing for each contract increased, especially financing for profit sharing, the NPF rate decreased drastically by 17.4%. Then in 2021 when the financing of leasing drops dramatically, the NPF rate will also decrease by 11.01%. Therefore, it can be concluded that until now there has been no consistent effect between the growth in lending based on the type of contract on the NPF.

The purpose of using different financing can also affect the risk of bad

credit. The composition of lending according to the right activities can help reduce the risk of bad credit at banks (Masruroh, 2018). This can be seen in Table 2 which shows the allocation of the use of funds and total bad credits in Islamic bank for the 2017-2022 period.

**Table 2. Financing Growth by Type of Usage in Islamic Banking Industry, 2017-2022 (In Percentage)**

Type of Usage	2017	2018	2019	2020	2021	2022
<b>Working Capital</b>	14.26	0.3	5.36	3.91	-1.69	13.03
<b>Investment</b>	11.34	5.03	14.84	0.25	3.4	13.1
<b>Consumption</b>	18.3	7.62	13.07	15.37	13.7	16.39
<b>Total Financing Growth</b>	15.2	4.45	10.93	8.1	6.75	14.74
<b>Total NPF Growth</b>	7.34	-17.4	20.77	7.39	-11.01	13.77

Source: SPS, Otoritas Jasa Keuangan (Data processed)

Table 2 shows that working capital, investment and consumption tend to increase every year. This is not in line with the movement of the NPF rate for the same period. For example, in the 2017 period when the percentage of financing growth increased and investment growth increased dramatically, NPF also increased. Then in 2018 when the percentage of growth decreased drastically, the NPF also decreased drastically. But in 2020 when the growth of working capital financing also decreased, the NPF increased. Therefore it can be concluded that until now there has been no consistent effect between the growth of credit distribution based on financing objectives on NPF, so a diversification strategy is needed in managing the financing portfolio at Islamic banks.

"Don't put all your eggs in the one basket" is a theory of investment portfolio strategy put forward by Markowitz. This theory is very appropriate to be used by companies that will invest, such as Islamic banks. Islamic bank credit risk is expected to be minimized through diversification or credit distribution strategies, thereby reducing the possibility of losses on credits extended and increasing profitability. Banks are required to diversify their financing portfolio across sectors as an application of the precautionary principle to reduce the

possibility of business failure due to concentration on credits. This is following PBI No. 7/3/PBI/2005, concerning Legal Lending Limits for Commercial Banks, which states that "To avoid bank business failures as a result of concentration in channeling funds, banks are required to apply the principle of prudence in allocating/diversifying the portfolio of credits disbursed".

Each type of financing provided by banks has a different risk profile, causing the need for special treatment in carrying out risk control and risk management (Ulpah, 2020). Research to determine which financing contract is more risky is still being debated among researchers. Ariffin, et al. (2018) argues that the principle of profit-loss sharing has the greatest risk in financing. Then Mufarida, et al. (2022) argues that buying and selling has the biggest risk in financing. However, Ulpah (2020) said that profit sharing has a significant negative effect on the level of NPF. There are differences in previous research on riskier financing objectives. As according to Hidayat and Arfianto (2017) investment financing can increase NPF, while Adzobu, et al (2007) credit portfolio diversification does not affect NPF. Because there are still inconsistent findings from the results of previous research, this motivates researchers to conduct further research on Islamic banking financing based types on contracts and usage.

This research was conducted to contribute benefits to various parties. First, Sharia Banking regarding the need for a strategy for diversifying financing portfolios to reduce the risk of bad credits in companies. Second, to future researchers, the findings of the study could be used as an additional reference for research that uses the topic of factors that affect the level of credit risk in Islamic Banking. Therefore, researchers want to know the effect of financing portfolio diversification based on the type of contract and the intended use partially and simultaneously on credit risk in Islamic banking in Indonesia for the 2018-2022 period.



## LITERATURE REVIEW

### Risk of NPF

Bad credit or usually called problem financing is the customer's inability to return the amount of the credit received from the bank and its compensation according to a predetermined time period (Piatti & Cincinelli, 2019). Bad credits are reflected by the Non Performing Financing (NPF) ratio. NPF affects the profits earned by Islamic banks. An increase in NPF will cause a decrease in bank income, so the profit received will also decrease, and vice versa (Priyadi, et al., 2021). The main cause of bad credit is that banks are too easy to provide credit to customers, this is because banks are too required to take advantage of their liquidity, so they are not careful and careful in assessing the feasibility of credit that will be distributed to customers to anticipate various risks that are likely to occur (Muhammad, 2016). There are 2 groupings of factors that cause bad credit, namely (Astarina & Hapsila, 2015):

#### a. Internal factors

1. The analysis is not precise, so it cannot predict what will happen during the credit period. For example, credit given is not in accordance with needs, so that customers are unable to pay installments that exceed their means.
2. There is collusion between bank officials who handle credit and customers, so that the bank decides which credit should not be given. For example, banks make over transactions on collateral values.
3. Limited knowledge of bank officials regarding the type of debtor's business, so that they cannot carry out proper and accurate analysis.

4. Too much interference from related parties, for example commissioners, bank directors so that officers are not independent in deciding credit.
5. Weaknesses in conducting credit coaching and monitoring debtor.

b. External factors

Elements of intention committed by the customer, among others:

1. The customer intentionally does not make installment payments to the bank.
2. The debtor expands too much, so the funds needed are too large.
3. Misappropriation by customers by using credit funds that are not in accordance with the intended use (side streaming).

Elements of unintentional, among others:

1. The debtor wants to carry out the obligations according to the agreement, but the company's ability is very limited, so it cannot pay installments.
2. The company cannot compete with the market, so sales volume decreases and the company loses.
3. Changes in government policies and regulations that impact the debtor's business.
4. Natural disasters that can cause debtor losses.

This risk can be mitigated by providing credit decision authority limits to customers, namely based on their capacity and limits on the amount of credit extended for their business, as well as diversifying the financing portfolio of the sectors financed. In addition, Islamic banks can request collateral in the form of collateral or third party guarantees to minimize the occurrence of moral hazard risks that customers may commit (Adzobu, et al, 2017).



## **Portfolio Diversification**

Markowitz theory "Don't put all your eggs in the one basket" (Don't put all your eggs in the same basket) is a diversification strategy (Tandelilin, 2017). This concept aims to minimize risk for companies that will invest using investments made by companies that do not focus on just one allocation to reduce the possibility of the risk occurring. Diversification is one of the strategies used by companies to face intense competition and very fast market growth (Duho, et al., 2021). Diversification can increase systematic risk, but companies can benefit from increasing the value of the companies in which they invest (Adzobu, et al., 2017).

Credit distribution is funding made by banks to support planned investments, either carried out independently or run by other people. The allocation of credit funds has several objectives, namely achieving an adequate level of profitability and a low level of risk, as well as maintaining public trust by keeping the liquidity position safe (Muhammad, 2016). Thus, diversification of the financing portfolio is a strategy for spreading the financing portfolio that can be carried out by Islamic banks to minimize risk to Islamic banks. This is following PBI No. 7/3/PBI/2005 which stated that Bank Indonesia urged banks in Indonesia to diversify their financing portfolios. One of the classifications of channeling credit funds to Islamic banks is based on the type of contract and the purpose of using the financing.

### **Credit Distribution Based on Type of Contract**

Credit distribution based on type of contract or principle that forms the basis of Islamic bank operations is divided into 3 types, namely profit sharing, buying and selling and leasing contracts.



a. Profit Sharing Contract

Profit Sharing Contracts are investment contracts that are uncertain and have variable income, the size of the income depends on the results of the business carried out by the customer (Karim, 2007). Credit distribution in this contract has a high risk opportunity, the main reason is that the Production Sharing contract is attached to the risk of asymmetric information in the form of moral hazard and adverse selection (Muhammad, 2011). Islamic banks must have screening tools provided to prospective customers and businesses to be financed to reduce the possibility of this risk occurring and monitor the businesses being financed as an effort to prevent them. Meanwhile, the advantage of a profit-sharing contract is that the bank will enjoy an increase in profit sharing when the customer's business profits increase and the return on the financing principal is adjusted according to the customer's business cash flow so that it is not burdensome to the customer and minimizes the risk of default. The various types of credit distribution products based on production sharing contracts are as follows (Muhammad, 2016):

1. Credit Distribution with *Mudharabah* contract

*Mudharabah* contract is a cooperation contract between the bank as the owner of the funds (*shahibul maal*) and the customer as a business manager with special expertise (*mudharib*). Profits generated from the business will be shared based on a predetermined ratio, while all losses will be borne by the *shahibul maal*. However, if the loss is caused by the *mudharib*'s negligence, the *mudharib* will bear it.

2. Credit Distribution with a *Musyarakah* contract

*Musyarakah* contract is a cooperation contract between the bank as the owner of a portion of the capital and the customer as the



manager and owner of a portion of the capital. In this contract, the bank has the right to participate in business management following the agreement of both parties, with the bank's right to manage this business, the potential for moral hazard risks can be minimized. Then the profits and losses will be divided according to the proportion of capital invested. In this contract, Islamic banks can play an active role in business activities and reduce potential risks that will occur such as moral hazard.

3. Credit Distribution with the *Musyarakah Mutanaqisah* (MMQ) contract

The *Musyarakah Mutanaqisah* (MMQ) contract is a form of product development based on the *Musyarakah* contract, this is because the inherent risk of profit sharing contracts is quite high. MMQ is a form of cooperation between Islamic banks and customers relating to the ownership of an asset, where this collaboration will reduce Islamic bank ownership to full customer ownership along with payment of installments of capital returns and rental prices to Islamic banks.

b. Receivable/Acceptables Contract

Distribution of credit based on the receivable/acceptables contract is carried out due to the transfer of ownership of goods. The level of profit earned by the bank is part of the price of goods sold, so it is determined beforehand (Veithzal, 2008). Receivable/acceptables contracts have a definite rate of return because the profit margin percentage is determined at the beginning of the contract (Wahyuni, 2016). Once the price is set, that amount must be paid by the customer, the price may not change until the contract ends, so when the customer's economic condition worsens, the risk of default will be even higher. The various types of credit distribution products based on

receivable/acceptables contracts are as follows (Muhammad, 2016):

1. Credit Distribution with a *Murabaha* contract

*Murabaha* contract is a contract to buy and sell goods at the cost price plus an agreed profit margin. Banks buy goods ordered by and sell them to customers. The selling price given by the bank is the purchase price from the supplier plus the agreed profit.

2. Credit Distribution with a *Salam* contract

*Salam* contract is a sale and purchase contract for a commodity where the goods are paid for at the time the contract is agreed, while the goods will be given later following the agreed timeframe.

3. Credit Distribution with an *Istishna* contract

*Istishna* contract is a sale and purchase contract in the form of manufacturing certain goods with certain criteria and conditions agreed between the buyer and the seller/manufacturer. Then payment for goods can be made at the beginning, in the middle or at the end of the order.

c. Leasing Contract

A lease contract is an agreement to transfer benefits or usufructuary rights (Ascarya, 2011). A lease contract is similar to leasing at a conventional bank because both of them involve the transfer of a benefit between parties, but the difference between the object of the lease and the lease contract of Islamic banks does not allow buying and selling because there is an element of *gharar* in it. This contract has a definite rate of return because the profit margin percentage is determined at the beginning of the contract (Wahyuni, 2016). The risk in this contract is when the bank sells the asset that has been leased and the sale value is not following the estimate, causing the bank to not return the capital provided. If there is an indication of a bottleneck in



this contract, the step taken by Islamic banks is to review the rental price using a floating rental rate approach (Wahyudi, 2013). This can minimize the possibility of the risk of congestion. The various types of leasing-based credit distribution products are as follows (Muhammad, 2016):

1. Credit Distribution with an *Ijarah* contract

An *Ijarah* contract is a contract for transferring the benefits of goods or services through payment of rental wages without being followed by a transfer of ownership of the goods. The benefits of the goods in question are limited to use, the goods are not changed or destroyed.

2. Credit Distribution with the *Ijarah Muntahiyya Bittamlik* (IMBT) contract

*Ijarah Muntahiyya Bittamlik* (IMBT) contract is a leasing contract for an item which at the end of its term becomes the property of the lessee. However, the contract for transfer of ownership can only be carried out after the end of the *ijarah* period and the promise of transfer of ownership (*wa'ad*) agreed at the beginning of the contract is not legally binding. The risk in this contract is when payments are made using the balloon payment method, so that it can pose a risk of inability to pay (Karim, 2013).

### **Credit Distribution Based on Type of Usage**

Credit distribution based on type of usage is divided into 3 types, namely credit distribution for Working Capital, Investment and Consumption.

- a. Credit Distribution with Working Capital

Working capital credit is company credits in the framework of funding the company's current assets, such as purchases of raw

materials, auxiliary materials, merchandise, operational costs, receivables and others (Rivai & Arifin, 2010). Working Capital credit is short-term funding because the term of this credit is only a maximum of one year, but can be extended as needed. Short-term funding has high credit risk characteristics when viewed from the high economic and political fluctuations that occur in a country (Fahmi, 2014), moreover this funding is more necessary for the SME sector to develop its business, where the sector is vulnerable to information opacity. Therefore, banks must have strong analytical skills on sources of return as seen from the operating income to be financed.

b. Credit Distribution with Investment

Investment credit is medium to long term funding that is usually needed for new projects, additions and replacement of company machines (Rivai & Arifin, 2010). This credit is given to customers to purchase capital goods (fixed assets) whose economic value is more than one year (Ismail, 2011). This investment credit has the highest risk because it is long term funding, so the risks faced are greater because it is based on the results obtained from the production process carried out (Meitasari, 2014).

c. Credit Distribution with Consumption

Consumption credit is funding provided to the public not for business purposes, but for purchasing personal needs (Ismail, 2011). Islamic banks have strict requirements for selecting prospective consumer credit customers so as not to create a risk of bad credit. One of the requirements is that the source of return on the credit comes from the customer's income sourced from other businesses, not from the results of operating the goods financed by this facility (Arifin, 2005) and there is a guarantee or collateral provided for this credit (Qadriyah, 2002).



## Hypothesis Development and Analytical Model

### 1. Diversification of Financing portfolio Based on Type of Contract Against Bad Credit Risk

Credit distribution based on type of contract is divided into 3 types, namely production sharing contracts, receivable/acceptables and leasing. According to Muhammad (2011) Profit sharing contracts have high risk opportunities because in this contract the bank does not participate in company management and lacks supervision of the business being financed, so it is attached to the risk of asymmetric information in the form of moral hazard and adverse selection. Furthermore, according to Wahyuni (2016) receivable/acceptables have a definite rate of return because the profit margin percentage is stated at the beginning of the contract and there may not be any price changes until the contract ends, so if the customer's economic condition decreases, the risk of congestion will be higher. Meanwhile, the risk of a lease contract is when the bank sells an asset that has been leased, then the sale value of the asset does not match the estimate which will cause the bank to not return the capital provided. This shows that each contract has its inherent risks, so it is necessary to diversify the financing portfolio to minimize the possibility of bad credits. This is following what was stated by Fernández de Lis et al (2000) that several factors can affect the level of credit problems, one of which is the composition of the financing portfolio plays an important role as an indicator of the risk profile faced by banks and Adzobu, et al (2017) found that as Islamic bank risk increases, it is better to diversify across Islamic instruments.

H1<sub>1</sub>: Diversification of the financing portfolio based on type of contract has a negative effect on the risk of bad credit.

### 2. Diversification of Financing portfolio Based on Type of Usage Against Bad Credit Risk

Credit distribution based on type of use is divided into 3 types, namely

working capital, investment and consumption. According to Fahmi (2014) working capital is short term financing, so they have high credit risk characteristics due to high economic and political fluctuations that occur in a country. Furthermore, according to Meitasari (2014) investment credit has the highest risk because this financing is long term financing, so the risks faced are higher because it is based on the results obtained from the results of the production process carried out. Productive financing (working capital and investment) has a greater risk of bad credit than consumptive financing (Qadriyah, 2002). While consumption credit is the most credit channeled by Islamic banks, the greater the credit, the greater the risk of default. Therefore, it is necessary to diversify the financing portfolio based on the intended use to minimize inherent risk and credit imbalances in consumption. This is following Rossi et al (2009) that diversification can reduce risk due to the concentration of financing can also reduce cost efficiency and increase profits.

H<sub>12</sub>: Diversification of the financing portfolio based on type of usage has a negative effect on the risk of bad credit.

### 3. Diversification of Financing portfolio Based on Type of Contract and Usage Simultaneously Against Bad Credit Risk

Markowitz's statement (1952) "don't put all your eggs in the one basket" is a classic theory of diversification and also PBI No. 7/3/PBI/2005 which indirectly states that diversification is better in reducing the level of risk of failure of bank financing. This is in line with the results of Diamond's (1984) research that a diversification strategy can reduce the level of default risk because risks are spread across many sectors. Then, the same opinion was expressed by Kamp et al (2005) a diversified financing portfolio will be able to reduce the level of banking risk and Elsas et al (2009) argue that diversification has a positive impact on the health condition of banks when facing economic crisis turmoil from the external environment.

H<sub>13</sub>: Diversification of the financing portfolio based on type of contract and usage simultaneously has a negative effect on the risk of bad credit.

### A Proposed Research Model

Based on the background and research objectives, the following is the analytical model in this study:

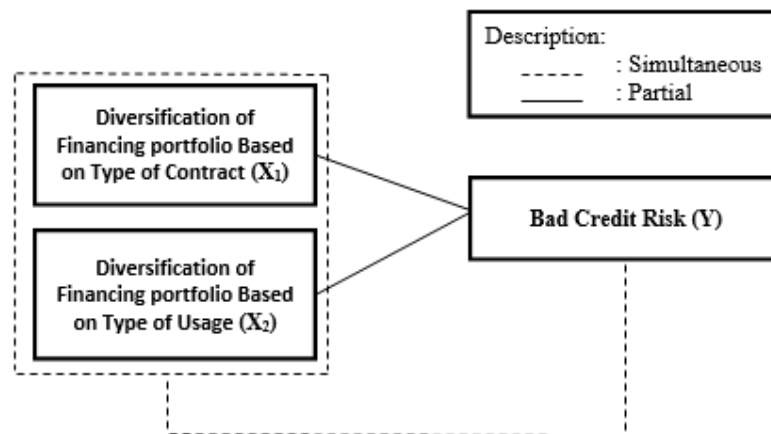


Image 1. A Proposed Research Model

## METHODOLOGY

### Types of Research

This study uses a quantitative approach. The quantitative approach was carried out because researchers wanted to find relationships between variables with a focus on testing hypotheses on measurement data. The analytical method used in this study can use Ordinary Least Square (OLS) or Error Correction Model (ECM). This method is used because the data source in this study is quantitative data obtained from secondary data (time series), then to determine the use of the method adjusted to the results of the stationarity test (unit root test). These approaches and methods are used to obtain the results of the influence of the diversification strategy on the risk of bad credit in Islamic Banking.



## Operational Definition and Variable Measurement

### 1. Dependent Variable (Endogenous Variable)

The endogenous variable in this study is the risk of bad credit. The bad credit risk variable is measured using Non Performing Financing (NPF), NPF is measured using the formula:

$$NPF = \frac{Bad\ Credit}{Total\ Financing} \times 100\%$$

### 2. Independent Variables (Exogenous Variables)

The exogenous variable in this study is the diversification of the financing portfolio based on the type of contract and the economic sector. The indicator for the level of diversification in this study uses the Hirschman Herfindahl Index (HHI). HHI is an indicator of market concentration with a value between 0 and 1. If the HHI value is close to 0, it indicates that the diversification of the financing portfolio in Islamic banks tends to be high (low focus). However, if the HHI value is close to 1, it indicates that the financing portfolio of Islamic banks tends to be low (Christianti, 2011). The diversification used in this study is financing portfolio diversification based on the type of contract and the purpose of using the financing.

The following is a formula for calculating financing portfolio diversification using HHI, namely (Christianti, 2011):

#### a. Diversification of the financing portfolio based on type of contract:

$$HHIA = \sum_{i=1}^n \left( \frac{x_i}{Q} \right)^2$$

Description:

HHIA = Hirschman Herfindalh Index based on type of contract

n = Number of groups measured

i = Number of Contract Types

- $x_i$  = Amount of credit disbursement per type of contract  
 $Q$  = Total amount of credit distribution

b. Diversification of the financing portfolio based on type of usage:

$$HHIP = \sum_i^n \left( \frac{x_i}{Q} \right)^2$$

Description:

- $HHIP$  = Hirschman Herfindalh Index based on type of usage  
 $n$  = Number of groups measured  
 $i$  = Number of Contract Types  
 $x_i$  = Amount of credit disbursement per type of usage  
 $Q$  = Total amount of credit distribution

### Data Types and Sources

The types and sources of data used in this study are quantitative data originating from time series data. Time series data is data that consists of one object but covers several periods (Rohmana, 2010). The data used in this study comes from statistical reports on Islamic banking at the Financial Services Authority (OJK) for the 2018-2022 period.

### Population and Research Sample

The population in this study is all Indonesian Sharia Banking in 2018-2022 totaling 30 Islamic banks.. The sample selection method in this study uses a saturated sample technique. The saturated sample technique is a sampling technique when all members of the population are used as samples (Suginoyo, 2018), so that the 31 Islamic banks are all samples. This is due to limited data sources from all Islamic Banks regarding the amount of financing distributed based on the contract and the purpose of financing, so it uses Islamic Banking data as a whole.

## **Method of Collecting Data**

The data collection method in this study is secondary data collection. Secondary data is research data obtained by researchers indirectly from intermediary media. Secondary data is generally in the form of evidence, historical reports or notes that have been compiled in published archives. This study uses secondary data obtained by researchers by conducting literature studies to support the material discussed in this study. This research activity is carried out by collecting information through books, journals, literature, websites and others. The data used is time series data which is monthly data on lending and Non-Performing Financing (NPF) of Islamic Banking. The data is obtained from the statistics of the Financial Services Authority (OJK) accessed through the website [www.ojk.go.id](http://www.ojk.go.id).

## **Data Analysis Technique**

The first step in carrying out data analysis techniques is to first tabulate the required data according to the research sample, then carry out some of the tests carried out in this study, including:

### **1. Descriptive Statistics**

Descriptive statistics provide an overview of a variable seen from the mean value, standard deviation, maximum value and minimum value of the research sample. The values of mean, median, standard deviation, maximum and minimum values describe the distribution of research data.

### **2. Stationarity Test (Unit Root Test)**

The stationarity test (unit root test) is the first test that must be carried out before carrying out a regression analysis of the data used. In this study, testing for stationarity used the Augmented Dickey-Fuller Test. The procedure for testing the stationarity of the data is as follows:

- a. In the data stationarity test, the first thing to do is to test each variable used from each level series.
- b. If all variables show that they are stationary at levels, then the estimation of the model used is Ordinary Least Square (OLS) regression.
- c. If any data is stated to be non-stationary at the series level, then the next step is to determine the first difference of each of these variables by conducting another stationarity test for the first difference.
- d. If at the first difference level, it shows that it is stationary, then the cointegration method can be used to estimate the model.
- e. If the cointegration test results reject the hypothesis which states that it is not stationary, then the estimate used is Ordinary Least Square (OLS). However, if the cointegration test results state that it is stationary, then the estimate used is the Error Correction Model (ECM) method.

### 3. Ordinary Least Square (OLS)

Ordinary Least Square (OLS) is a method used to estimate the population regression function and the sample regression function (Gujarati & Porter, 2012). By using this analysis it can be seen the effect of exogenous variables on endogenous variables in this study. The regression equation model used in this study is as follows:

$$\Delta NPF_i = \beta_0 + \beta_1 HHIA_{i1} + \beta_2 HHIP_{i2} + \varepsilon_i$$

Description:

$\Delta NPF_{it}$  = NPF variable from  $i$  unit and observed in the  $t$  time period

$\beta_1 HHIA_{i1}$  = Variable Hirschman Herfindalh Index based on type of contract from  $i$  unit

$\beta_2 HHIP_{i2}$  = Variabel Hirschman Herfindalh Index based on type of usage from  $i$  unit

$\varepsilon_i$  = Based on type of contract from  $i$  unit

#### 4. Classical Assumption Test

##### a. Normality Test

The normality test was carried out to find out whether the data is normally distributed or not. A good regression model is having a normal or close to normal data distribution (Gujarati, 2006). To test whether the data distribution is normal or not, it can be done using the Jarque-Bera Test.

##### b. Multicollinearity Test

The multicollinearity test aims to test whether the regression model shows a correlation between the independent variables (exogenous variables). A good regression model should not correlate with independent variables (Ghozali, 2011). To detect symptoms of multicollinearity in this regression model, look at the correlation coefficient between variables, if the correlation coefficient is above 0.8 then it is suspected that there is multicollinearity in the model and vice versa if it is below 0.8 then there is no multicollinearity.

##### c. Heteroscedasticity Test

The heteroscedasticity test aims to determine whether there is a relationship between the confounding variables and the independent variables. If there are symptoms of homoscedasticity, it means that there is no relationship between the confounding variables and the independent variables, so the dependent variable is explained only by the independent variables. The method used to detect the presence of heteroscedasticity is using the Glejser Test.

#### 5. Hypothesis Test

##### a. t-Test

t-test aims to determine how far the influence of individual exogenous variables on endogenous variables. The basis for decision-making is done by comparing the significance values. If the calculated t value > t table value, then

$H_0$  is rejected, which means that  $X_i$  has a significant effect on  $Y$ , and so on. Conversely, if the calculated  $t$  value  $<$  table  $t$  value, then  $H_0$  is accepted, which means that  $X_i$  has no significant effect on  $Y$ .

b. F-Test

F-test was conducted to determine how far the variations in the endogenous variable is explained by changes in the exogenous variables and it is to show the goodness of fit of the model used in the study. If the calculated  $F$  value  $>$   $F$  table value, then the estimated proposed model is good fit enough to measure the effect of portfolio diversification on the risk of NPF on the Islamic banks in Indonesia

c. Determination Coefficient Test

The coefficient of determination, which is denoted by  $R^2$  shows the goodness of model prediction. If the value of  $R^2$  gets closer to 1, the better the model prediction, and vice versa. Therefore, the higher the  $R^2$ , the more significant the model's exogenous variables are to explain the endogenous variables.

## RESULT AND DISCUSSION

### Result

**Table 3. Descriptive statistics**

Variable	Mean	Median	Min	Max	St. Dev
HHIAkad	0.48	0.48	0.47	0.49	0.0067
HHIJP	0.35	0.35	0.34	0.37	0.0049
NPF	3.79	3.36	2.85	5.54	0.0067

Source: Results of Data Analysis

The table above explains that HHIAkad has a mean value of 0.48, a median of 0.48, a minimum value of 0.47 and a maximum of 0.49 with a standard deviation of 0.0067. HHIJP has a mean value of 0.35, a median of 0.35, a minimum value of 0.34 and a maximum of 0.37 with a standard deviation of 0.0049. NPF has a mean value of 3.79, a median of 3.36, a minimum value of 2.85 and a maximum of 5.54 with a standard deviation of 0.0067.

**Table 4. Descriptive statistics**

Variable	Probability	Description
HHIAkad	0.0000	stationary at the first different level
HHIJP	0.0000	stationary at the first different level
NPF	0.0068	stationary at the first different level

Source: Results of Data Analysis

Based on the results of the data stationarity test using the Augmented Dickey-Fuller Test with the E-Views 12 statistical tool, it shows that all research variables are stationary at the first different level with a significant level below 5%. Therefore, the cointegration method is needed to determine model estimation.

**Table 5. Cointegration Test Results**

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.224520	18.70509	29.79707	0.5143
At most 1	0.069039	4.211538	15.49471	0.8857
At most 2	0.002346	0.133892	3.841465	0.7144

Trace test indicates no cointegration at the 0.05 level

Source: Results of Data Analysis

Based on the Cointegration test results above using the Johansen System Cointegration Test method, it shows that there is no cointegration among all variables. This shows that this study uses Ordinary Least Square (OLS) estimation. The following is the regression result using Ordinary Least Square (OLS) estimation.

**Table 6. OLS Test Result**

Variable	Coeffisient	Probability	Description
HHIAkad	3.465.349	0.0000	Significant
HHIJP	-3.690.257	0.0000	Significant
Simultaneous	R <sup>2</sup> (0.822439)	0.0000	Significant

Source: Results of Data Analysis

### Classical Assumption Testing

#### 1. Normality Test

Based on the results of the time series data normality test with E-Views 12 application, menunjukkan bahwa hasil probabilitas lebih besar dari tingkat signifikan ( $\alpha = 0.05$ ), it shows that the probability results are greater than the



significant level ( $\alpha = 0.05$ ), which is equal to 0.1153. So it can be concluded that  $H_0$  failed to be rejected and the residuals are normally distributed. So the model is feasible to use.

## 2. Multicollinearity Test

Based on the results of the multicollinearity test of time series data with E-Views 12 application, it shows the correlation value between the variables is not more than  $\pm 0.8$ . This shows that there is no high correlation between variables. So there is no multicollinearity in the time series that has been analyzed.

## 3. Heteroscedasticity Test

Based on the results of the Heteroscedasticity test of time series data with the help of the E-Views 12 application, it shows that the P-value is not  $< \alpha = 0.05$ , which is equal to 0.1816. then it is stated that  $H_0$  failed to be rejected and it can be concluded that there were no cases of heteroscedasticity.

## Discussion

### The Effect of Credit Diversification Strategy based on Type of Contract on NPF

Based on the results of statistical research data processing, the regression coefficient value of the contract HHI variable is 34.65349 with a probability of 0.0000 which indicates a value less than 0.05 (5%). Thus, it can be interpreted that credit diversification based on contracts has a positive and significant effect on NPF. The regression coefficient of 34.65349 indicates that each increase in the contract HHI variable unit will increase the NPF by 34.65349 units. Thus, the hypothesis states that credit diversification based on contracts partially has a positive and significant effect on the NPF received.

Distribution of credit based on profit-sharing contract has a high risk opportunity because in this contract, the bank does not participate in company management and lacks supervision of the business being financed, so it is attached to the risk of asymmetric information in the form of moral hazard and



adverse selection. Furthermore, according to Hidayat and Arfianto (2017) receivable/acceptables have a definite rate of return because the profit margin percentage is stated at the beginning of the contract and there may not be any price changes until the contract ends, so if the customer's economic condition decreases, the risk of congestion will be higher. Meanwhile, the risk of a lease/ijarah contract is when the bank sells an asset that has been leased, then the sale value of the asset does not match the estimate which will cause the bank to not return the capital provided. This shows that each contract has its inherent risks. Thus, banks need to carefully consider how they choose to diversify into new or old contracts because it will affect their incentives to monitor, as well as the effectiveness of their monitoring.

These results are consistent with research conducted by Adzobu, et al (2017) that diversification of the financing portfolio alone does not guarantee improved performance and reduced risks to banks. Furthermore, research conducted by Aiyubbi, et al. (2022) found that diversification led to an increase in problem financing at BPRS in Indonesia. The reason for this may be that concentrating the financing portfolio increases monitoring efficiency, as banks may have expertise in the sector they are lending to. so that BPRS are expected to be able to implement a strategy of concentration of financing in certain sectors because it will reduce the risk of bank failure.

#### The Effect of Credit Diversification Strategy based on Type of Usage on NPF

Based on the results of statistical research data processing, the regression coefficient value on type of usage HHI is -36.90257 with a probability of 0.0000 which indicates a value less than 0.05 (5%). Thus, it can be interpreted that credit diversification based on the type of usage has a negative and significant effect on NPF. The regression coefficient of 36.90257 indicates that each increase in the contract HHI variable unit will reduce the NPF by 36.90257 units. Thus, the hypothesis states that credit diversification based on the type of use partially



has a negative and significant effect on NPF is accepted.

This result is in accordance with Markowitz's theory (1952) "don't put all your eggs in one basket" which is a classic theory of diversification and also PBI No. 7/3/PBI/2005 which indirectly states that diversification is better in reducing the risk of default in banking. This result is in accordance with Shim's statement (2019) explaining that increasing credit diversification can increase a bank's financial strength. Furthermore, Al-Kayed and Aliani (2020), that Islamic banking needs to diversify when the financing risk is high in order to increase their profitability. Moudud-Ul-Huq et al. (2018) show similar results, their research showing that diversification benefits banks in Indonesia, Malaysia the Philippines, Thailand and Vietnam, where diversified banks have higher performance and lower risk.

#### The Effect of Credit Diversification Strategy based on Type of Contract and Usage on NPF

Based on the results of statistical research data processing, the value of the f-statistic has a probability of 0.0000 which indicates a value less than 0.05 (5%). Thus, it can be interpreted that credit diversification based on contracts and types of use has a significant effect on NPF. Thus, the hypothesis states that credit diversification based on contracts and types of use simultaneously has a significant effect on NPF is accepted. The R-Squared value is 0.822439. This value indicates that the credit diversification strategy based on contracts and types of use can explain 82.2% of the dependent endogenous variable (Non Performing Financing) in Islamic Banking in Indonesia for the 2018-2022 period. Meanwhile, the remaining 17.7% is explained by other variables not used in the study.

This result is following Markowitz's statement (1952) "don't put all your eggs in one basket" which is the classic theory of diversification and also PBI No. 7/3/PBI/2005 which indirectly states that diversification is better in reducing

the risk of default in banking. This result is in accordance with Shim's statement (2019) explaining that increasing credit diversification can increase a bank's financial strength. Furthermore, Al-Kayed and Aliani (2020), that Islamic banking needs to diversify when the financing risk is high in order to increase their profitability. Moudud-UI-Huq et al. (2018) show similar results, their research showing that diversification benefits banks in Indonesia, Malaysia the Philippines, Thailand and Vietnam, where diversified banks have higher performance and lower risk. Widarjono and Rudatin (2021) empirically tested the effect of financing diversification on Islamic banks in Indonesia with several control variables and found that financing concentration increased the NPF of Islamic bank financing.

## CONCLUSION

The results of this study indicate that the diversification of the financing portfolio based on the contract has a positive and significant effect on NPF, while financing portfolio based the type of usage has a negative and significant effect on of NPF in Islamic Banks. Bank Indonesia's appeal to banks in Indonesia to diversify financing is very appropriate as one of the risk mitigations in financing channeled by banks, so it is hoped that Islamic banks in Indonesia, both BUS and UUS, will carry out a strategy of diversifying the financing portfolio as one of the risk mitigation bad credit. Furthermore, Suggestions from the author for the conclusions above for Islamic banking, based on research results, it is necessary to have a strategic policy on financing portfolio diversification to reduce the risk of bad credit in companies. However, banks must remain cautious and need to monitor so that the financing portfolio diversification strategy runs effectively because if the strategy is misdirected it will actually increase the risk of bad credit. While, for future studies can explain in more detail by adding other variables related to financing portfolio diversification or replacing the endogenous variable risk of bad credit with the level of profitability of Islamic banking.

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