

Income Structure, Risk-Taking and Performance in Indonesia Bank Level Analysis

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Abstract— Panel data analysis with random effects shows that there is a significant positive effect between diversification on the income structure on performance alone, not on risk. It is certainly understandable that because banks in Indonesia are relatively new to switching to non-interest income, banks are more careful in carrying out these activities, so the impact is on an excellent performance. Furthermore, in the non-interest income sub-category, net trading has a significant positive effect on performance.

Keywords: *income structure, risk-taking, performance, data panel*

I. INTRODUCTION

The bank is an intermediary institution between the surplus unit and the deficit unit. In general, the function of banks is collecting funds from the public and channeling them, both credit and other forms. This critical function makes banks a highly regulated institution. Law No. 10 (1998), defines banks are business entities, collect funds from the public in the form of deposits and distribute them to the community in the form of credit and or other forms, in order to improve the lives of many people. The activity of collecting funds from the community means that banks collect or find funds by buying them from the community with their strategies so that people save their funds in the form of deposits such as demand deposits, savings, and times deposits.

In connection with these community activities, the bank provides incentives in the form of interest or other services. Furthermore, the bank channeled these funds to people in need in hopes of obtaining returns from these activities. Spread between loan interest and deposit interest becomes a part from bank income which represents the level of profit (loss) from banking operations. The bank is an intermediary for meeting customers (surplus and deficit) or brokerage, then allocating credit, which is expected to provide better returns than at present/qualitative asset transformation [1]. This transformation is undoubtedly not a riskless activity because transferring an asset with a relatively short maturity to an asset with a relatively long maturity requires banks to analyze it thoroughly, carefully, and certainly by considering costs and benefits.

In the Indonesian context, the banking industry is the most attractive market in Southeast Asia [2]. It is the most profitable industry compared to similar industries in other G20 member countries. Report on the Banking Industry Profile of the Financial Services Authority 2018 shows that the banking intermediation function is quite good, with credit growth accelerating at 11.97% (YoY) amidst slowing growth in deposits by 6.37% (YoY). Third- Party Funds (DPK) is the primary source of bank funding, reaching 82.42% of bank funds consisting of time deposits (56.16%), savings deposits (20.54%), and current accounts (23.26%) [3].

Banks certainly expect a maximum profit, and these profits are mostly obtained from the difference between the loan interest rate and the deposit interest rate (in the future net interest margin or with the abbreviation for NIM). The size of profit depends on the spread, between the interest rate on loan with interest rate on savings. However, despite the high bank revenue from these traditional activities, the high spread is seen as an indication that the bank is not yet efficient in carrying out its function as an intermediary institution. Meanwhile, in 2020 banks in Indonesia will face ASEAN financial integration (ASEAN Banking Integration Framework) which will provide incentives for higher levels of competition, so banks will no longer be able to rely solely on the interest income from lending because this income is cyclical [4]. Changes in business models that are gradually being carried out by banks in this region, including Indonesia, are considered as a strategy in dealing with various deregulations and increasingly dynamic environmental changes. Banks have begun to change their business models from traditional banking models to universal banking models. It has led to changes in the structure of bank income, banks not only focus on traditional activities but also lead to non-traditional activities.

Various policies are implemented, such as transaction banking, international business, investment services, and agency business, in the hope that the bank will be able to obtain other income besides interest. On the other hand, the bank can mitigate and diversify risks related to banking operations. However, policies that lead to changes in revenue structure have not yet received consensus in the literature. Some empirical research results conclude that

non-traditional banking activities tend to increase risk, such as increased volatility [5], as well as systematic risk [6], [7]. On the flip side, it is also shown that non-traditional income also has an impact on increasing return/profitability [5], [8]. This study examines the effect of the structure of bank income on risk and performance.

II. LITERATURE REVIEW

Several studies related to income structure, particularly non-interest income, on the effects of risk and performance have not reached conclusive, for example, traditional lending activities with fee-based activities associated with high-income volatility [5]. Other research also shows that finding non-interest exposure is positively related to market return volatility and bank market beta [9], increasing the bank's franchise value and systematic risk [6]. Even then the findings also show that income diversification can increase the standard deviation of weekly stock returns, systematic risk, specific risk, bankruptcy risk, asset risk, and SDROA and SDROE [10].

On the flip side, findings show different results; for example, non-interest income can reduce bank exposure to systematic industry risk [8]. Correspondingly it is also found, reduce the sensitivity of NIM [4], and found an increase in bank returns [11], [8].

Revenue structure is an essential aspect in evaluating the level of bank risk, various changes in regulations and policies encourage banks to innovate continuously. This change encouraged banks to diversify their income by offering non-bank products such as insurance, investment banks, and other financial services.

The role of banking transformed, changing the banking business model from traditional to non-traditional activities causing changes in the structure of banking income. However, in this research, these changes are related to the intermediation function and banking risk in Indonesia, this is based on the effects that are not yet conclusive from the relationship.

Prior research found that diversification decisions at large and small banks had different effects on risk [10]. Small banks face increasing risk with the increasing proportion of non-interest income and trading income. Small banks have limited employee resources and expertise. Income diversification activities produce two types of income, namely fee income, and trading income. Income those sourced from fees are seen as a more stable income than other sources of income. Besides, if evaluated concerning the level of performance, then we find several studies have a positive effect on bank performance.

The improved performance is indicated by the increasing market value of the bank. That is because investors view diversification as being able to stabilize bank income. Several other studies find that income diversification decreases bank performance because agency conflicts that occur in banks cover the benefits of economies of scope, and banks engage in activities that increase revenue volatility.

III. METHODOLOGY

Bank-level data are retrieved from Moody's Analytics BankFocus and annual report each bank to construct a sample consisting of an unbalanced panel of annual series for the period 2013–2018. We consider 15 commercial banks in Indonesia (from data cleaning). After obtaining the correct commercial banks' sample, we create the ratios, winsorize the extreme values at the 1st and 99th percentiles and retain for banks with a minimum of 4 observations.

A. Dependent Variable; Risk and Performance

One measure of risk in this study is using the z- score calculation proxy, which has been widely applied in the banking literature [12]. Besides, we also use other measures such as loan loss provision. Bank performance measurement uses the accounting-based approach with ROAA and ROAE proxy.

B. Explanatory Variable

To measure the income structure, we use non- interest income as a proxy [9].

$$TI = NII + NNII \quad (1)$$

Where,

TI: Total Income

NII: Net Interest Income

NNII: Net Non-Interest Income

Next is the calculation of the Adjusted Herfindahl Hirschman Index

$$AH = 1 - \left[\frac{NII}{TI} \right]^2 + \left[\frac{NNII}{TI} \right]^2 \quad (2)$$

Index values vary from 0.0 to 0.5. If the structure of minimum income and operating income is only from one source (interest or non-interest), the index will be zero. Conversely, a value equal to 0.5 occurs when a complete income structure occurs. Therefore, a higher value indicates a more diverse income mix.

B. Control Variable

Several bank specific control variables are included in this study. First, the bank's capital adequacy ratio (EQTA); ratio of total deposits to total assets (DEPO). In addition, bank size (SIZE) is measured by the logarithm of the bank's total assets.

C. Model Empirical

$$Z - Score = \alpha + \beta_1 DIV_{i,t} + \beta_2 EQTA_{i,t} + \beta_3 DEPO_{i,t} + \beta_4 LOAN_{i,t} + \beta_5 SIZE_{i,t} + \epsilon$$

$$ROA = \alpha + \beta_1 DIV_{i,t} + \beta_2 EQTA_{i,t} + \beta_3 DEPO_{i,t} + \beta_4 LOAN_{i,t} + \beta_5 SIZE_{i,t} + \epsilon$$

$$Z - Score = \alpha + \beta_1 shareCOM_{i,t} + \beta_2 EQTA_{i,t} + \beta_3 DEPO_{i,t} + \beta_4 LOAN_{i,t} + \beta_5 SIZE_{i,t} + \epsilon$$

$$ROA = \alpha + \beta_1 shareCOM_{i,t} + \beta_2 EQTA_{i,t} + \beta_3 DEPO_{i,t} + \beta_4 LOAN_{i,t} + \beta_5 SIZE_{i,t} + \epsilon$$

$$Z - Score = \alpha + \beta_1 shareTRADE_{i,t} + \beta_2 EQTA_{i,t} + \beta_3 DEPO_{i,t} + \beta_4 LOAN_{i,t} + \beta_5 SIZE_{i,t} + \epsilon$$

$$ROA = \alpha + \beta_1 shareTRADE_{i,t} + \beta_2 EQTA_{i,t} + \beta_3 DEPO_{i,t} + \beta_4 LOAN_{i,t} + \beta_5 SIZE_{i,t} + \epsilon$$

IV. EMPIRICAL RESULTS

A. Descriptive Statistics

The zscore value is, on average, 16.21, while the average DIV (income structure) is 0.38. The DIV value indicates that non-interest income is still relatively small when compared to total operating income. It can result in the effect of DIV on Z-Score (risk), which does not exist at all (not significant), although the value of the Z-score is relatively good for the risk category. The same is valid for a fee and commission income as well as small trading in the proportion of total revenue, 15%, and 4.2% respectively.

TABLE I. DESCRIPTIVE STATISTICS

Variable	Obs	Mean	Std.Dev.	Min	Max
zscore	56	16.213	32.752	.791	225.3
LnZ	56	1.825	1.331	-.235	5.418
roaa	84	1.598	.915	.04	3.72
DIV	84	.389	.15	.1	.748
share_FEES	84	.153	.068	.006	.338
share_TR	84	.042	.038	-.075	.181
DE					
EQTA	84	.136	.032	.078	.225
DEPO	84	.714	.064	.504	.825
LOANS	84	.649	.074	.394	.797
SIZE	84	19.175	.96	17.094	20.983

B. Regression Analysis

This research is an analysis of bank-level panel data in a single country. So, to determine the best estimator, we conducted a series of tests. The test results indicate that the analysis uses random effects.

TABLE II. Regression Model

VARIABLES	(1)	(2)	(3)	(4)
	Ln Z-Score	Ln ROAA	Ln Z-Score	ROAA
DIV	0.459	1.491*		
EQTA	11.66** (5.536)	4.641* (2.551)	12.09** (5.305)	4.226 (2.938)
DEPO (1.495) (0.807)	3.314 (3.019)	3.616** (1.500)	3.421 (2.490)	2.529 (1.627)
LOANS	3.250 (2.081)	-1.022 (2.257)	3.237* (1.797)	-2.355 (2.039)
SIZE	0.772*** (0.257)	0.597*** (0.0885)	0.752*** (0.246)	0.625*** (0.0838)
share_FEES			2.148 (2.928)	0.721 (1.741)
share_TRADE				
Constant	-19.34*** (6.081)	-12.99*** (2.853)	-19.23*** (5.642)	-11.35*** (2.625)
Observations	56	84	56	84
Number of id	14	14	14	14

(5) (6)

VARIABLES	Ln Z-Score	ROAA
share_T RADE	- 1.034	4. 025**
	(2.03) 3)	(1) .665)
EQTA	11.0 7**	3. 944
	(4.93) 6)	(2) .428)
DEPO	2.62 6	3. 201*
	(1.96) 9)	(1) .687)
LOAN	2.22	-

S	5	2.222
	(2.48 1)	(1 .379)
SIZE	2***	0. 638***
	(0.24 9)	(0 .0811)
Consta nt	- 18.08***	- 12.18**
	(5.78 5)	(2 .515)
Observ ations	56	8
	4	4
Number of id	14	14

Table 2 shows the regression results. Strangely, the results show that the diversification index is not significant to risk (z-score), but is positively and significantly related to bank performance. Influence on positive performance shows that diversification provides benefits and this is in line with prior research [10]. The exciting thing is that the impact of net trading income has a significant positive effect on bank performance. It indicates that the bank can manage this income even though its share is still minimal compared to all revenue. Different from previous research, for example, states that bank size (SIZE) tends to exacerbate bank risk-taking, and to some extent, larger banks are subject to greater market discipline.

V. CONCLUSION

Financial deregulation and technological progress are issues that continue to be discussed both by academics and regulators/policymakers related to risk and performance banking. These policies have two sides, which can have an impact on the level of intermediation as well as risk. Banks, as business entities, certainly expect profits maximum through intermediation activities. Big or small profit depends on the spread between interest rates loans with deposit rates.

However, since the 1997 Asian financial crisis, the banking industry in the region Asia including Indonesia, began to make various innovations from the traditional banking model to the banking model universal. It causes structural changes in bank income, and banks do not just focus on activities traditional, but also leads to nontraditional activities.

This study aims to examine the impact of revenue structure on the risk and performance of banks in Indonesia. The Indonesian context was chosen, referring to the Indonesia Banking Survey 2017, which shows the position of the highest attraction of the banking business (PwC, 2017). Besides, based on various indicators of the level of performance of banks in Indonesia, it was shown to be quite an increase/growth both in the aspect of raising funds and channeling funds (OJK, 2018). Furthermore, Indonesia is one of the countries in the ASEAN Region, which is a laboratory for the implementation of various policies related to the banking sector. The study will use secondary data from 15 commercial banks in Indonesia from 2013-2018. The results showed that the impact of diversification on income structure had a positive effect on performance but did not produce any results/impact on risk. It becomes a natural thing because the proportion of non- interest income is small, so the bank tends to shift its income to non-interest more carefully and with good understanding and expertise.

The short research period is a limitation in this study so it has not captured the period during the global financial crisis. Future research needs to include this and differentiate banks according to their respective capital levels or based on Bank Indonesia book criteria.

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