



REVENUE DIVERSIFICATION, PERFORMANCE, AND BANK RISK: EVIDENCE FROM INDONESIA

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Abstract

There have been a number of studies on the implication of revenue diversification especially on bank performance and risk, both in the context of developed and emerging countries. This paper examines the effect of revenue diversification on bank performance and bank risk by studying 101 conventional commercial banks in Indonesia over the period of 2010-2014 resulting in 505 observations. By employing panel least square technique, our results show that revenue diversification negatively affects bank performance. From the findings, we can conclude that diversified banks are riskier than specialized banks. The risk is diminished when state-owned banks diversify their business. Joint venture banks are riskier than other banks when they engage in non-interest income activities.

DIVERSIFIKASI PENDAPATAN PADA KINERJA DAN RISIKO BANK: FAKTA DARI INDONESIA

Abstrak

Pengujian mengenai risiko maupun kinerja yang diakibatkan oleh sumber pendapatan yang terdiversifikasi pada perusahaan perbankan sudah banyak dilakukan, baik pada negara berkembang maupun negara maju. Penelitian ini menguji pengaruh diversifikasi pendapatan pada kinerja bank dan risiko bank dengan mempelajari 101 bank umum konvensional di Indonesia selama periode 2010-2014 menghasilkan 505 observasi. Menggunakan panel least square technique, hasil penelitian menunjukkan bahwa diversifikasi pendapatan mempunyai pengaruh negatif pada kinerja bank. Selain itu, ditemukan bahwa bank-bank yang terdiversifikasi lebih berisiko daripada bank yang tidak mendiversifikasi pendapatannya. Risiko berkurang ketika bank-bank yang dimiliki oleh negara atau bank BUMN melakukan diversifikasi proses bisnisnya. Sedangkan, bank hasil Joint Venture lebih berisiko daripada bank lain ketika bank-bank tersebut berfokus pada pendapatan non-bunga.

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INTRODUCTION

Around the world, the banking industry has developed along with the development of technology and globalization. It started with traditional activities which are collecting funds from depositors and distributing it to borrowers. The shift from traditional activities to non-traditional activities has further started since the banking deregulation applied in many countries (e.g. cross-state ownership in the US, financial deregulation package of 88 in Indonesia). This has led the banking activities have been varied, not only collecting and granting funds but also engage in trading activities, providing insurance, providing brokerage services, and other services.

There have been a number of studies on the implication of revenue diversification especially on bank performance and risk, both in the context of developed and emerging countries. Research in the US banking conducted by Stiroh (2002) examines how the non-traditional activities affect bank profit and risk. In aggregate, non-interest revenue shows volatility but negatively correlated with risk-adjusted return. Another finding is that trading revenue contributes to increasing bank risk. Chiorazzo et al. (2008), by studying Italian banks, find that a shift to non-interest income is a benefit for both large banks and small banks. Small banks can get gains from the diversified source of income, while large banks are also benefitted as it can cover higher operating cost after investment in new technology.

The benefits of revenue diversification have also been proved by Klein and Saidenberg (1998), Stiroh (2002), Stiroh et al. (2004), Elsas et al. (2010). Considered, revenue diversification is beneficial and provides greater performance, even though it is more volatile. Elsas et al. (2010) find that there is an indirect effect of revenue diversification on bank value. Sanya and Wolfe (2011) document that revenue diversification decreases risk and increases the profitability of banks in emerging economies. Similarly, Meslier et al. (2014) find that banks (local or foreign banks) which are diversified in

their income have a higher profit, but this only works for those having low exposures to SMEs.

On the other side, there has been an inconclusive finding in the literature regarding the effect of revenue diversification on bank risk. Acharya et al. (2006) find that revenue diversification is not associated with bank risk. Some also reveal that revenue diversification does not increase bank stability, but it does not decrease bank risk as well. Köhler (2014) explains that expanding into more non-interest revenue leads banks riskier particularly for investment-oriented banks. Köhler (2014) also finds that savings and cooperative banks are more stable and profitable if their non-interest activities are increased.

DeYoung and Roland (2001) explain that the volatility of bank earning come from the switching of relationship based loan to fee-based activities which typically has no relationship element. Subsequently, it creates their earnings more volatile. Moreover, the increasing of fee-based activities can increase the operating leverage of bank to meet the additional fixed labor inputs.

Our present paper here is aimed at re-examining the impact of bank diversification on performance and risk by studying Indonesian banks which is an emerging market. Like in other countries, Indonesian banks have also diversified their business along with the advancement in the information technology, the deregulation, and the globalization. We focus on Indonesian banks due to banking is still the main locomotive of financial intermediation activities in this country (Trinugroho et al., 2014). Going deeper, we look at the impact of revenue diversification for different types of banks based on the ownership structure. Pennathur et al. (2012), using data from banks in India, find that foreign-owned banks are more diversified while public sectors banks with higher levels of government ownership have lower fee-based activity.

According to Sanya and Wolfe (2011), revenue diversification can be defined as the extent to which banks generate incomes separated from loan portfolio. Bank revenue diver-

sification is not only pronounced in advanced countries but also recently in emerging countries. They also explain that non-interest income activities come from securities underwriting, insurance, real estate investment and others. Expectedly, the larger the business scopes could increase the bank profitability.

Elsas et al. (2010) find that diversification directly increases bank profitability and indirectly affects market value. They also find that shifting to non-interest activities could lower cost-income ratios which subsequently lead banks to gain a higher margin. According to Landskroner et al. (2005), the increasing of the scale and scope of operations can improve the profitability and operational efficiency. It could also improve asset quality Apergis (2014). Some empirical studies have found that non-interest activities have a positive impact on banks' performance (e.g. Chiorazzo et al., 2008). Chiorazzo et al. (2008) also find that large banks can get more benefit than small banks due to they have more capability to manage the operating leverage associated with fee-based activities. Besides that, large banks can utilize new technology such as online services to sell additional products.

Turn to the effect of income diversification on bank risk; it is widely considered that the more the diversification, the riskier the bank should be. However, mixed findings are found in the literature. Stiroh (2002) reveals that non-interest income is much more volatile than interest income. Fee-based activities are more volatile than interest-based activities (Stiroh & Rumble, 2006). Trading activities are also considered to increase bank risk because it heavily depends on uncertain market conditions. Fee-based income and commission income positively and significantly drive bank risk in small banks. Further, more trading income is also associated with higher risk (Lepetit et al., 2008).

On the contrary, Pennathur et al. (2012) find that fee-based income significantly reduced risk in the case of public sector banks. Fee for

investment service such as brokerage fee can reduce the probability of failure. However, it becomes risky when banks can not cover operation fixed cost due to this activity (DeYoung & Torna, 2013).

The issue of ownership structure should be taken into account to discuss the impact of diversification strategy on risk and performance of banks. Considered, there are two types of banks that have different characteristics. First, state-owned banks or public banks should be included. Those banks typically engage more on traditional banking activities as they have to help the government in the country development by channeling more loans. However, state-owned banks are commonly large. Second, the role of foreign banks should also be considered. Generally speaking, foreign banks' presence in the developing countries could bring a benefit as they have advanced technology enabling them to perform more efficient (Trinugroho et al., 2014).

Pennathur et al. (2012) document that public banks seek less fee-based income but they obtain more in brokerage income or service-based income. On the other side, domestic private banks and foreign banks have higher fee-based income. Meanwhile, Williams and Prather (2010) argue that foreign banks have higher income volatility and hold more capital. However, they could manage the risk as they tend to have better networks, partnership, and connection with international conglomerates (Berger, 2010).

METHOD

Sample and Data

We study conventional commercial banks in Indonesia over the period of 2010-2014. However, we exclude banks that have been merged and acquired, with incomplete information, and have negative equity. Banks with negative equity should be excluded due to they create difficulty in measuring the Z-score. Thus, this study finally obtains a sample of 101 banks during 2010-2014 resulted in 505 observations.

Data on bank-level variables (income, assets, loan, equity, and others) are gathered from financial statements which are provided by the Bank Indonesia and the Indonesia Financial Services Authority (OJK). As a highly regulated industry, banks have to disclose their reports periodically. Going deeper, we also divide the sample into six types of banks based on ownership which are state-owned banks, foreign exchange commercial banks, non-foreign exchange commercial banks, regional development banks, joint venture banks, and foreign-owned banks.

Revenue Diversification

Our main explanatory variable is revenue diversification (DIV). Bank income sources are divided into two major categories (interest and non-interest incomes). Non-interest income could be broken down into fee-based income, trading income, and other income. Referring to the work of Elsas et al. (2010), we measure diversification index as follow:

$$DIV = 1 - \left(\left(\frac{INT}{TOR} \right)^2 + \left(\frac{FEE}{TOR} \right)^2 + \left(\frac{TRAD}{TOR} \right)^2 + \left(\frac{OTH}{TOR} \right)^2 \right)$$

INT is gross interest revenue, FEE is net fee-based income, TRAD is net trading income, OTH is net of all other income, TOR is total operating revenue and equal to the sum of INT, FEE, TRAD, and OTH. The value of DIV is between zero and 0.75. A zero value means that a bank has only one source of income (specialized), but if the value of DIV is 0.75, it means that a bank has balanced income.

Going deeper, we also divide the non-interest incomes to carefully investigate which source of non-interest income has an impact on performance and risk. Fee-based incomes consist of fee and administration, provision, commission, dividend, and profits from investments in equity method. Trading income consists of mark to the financial market asset, the profit of spot and derivative transaction, and the profit from selling the financial asset. Other income is other income accounted in the financial report.

$$FEESHARE = \frac{Fee\ Revenue}{Net\ Operating\ Revenue}$$

$$TRADSHARE = \frac{Trading\ Revenue}{Net\ Operating\ Revenue}$$

$$OTHSHARE = \frac{Other\ Revenue}{Net\ Operating\ Revenue}$$

Bank Performance

Bank performance is represented by accounting performance which is ROA (the ratio of return on asset).

$$ROA_{it} = \frac{Net\ Income\ After\ Tax}{Average\ Assets}$$

Bank Risk

Bank risk is measured by Z-Score which shows the probability of a bank's failure. A smaller value of Z-Score means higher risk.

$$ZScore = \frac{ROA + \frac{Equity}{Total\ Assets}}{\sigma ROA}$$

Bank Specific Characteristics (Control Variables)

Bank Size (Assets) is measured by the natural logarithm of total asset (LNASSET). Bank Growth is the growth rate of total assets (GROWTH). Bank Capital (Equity) is the ratio of equity to total assets (EQTA). Bank Loan is the ratio of total loans to total assets (LOANTA)

Empirical Model

The regression models to be estimated are presented below:

$$ROA = \alpha + \beta_1 DIV_{it} + \beta_2 LNASSET_{it} + \beta_3 GROWTH_{it} + \beta_4 EQTA_{it} + \beta_5 LOANTA_{it} + \varepsilon$$

$$ROA = \alpha + \beta_1 FEESHARE_{it} + \beta_2 LNASSET_{it} + \beta_3 GROWTH_{it} + \beta_4 EQTA_{it} + \beta_5 LOANTA_{it} + \varepsilon$$

$$ROA = \alpha + \beta_1 TRADSHARE_{it} + \beta_2 LNASSET_{it} + \beta_3 GROWTH_{it} + \beta_4 EQTA_{it} + \beta_5 LOANTA_{it} + \varepsilon$$

$$ROA = \alpha + \beta_1 OTHERSHARE_{it} + \beta_2 LNASSET_{it} + \beta_3 GROWTH_{it} + \beta_4 EQTA_{it} + \beta_5 LOANTA_{it} + \varepsilon$$

$$ZSCORE = \alpha + \beta_1 DIV_{it} + \beta_2 LNASSET_{it} + \beta_3 GROWTH_{it} + \beta_4 EQTA_{it} + \beta_5 LOANTA_{it} + \varepsilon$$

$$ZSCORE = \alpha + \beta_1 FEESHARE_{it} + \beta_2 LNASSET_{it} + \beta_3 GROWTH_{it} + \beta_4 EQTA_{it} + \beta_5 LOANTA_{it} + \varepsilon$$

$$ZSCORE = \alpha + \beta_1 TRADSHARE_{it} + \beta_2 LNASSET_{it} + \beta_3 GROWTH_{it} + \beta_4 EQTA_{it} + \beta_5 LOANTA_{it} + \varepsilon$$

$$ZSCORE = \alpha + \beta_1 OTHERSHARE_{it} + \beta_2 LNASSET_{it} + \beta_3 GROWTH_{it} + \beta_4 EQTA_{it} + \beta_5 LOANTA_{it} + \varepsilon$$

We estimate the models using fixed effect least square technique (static panel data method). However, for robustness check, we also employ the dynamic panel model.

RESULT AND DISCUSSION

Descriptive Statistics and Correlation

Table 1 provides the descriptive statistics of variables, while Table 2 exhibits the descriptive statistics based on ownership types. Table 3 shows correlation matrix of variables. The correlation between the DIV and ROA is 0.03802. Despite the small value, it still indicates a posi-

Table 1. Descriptive Statistics

	Obs	Mean	Min	Max	Std. Dev
Div	505	0.205648	0.006988	0.637687	0.160218
FEE/Non-intr rev	505	0.423017	-0.494940	3.139137	0.293814
FEE/Net opr rev	505	0.292286	-17.64049	16.84983	1.639191
TRAD/non-intr rev	505	0.244019	0.000000	0.990828	0.301766
trad/net opr rev	505	0.966632	-19.45865	200.8780	9.302058
OTH/non-intr rev	505	0.323968	0.000000	1.000000	0.308765
oth/net opr rev	505	0.228630	-9.512077	23.67692	1.313185
DIVLL	505	0.243129	0.007009	0.998950	0.222806
ROA	505	0.015774	-0.184295	0.074996	0.016477
Z-SCORE	505	50.63594	0.262810	340.6068	48.32711
LNASSET	505	16.02025	11.79931	20.47226	1.727558
GROWTH	501	0.232705	-0.494940	3.139137	0.293814
EQTA	505	0.150712	0.015866	0.886903	0.094812
LOANTA	505	0.619009	0.090285	0.871253	0.118897

Table 2. Statistics Descriptive of Banks Based on Ownership Type

Bank		DIV	ROA	Z-SCORE	LNASSET	GROWTH	EQTA	LOANTA
State-Owned Banks	Mean	0.28195	0.02198	53.02509	19.57691	0.167845	0.117779	0.63360
	SD	0.14120	0.00778	22.08024	0.730768	0.068524	0.020529	0.057942
	MAX	0.63672	0.034896	91.16112	20.47226	0.306132	0.143116	0.734008
	MIN	0.10269	0.007634	26.21443	18.03992	0.060426	0.082673	0.535733
	Obs	20	20	20	20	20	20	20
Foreign Exchange Commercial Banks	Mean	0.21139	0.012261	60.96698	16.54764	0.219566	0.129763	0.642213
	SD	0.11526	0.012826	66.26704	1.654513	0.235275	0.050009	0.090371
	MAX	0.62125	0.074996	333.0890	20.11061	1.616264	0.329422	0.789665
	MIN	0.02640	-0.03952	0.262810	13.29043	-0.145463	0.041806	0.282886
	Obs	145	145	145	145	145	145	145
Non-Foreign Exchange Commercial Banks	Mean	0.10654	0.006849	65.23633	14.22983	0.312508	0.212272	0.609787
	SD	0.07064	0.022651	54.10566	1.282445	0.482727	0.152579	0.143924
	MAX	0.50012	0.063438	340.6068	18.09064	3.139137	0.886903	0.871253
	MIN	0.00699	-0.18429	0.287322	11.79931	-0.228456	0.076069	0.113675
	Obs	115	115	115	115	115	115	115

Table 2. Continuou

Bank		DIV	ROA	Z-SCORE	LNASSET	GROWTH	EQTA	LOANTA
Regional Development Banks	Mean	0.11178	0.026543	35.57224	16.02508	0.197234	0.123071	0.610677
	SD	0.05623	0.011606	24.73342	0.907797	0.133787	0.029380	0.084236
	MAX	0.46269	0.062957	111.7836	18.06624	0.543244	0.230160	0.745953
	MIN	0.04087	-0.02025	3.739835	13.95893	-0.106522	0.080748	0.345454
	Obs	130	130	130	130	130	130	130
Joint Venture Banks	Mean	0.38348	0.014983	45.29508	16.31844	0.241248	0.182411	0.635113
	SD	0.16283	0.009388	20.70967	1.010045	0.205444	0.082720	0.147516
	MAX	0.62455	0.038318	105.8433	18.00470	1.064298	0.483395	0.812935
	MIN	0.05424	0.000394	12.27228	13.63005	-0.050606	0.086177	0.090285
	Obs	55	55	55	55	55	55	55

Table 3. Correlation Matrix

	ROA	Z-SCORE	DIV	FEESHARE	TRAD SHARE	OTH-SHARE	LNASSET	GROWTH	EQTA	LOANTA
ROA	1									
Z-SCORE	-0.04433	1								
DIV	0.038024	-0.10179	1							
FEESHARE	-0.013450	0.001714	0.096078	1						
TRADSHARE	-0.040324	-0.03379	0.062321	0.150945	1					
OTHSHARE	-0.066833	0.100039	-0.03916	0.283127	0.071408	1				
LNASSET	0.46625	0.22105	-0.12512	0.060380	-0.001216	0.093324	1			
GROWTH	-0.03107	-0.12038	-0.03107	-0.021629	-0.00799	-0.034324	-0.09553	1		
EQTA	-0.11181	-0.07286	-0.11181	-0.029109	0.057409	0.039988	-0.46612	0.060398	1	
LOANTA	-0.11977	0.11602	-0.11977	0.037517	-0.092164	-0.032151	0.153148	-0.13761	-0.31139	1

tive relationship. The correlation between DIV and Z-SCORE is -0.10179. It indicates that revenue diversification increases are positively correlated with bank risk.

Empirical Results

Table 4 provides the regression results. Surprisingly, result shows that diversification index is negatively and significantly associated with bank performance which is not consistent with some previous findings findings (Landskroner et al., 2005; Lepetit et al., 2008; Elsas et al., 2010; Sanya & Wolfe, 2011) in which diversification strategy could bring positive impact on bank performance. Some arguments may explain this contradictory finding. First, as mentioned by Trinugroho et al. (2014), Indonesian banks have higher interest margins than banks in other countries particularly in the Asia. The-

refore, shifting from interest-based income to non-interest activities could reduce their overall financial performance. Second, the small proportion of non-interest income may not sufficiently enough to cover the increasing fixed costs due to the shifting to non-interest activities.

Our result also exhibits that diversification index is negatively and significantly correlated with Z-Score which means that revenue diversification leads banks to be riskier. Diversified banks have a higher risk than specialized bank (Lepetit et al., 2008). Arguably, diversification activities bring banks to a new environment which it is more unstable and uncertain.

Results of our control variables reveal that the ratio of equity to total assets and the ratio of loan to total assets are positively associated with the Z-Score. It means that banks having a higher proportion of equity in their financing

are less risky than those with lower equity financing. We also find the positive effect of the ratio of loan to total assets on return on asset (performance) which could be explained by the fact that the more the proportion of assets is allocated for loans, the higher the return that banks could get.

Bank size which is proxied by the natural logarithm of the total asset has a positive and significant effect on ROA and Z-score which means that large banks are more profitable and less risky. However, we also find that bank growth is negatively associated with the return on assets.

Table 4. Regression Results

	ROA	Z-SCORE
DIV	-0.009202* (0.0782)	-26.73464* (0.0656)
LNASSET	0.002812*** (0.0000)	2.582807* (0.0867)
GROWTH	-0.005397** (0.0293)	-2.186221 (0.7502)
EQTA	0.014528 (0.1033)	203.1487*** (0.0000)

	ROA	Z-SCORE
LOANTA	0.012577* (0.0568)	36.89064** (0.0444)
R-Squared	0.083562	0.137868
Adjusted R-Squared	0.066764	0.122065

The table reports the result for panel least square regression. The p-value is presented in parentheses. *, ** and *** indicate significance at the 10%, 5%, and 1% level.

Table 5 presents the regressions results for different types of non-interest incomes. Fee-based income does not significantly affect performance and risk. Similarly, no significant influence is found for trading activities neither on performance nor risk. Revenue generated from another source has a positive effect on Z-score which means it significantly reduces bank risk.

Table 6 provides the regression results on the impact of diversification on performance and risk based on ownership types. Diversification is found to be positive and significant on Z-Score of state-owned banks. It means that revenue diversification contributes to reducing the risk of state-owned banks. However, no evidence is found for performance.

Table 5. Regression Results for the Breakdown of Banks Revenue Sources

	ROA			Z-SCORE		
	1	2	3	4	5	6
FEESHARE	-0.000370 (0.3988)			0.172282 (0.8878)		
TRADSHARE		-6.72E-05 (0.3857)			-0.238812 (0.2671)	
OTHSARE			-0.000673 (0.2186)			3.320444** (0.0288)
LNASSET	0.002367*** 0.0000	0.002356*** 0.0000	0.002299*** 0.0000	1.216202 (0.3571)	1.266982 (0.3362)	1.453332 (0.2696)
GROWTH	-0.005372** (0.0305)	-0.005375** (0.0304)	-0.0055** (0.0275)	-1.981253 (0.7737)	-2.14878 (0.7549)	-1.307783 (0.8489)
EQTA	0.013249 (0.1368)	0.013473 (0.1306)	0.013094 (0.1411)	199.1105*** (0.0000)	200.2889*** (0.0000)	199.4498*** (0.0000)
LOANTA	0.014755** (0.0238)	0.014100** (0.0312)	0.014471** (0.0264)	42.63499** (0.0189)	41.00225** (0.0242)	43.25977** (0.0166)

The table reports the result for panel least square regression. The p-value is presented in parentheses. *, ** and *** indicate significance at the 10%, 5%, and 1% level.

Table 6. Regression Results based on the Type of Ownership

Banks		DIV	LNASSET	GROWTH	EQTA	LOANTA
State-Owned Banks	ROA	-0.01201 (0.1900)	0.01095*** (0.0001)	0.010080 (0.4661)	0.19236** (0.0387)	0.0803*** (0.0087)
	Z-SCORE	154.237** (0.0483)	1.729352 (0.9016)	-14.3023 (0.8962)	-663.439 (0.3312)	-25.5898 (0.8998)
Foreign Exchange Commercial banks	ROA	0.00814 (0.4091)	0.002561*** (0.0003)	-0.00809* (0.0548)	0.0944*** (0.0000)	0.013747 (0.2205)
	Z-SCORE	-54.3281 (0.3367)	5.949774 (0.0234)	5.264226 (0.8264)	190.571* (0.0934)	69.6516 (0.2787)
Non-Foreign Exchange Commercial Banks	ROA	-0.03907 (0.2888)	0.005166** (0.0157)	-0.00179 (0.7033)	0.02723 (0.2473)	0.03389 (0.1526)
	Z-SCORE	81.4967 (0.2774)	-9.854960** (0.0234)	-9.04595 (0.3440)	160.40*** (0.0011)	0.507991 (0.9916)
Regional Development Banks	ROA	-0.00296 (0.8393)	-0.00278*** (0.0033)	0.01332** (0.0347)	0.1862*** (0.0000)	0.0375*** (0.0002)
	Z-SCORE	-62.7664 (0.1483)	6.441983** (0.0206)	-9.81931 (0.5958)	54.7566 (0.5117)	79.233*** (0.0062)
Joint Venture Banks	ROA	0.0347*** (0.0002)	-0.002127 (0.1963)	0.004604 (0.3714)	0.04085** (0.0204)	0.007298 (0.4188)
	Z-SCORE	-54.725** (0.0374)	6.680247 (0.1781)	-8.55080 (0.5804)	110.961** (0.0354)	24.99081 (0.3584)
Foreign Banks	ROA	-0.00811 (0.6397)	0.006492** (0.0132)	0.004201 (0.5960)	0.06003** (0.0437)	-0.01206 (0.3370)
	Z-SCORE	5.00757 (0.7821)	1.568882 (0.5472)	-4.29153 (0.6045)	51.2434* (0.0960)	20.06348 (0.1312)

The table reports the result for panel least square regression. The p-value is presented in parentheses. *, ** and *** indicate

The impact of revenue diversification on performance is found to be positive and significant for joint venture banks. More diversified revenue would lead to improving the performance of joint venture banks. However, our result also presents a negative coefficient of diversification on Z-Score for joint venture banks. It means that risk increases when the banks engage more in non-interest activities. No significant effect of diversification on performance and risk for domestic private banks, regional development banks, and foreign banks.

Robustness Check

We also conduct some robustness checks to assure that the results are consistent and ro-

bust. First, we exclude 5% outliers. Our variable of interest which is revenue diversification still has a negative impact on performance. Likewise, more diversified banks are found to be riskier. Second, we change the measure of the level of revenue diversification. We follow the work of Laeven and Levine (2007). On performance and risk, the coefficients of diversification are consistent with the results presented in Table 4.

CONCLUSION AND RECOMMENDATION

This study examines the effect of revenue diversification on bank performance and risk. We also investigate which revenue sources contribute to bank performance and bank risk.

Going deeper, we also take into account the role of bank ownership. Our results do not confirm most previous studies on the effect of income diversification on performance. We find that income diversification decreases bank performance. However, we do find that diversified banks are riskier than less diversified banks. Indonesian banks are benefited from the high-interest margin. Shifting to non-interest activities may not be beneficial at this time. Also, they relatively only have a small share of non-interest revenue, considerably, it is not sufficient enough to drive bank performance.

The result of the effect of revenue diversification on bank performance and bank risk based on ownership type shows that only joint venture banks can get benefit from revenue diversification. State-owned banks show a risk reduction when they are more diversified. On the other hand, joint venture banks show riskier than other banks when they are more diversified.

However, relatively short period of this study could be a limitation as it could not capture the period during the global financial crisis. We suggest that future research could explore the effect of bank diversification on performance and risk by looking at the matter of financial crisis period. Looking at the impact of pre-crisis, crisis, and post-crisis could bring a deeper insight. Also, we do not employ the dynamic panel estimation as one may argue that its previous value determines the level of revenue diversification.

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