

# “Do foreign and state banks take more risk?”

Fitri Ismiyanti  <https://orcid.org/0000-0002-2353-0149>

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## AUTHORS

Afwadi Rahman

Putu Anom Mahadwartha  <https://orcid.org/0000-0003-0744-5478>

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Fitri Ismiyanti, Dr., Faculty  
of Economics and Business,  
Airlangga University, Indonesia.

Afwadi Rahman, Faculty  
of Economics and Business Alumnus,  
Airlangga University, Indonesia.

Putu Anom Mahadwartha, Dr.,  
Faculty of Business and Economics,  
University of Surabaya, Indonesia.



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Fitri Ismiyanti (Indonesia), Afwadi Rahman (Indonesia),  
Putu Anom Mahadwartha (Indonesia)

## DO FOREIGN AND STATE BANKS TAKE MORE RISK?

### Abstract

This paper addresses the impact of foreign ownership, government ownership, efficiency and income diversification on the risk-taking behavior of banks in Indonesia. This research uses Z-Score to measure bank risk-taking behavior. Z-score proxies probability bank's loss that is greater than its equity. Despite their profit, bank may suffer financial insolvency when taking too much risk. This study used a sample of 44 banks in Indonesia over the 2011–2016 period with purposive sampling method. Based on the result of the research, it can be concluded that foreign ownership can increase bank risk-taking behavior due to the barrier to entry in the form of deficiency of quality information of the borrower so that it has an impact on the increase of non-performing loan ratio. While government ownership can also increase risk-taking behavior, because banks are used by politicians to pursue political goals that cause banks to take high-risk projects with low profits. In addition, the results of this study also show that banks with low efficiency tend to increase the risk-taking behavior.

**Keywords** foreign ownership, government ownership, efficiency,  
income diversification, bank risk-taking behavior

**JEL Classification** E58, G21, G32

## INTRODUCTION

The banking industry plays an important role in the economy as a financial intermediary institution and payment system. Banks are still a major sector in driving the Indonesian economy; therefore, bank risk-taking behavior should be noted well by the banking regulator. Large banks with risk-taking behavior can increase systemic risk, causing disruption of the entire economic system. Bank risk-taking behavior can be measured using z-score. The z-score shows the probability of bank loss greater than the equity. Banks may experience insolvency when taking too much risk to make a profit. If the economy is in good condition, high risk-taking behavior will provide high returns as well. However, the bad economic condition can cause insolvency (Fang et al., 2014).

There are various factors that influence bank risk-taking behavior such as bank ownership and bank characteristics. Previous studies (Berger et al., 2008; Shaban & James, 2014; Chen et al., 2017) generally divide bank ownership into domestic private, foreign, and state ownership. While the characteristics that affect bank risk-taking behavior are efficiency and income diversification. The penetration of foreign banks in Indonesia is increasing due to the high net interest margin and deregulation of foreign ownership (up to 99%) in the Indonesian banking industry. Foreign banks generally have advantages in accessing international capital, sophisticated management, and more advanced understanding of how to screen and monitor borrowers (Chen et al., 2017). However, foreign banks face a barrier to entry in the form of a lack of creditor's creditworthiness information, leading to a rise in

non-performing loans. The low quality of credit causes foreign banks to assume higher risk-taking behavior than domestic banks (Dell’Ariccia et al., 1999; Shirasu, 2017). The deregulation of private banks after PAKTO 88 caused the decrease of state bank domination. Differences in private and state ownership affect bank risk-taking behavior. State banks are generally used to pursue the political goals (Shleifer & Vishny, 1997). Bank risk-taking behavior is also influenced by the characteristics of bank efficiency. Generally, banks with low efficiency tend to improve their performance by lowering credit standards or reducing credit monitoring. In the short term, this policy indeed can provide high profits but may increase long-term risk. This risk-taking behavior may cause the bank to be insolvent if the external shock exists such as increasing of non-performing loans (Fiordelisi et al., 2011).

This research composes four research problems, which are:

1. Does foreign ownership affect bank risk-taking behavior?
2. Does state ownership affect bank risk-taking behavior?
3. Does bank efficiency affect bank risk-taking behavior?
4. Does the bank income diversification affect bank risk-taking behavior?

## 1. LITERATURE REVIEW

### 1.1. Bank risk-taking behavior

It is well known that banks face various risks such as credit risk, liquidity risk, and another risk. Banks generally take risks to earn net income. Risks taken under normal economic conditions can provide a high profit. However, high risk-taking behavior while the economy is on the downturn may cause insolvency among banks (Fang et al., 2014). Laeven and Levine (2009) explained that insolvency occurs when the bank is unable to pay its liabilities. The situation occurs usually when bank losses are greater than equity. Thus, the greater liabilities value more often cause bank experiencing insolvency. However, high risk-taking behavior causes the bank to face the uncertainty of net income thus increasing the probability of insolvency. In many studies (Laeven & Levine, 2009; Houston et al., 2010; Chen et al., 2017), bank risk-taking behavior is measured using an inverse of z-score that indicates the distance of a bank’s insolvency. The bank is insolvent if the z-score value falls below zero.

### 1.2. Foreign ownership

Banks with foreign ownership have several advantages over domestic one through owning favorable access to international capital, sophisticated management, and more advanced when dealing with borrowers. These three factors make foreign

banks to have better risk control and lower bank risk-taking behavior (Chen et al., 2017). To overcome the barrier to entry, foreign banks usually do mergers and acquisitions with domestic private banks. Mergers and acquisitions can increase lending and increase profitability in the short term. However, the loan will accumulate the non-performing loans in the long term, thereby reducing the profitability of foreign banks (Shirasu, 2017). This argument shows that mergers and acquisitions only increase market share but are unable to solve the lack of information problem on borrower’s eligibility. The high non-performing loans and the decline in profitability will have an impact on the low value of z-scores of foreign banks. The argument is supported by Angkinand and Wihlborg (2010), Lee and Hsieh (2014), and Chen et al. (2017) who analyze the influence of foreign ownership on bank risk-taking behavior. The results showed that foreign ownership positively affects bank risk-taking behavior.

*H1: Foreign bank ownership positively affects bank risk-taking behavior.*

### 1.3. State ownership

In general, most studies consider state ownership to positively affect bank risk-taking behavior. State banks are usually used for political purposes of distributing low-interest loans to groups that support politicians in return for having supported political strategy. Under Agency Theory, the

separation of ownership between management and shareholders can lead to a conflict of interest between management and bank shareholders. Domestic private bank shareholders concern with management that can generate profits. However, it is different from state banks that are managed by politicians. Politicians are considered to have strong corporate control rights but have no significant cash flow rights (Shleifer & Vishny, 1997). This led to differences in banks with state banks dictated by political interests. Thus, politicians as owners of strong corporate control rights can encourage bank managers to lend to groups that support the politicians.

In addition, the results of Micco et al. (2007) in developing countries showed that during the election year, state banks provide larger loans with lower interest margins than private ownership. This causes banks to take high risks because of large credit expansion, if not offset by good credit quality, can cause loan problems in the future. The result is supported by Angkinand and Wihlborg (2010), Dong et al. (2014), and Chen et al. (2017) on the effect of ownership on bank risk-taking behavior. The results of this study showed that state ownership positively affects bank risk-taking behavior.

*H2: State ownership positively affects bank risk-taking behavior.*

#### 1.4. Bank efficiency

Normally, banks with low-efficiency performance tend to have high risk-taking behavior due to various causes such as poor management, moral hazard, short-term profit exchange with long-term risk, and unpreparedness against external shocks (Fiordelisi et al., 2011). Banks with low operating efficiency have a high burden due to an inefficient control of operating expenses. This encourages bank managers to execute moral hazard behavior due to the performance indicators of bank managers.

Bank managers with moral hazard problems will try to increase short-term profits by loosening credit standards and loan monitoring. However, this means that banks have to bear the long-term risks of rising non-performing loans. This situation can encourage banks to experience insol-

veny in case of external shocks due to having bad credit or withdrawal of customer's money. The argument is supported by Dong et al. (2014) and Chen et al. (2017) research on the effect of ownership on bank risk-taking behavior in developing countries using efficiency variables as characteristic variables. The results indicated that efficiency has a negative effect on bank risk-taking behavior.

*H3: Bank efficiency negatively affects bank risk-taking behavior.*

#### 1.5. Bank income diversification

Conventional thinking among bankers, regulators, and banking analysts argues that service income is more stable than interest income because service income is insensitive to interest rate movements and economic downturns. However, Deyoung and Roland (2001), and Stiroh (2004) argued that service income can increase risk through three causes. First, the income from lending activities is relatively more stable because there are switching costs and information costs that make it difficult for the debt holders to disconnect the loan, while the service activity is easier to move interbank consumers. Second, the loan activity has a variable cost of interest expense. While the activity of service income can have a fixed cost such as labor costs and will increase the bank's operating leverage. The high operating leverage leads to higher profit volatility. Third, the lack of regulations related to the capital structure and non-interest income may trigger banks to arbitrage by transferring the risk of the on-balance sheet from interest-based activity to risk of the off-balance sheet from non-interest income based activities, which will increase the leverage of the bank.

The argument is supported by Demirgüç-Kunt and Huizinga (2010), Beck et al. (2013), and Amidu and Wolfe (2013) study on the effect of income diversification on bank risk-taking behavior. The results of these studies showed that income diversification has a positive effect on bank risk-taking behavior.

*H4: Bank income diversification negatively affects bank risk-taking behavior.*

## 2. METHODOLOGY

### 2.1. Data

This study used quantitative data, obtained from the annual report and bank financial statements over the 2011–2016 period. In addition, researchers used data from bank financial statements in 2010 and 2009 to measure z-score that requires a previous two-year Return on Asset.

### 2.2. Research variable

The dependent variable in this research was the bank risk-taking behavior shown by natural z-score logarithm. This research uses Return on Asset (ROA) and Capital to Asset Ratio (CAR) as composite of ZSCORE to calculate the portion of bank's value based on their risk, which is standard deviation of ROA. This study does not use Dupont analysis, because Dupont is a framework for analyzing fundamental performance and has not included an element of risk. This ratio was measured using the following equation:

$$\ln(ZSCORE)_{it} = \frac{ROA_{it} + CAR_{it}}{\sigma(ROA)_{it}}. \quad (1)$$

$ROA_{it}$  shows the company's ability to use assets to generate a net profit,  $CAR_{it}$  is a capital to asset ratio that shows how much shareholders fund total assets, and  $\sigma(ROA)_{it}$  shows  $ROA_{it}$  volatility. Beck et al. (2013) used three years of  $ROA$  to measure  $ROA$  standard deviation, because the value of Z-score has a big difference between banks. Thereby, researchers used the natural logarithm of Z-score to measure bank risk-taking behavior. Z-score is an inverse of bank risk-taking behavior. The smaller the Z-score ratio, the greater the bank risk-taking behavior.

In addition, there are independent variables of ownership and bank characteristics. The bank ownership consists of two variables: foreign ownership and state ownership. Both of these variables were measured with dummies. Dummy 1 (one) if the ownership of a foreign or government share exceeds 50% and 0 (zero) if the foreign or government share is less than 50%. This research also used bank characteristic variables such as efficiency and income diversification. Bank efficiency was measured with operation cost to operating income

ratio, which shows the comparison between operating expense and operating income. Operation cost to operating income ratio is an inverse of bank's efficiency. The greater operation cost to operating income ratio shows the bank has low efficiency. Meanwhile, income diversification was measured by non-traditional income ratio, which is the ratio of non-interest income to operating income. The greater value of nontraditional income ratio shows greater diversification of revenues.

In estimating the influence of ownership and bank characteristics on bank risk-taking behavior, this research used ordinary least squares (OLS):

$$\ln(ZSCORE_{it}) = c + \beta_1 FOREIGN_{it} + \beta_2 STATE_{it} + \beta_3 CIR_{it} + \beta_4 NTIR_{it} + \varepsilon_{it}, \quad (2)$$

where  $ZSCORE_{it}$  is an independent variable which is inverse from bank risk-taking behavior. There are two variables of bank ownership, namely  $FOREIGN_{it}$  and  $STATE_{it}$ , which show dummy variable of foreign ownership (more than 50% foreign ownership equal to 1, and otherwise zero) and state ownership (more than 50% state ownership equal to 1, and zero otherwise). In addition, there are two variable bank characteristics in form of  $CIR_{it}$  which show the inverse of efficiency (operational cost to operational revenue) and  $NTIR_{it}$  used to measure the bank income diversification (non-interest revenue to operational revenue).

## 3. RESULTS AND DISCUSSION

### 3.1. Description of statistics

Based on Table 1, it is known that the average value of bank risk-taking behavior as measured using natural Z-score logarithm (bank risk-taking) is 4.047 with a standard deviation of 0.877. In addition, the Z-score has a wide range value, because the Z-score uses the standard deviation of  $ROA$ , causing the bank to have a very high Z-score value if it has constant  $ROA$ .

This study uses two variables of bank ownership, namely foreign ownership and state ownership. In this study, there are 16 banks with foreign ownership, 15 banks with state ownership, and 16 banks

**Table 1.** Descriptive statistic

Variables	N	Minimum	Maximum	Mean	Std. deviation
Bank risk-taking behavior	272	0.620	6.320	4.047	0.877
Foreign ownership	272	0	1	0.350	0.476
State ownership	272	0	1	0.310	0.461
Efficiency	272	0.391	1.567	0.824	0.146
Income diversification	272	0.003	0.457	0.110	0.099

with domestic private ownership with total firm's year observation of 272. Efficiency measurement showed mean of 0.824 and income diversification with mean of 0.110. The standard deviation of bank risk-taking behavior has the highest value than the other variables.

### 3.2. Model analysis and hypothesis testing

The research model has gone through testing classical assumptions to ensure that the research model is the best linear unbiased estimator (BLUE). The goodness of fit model (F test) is 3.063, which showed the model is statistically fit and independent variables increase model fit. Linearity test showed that deviation from linearity is 0.539, which is higher than 0.05 or there is a linear relationship between dependent and independent variables. The Adjusted R Square showed value of 0.151 (15.1%), which explains that all independent variables can explain 15% of dependent variables movement. The results showed the effect of foreign ownership, state ownership, bank efficiency, and bank income diversification on bank risk-taking behavior (Table 2).

**Table 2.** The impact of ownership and characteristics on bank risk-taking behavior

Variables	Coefficient	Sig.
Constant	6.425	0.000
Foreign ownership	-0.335	0.007
State ownership	-0.531	0.000
Efficiency	-2.371	0.000
Income diversification	-1.341	0.011
R	0.404	
R square	0.163	
Adj R square	0.151	

Foreign ownership has a significant positive effect on bank risk-taking behavior as foreign banks face the problem of the creditworthiness of creditor information when entering emerging markets

such as Indonesia (Dell'Araccia et al., 1999). As foreign banks enter the emerging markets, they will generally face the displacement of poor quality borrowers who are rejected by domestic banks. In addition, the lack of ability of foreign banks that recently entered the market in assessing borrowers has led to foreign banks taking on substantial credit risk in the future. Foreign banks generally enter the emerging markets by conducting mergers and acquisitions, so that credit risk can be reduced

However, mergers and acquisitions only increase market share and cannot solve the problem of lack of information on borrower worthiness (Shirasu, 2017). The results are consistent with Angkinand and Wihlborg (2010), Lee and Hsieh (2014), and Chen et al. (2017). State ownership has a significant positive effect on bank risk-taking behavior as state-owned banks are usually used to pursue political goals by channeling low-interest loans to groups that support the politicians in return for supporting political strategies. Politicians generally have strong corporate control rights but do not have a significant cash flow right so one way to earn a profit is using state banks for political purposes (Shleifer & Vishny, 1997). Because the loan is not based on a correct credit rating assessment and having a low-interest margin causes the bank to take a greater risk. The results of this study are consistent with the results of Angkinand and Wihlborg (2010), Dong et al. (2014), and Chen et al. (2017).

Bank efficiency has a significant negative effect on bank risk-taking behavior, because low efficiency indicates that banks have poor quality management in terms of operational cost control. This causes banks to suffer from low net income. However, low monitoring by bank owners and regulators will lead bank managers to carry out moral hazards to create a high financial performance. The high financial performance is created by tak-

ing greater risks such as loosening standards and monitoring credit. While this can be successful in increasing profits in the short run but may increase problem loans, causing banks to bear greater long-term risks. Coupled with the emergence of external shock events can encourage the bank to experience insolvency, because losses exceed the equity owned (Fiordelisi et al., 2011). The results are supported by the research by Dong et al. (2014) and Chen et al. (2017).

Bank income diversification has a significant positive effect on bank risk-taking behavior as interest income from credit activity has a large switching cost and information cost. While non-interest

income is easier to move between banks, the situation causes interest income more stable than non-interest income. Non-interest income also has the character of increasing the fixed expense; therefore, the uncertainty of non-interest income causes less stable operating profit of the company. In addition, if the regulator does not specify a regulation related to the capital structure of the non-interest income activity, it may cause the bank to arbitrage by transferring the risk of on-balance sheet from interest-based activity to off-balance sheet risk. The action will increase the leverage of the bank (Deyoung & Roland, 2001). The result is supported by Demirgüç-Kunt and Huizinga (2010), Beck et al. (2013), and Amidu and Wolfe (2013).

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## CONCLUSION

This study aims to determine the effect of bank ownership and characteristics on bank risk-taking behavior in Indonesia. The research concluded that foreign ownership can increase bank risk-taking behavior due to the barrier to entry of banking industry. The barrier is usually in the form of deficiency of information quality of the borrower and has an impact on the increase of non-performing loan ratio. While state-owned banks can also increase risk-taking behavior because the banks are used by politicians to serve political goals and cause the banks to take high risk projects with insufficient profits. In addition, the results of this study also showed that banks with low efficiency tend to increase bank risk-taking behavior and take greater risks to improve short-term performance. While income diversification can encourage greater bank risk-taking behavior because of the nature of the non-interest activity that easily transfers interbank consumers, increases fixed costs, and has high leverage if the activity is not funded by capital.

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