

Risk-taking model in Indonesian banking companies

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ABSTRACT: This paper aims to create a model that can measure how bank take the risk for their profit. Risks occur due to uncertain actions taken by the company. The final model performs which variables can explain bank risk-taking. The variables of risk-taking in this paper are capital, size, mergers and acquisitions, ownership, off-balanced sheet, LDR, BI rate, inflation, and GDP Growth. The sample data was limited to 28 banks listed in Bursa Efek Indonesia (BEI) in the period 2013-2017. The primary data source of all the variables includes financial statements, annual reports, ICMD (Indonesian Capital Market Directory), and the official website of the banks. There are four methods used to examine the best model, including forwarding, backward, stepwise, and enter. R-squared, adjusted R-squared, AIC, SIC, and Cp Mallows are used for choosing the best model in each method.

Keywords: risk-taking, forward, backward, stepwise, enter method

1 INTRODUCTION

Bank activity affects the national economy since it involves several players such as creditors and government. The Bank supports the national economy by giving credit to the public. Furthermore, they collect funds from the public by offering savings account, deposits assurance, and insurance. These products come with interest or profit-sharing to motivate the public to buy the product.

Table 1. Loan, Credit, LDR and Interest Rates of Conventional Banks in Indonesia

Year	Loan	Credit	LDR	Interest rate
2013	3,520,616	3,158,099	89.70%	6.48%
2014	3,943,697	3,526,364	89.42%	7.54%
2015	4,238,349	3,903,936	92.15%	7.52%
2016	4,630,352	4,199,713	90.70%	6.00%
2017	5,050,984	4,548,155	90.04%	4.56%

Source: Otoritas Jasa Keuangan (OJK).

From table 1, deposits had increased, loans and LDR while interest rates decrease from year to year. Loan improvement indicates that the public increasingly trusts the banks with their money. It also followed an increase in the number of loans extended by the bank to the community to support the national economy. LDR is a ratio to measure the percentage of loans distributed to the public in the form of credit. LDR of 2013-2015 dropped the following year, indicating an increase in risk-taking behavior. The greater loans granted by banks to the public, the greater bank risk-taking.

Understanding bank risk-taking is vital since it relates to its failures. Some studies examine the factors influencing the risk-taking in the banking sector. This paper aims to identify the various factors explaining bank risk-taking and then make a model measure the bank. The determinants used in this paper are macroeconomic and bank-specific factors.

2 LITERATURE REVIEW

2.1 Risk-taking

Risks occur since the companies are uncertain when handling some situations. Lepetit and Strobel (2013) stated a popular measure of risk in the banking and financial stability related to literature, which reflects a bank's probability of insolvency is the Z-score. Generally, Z-score is often used as a tool to measure the insolvency of banks. This assertion is supported by Laeven and Levine (2009), Pathan (2009), Mubarak (2014), and Liljeblom et al. (2016), which examine the bank's risk-taking and the use of Z-score as a proxy. Therefore, this study uses the Z-score as a proxy for bank risk-taking.

2.2 Z-score

Z-score Index is a measure developed by Boyd, Graham, and Hewitt in 1993 to measure risk. The greater the Z-score index shows, the bank is far from risk. Some researchers, including Laeven and Levine (2008), Pathan (2009), Mubarak (2014), and Liljeblom et al. (2016)) used Z-Score for measuring risk. In general, financial literature uses several risk measures, and the choice depends on the characteristics of the sample. This paper uses the Z-score model modification for measuring risk in the banking company. The index is formulated as follows (Mokni, Rajhi, & RachDi, 2015):

$$Z_{score} = \frac{ROA + Eq/TA}{SDROA}$$

where;

ROA: Return on assets

Eq/TA: Total equity divided by total assets

SD ROA: Standard deviation of ROA over n years

3 METHODS

Some researchers have estimated bank capital, size bank, mergers and acquisitions, bank ownership, Off-Balanced sheets, LDR, interest rates, real GDP growth, and inflation to bank risk-taking. Bank capital is measured by CAR, and higher value indicates banks have a large capital. Contrarily, a lower value shows the lender does not have enough capital to obtain the credit. CAR value causes banks to take high risks in giving credit to the public (Warjiyo, 2004). However, bank size is another reason for risk-taking. The number of assets determines the size of the bank. The larger the assets cover, the higher the risk-taking and vice versa. The level of assets cover makes banks confident to take a risk in giving credit to the public. Mergers and acquisitions are a way of increasing bank assets.

Government banks have an advantage since they get support (Novado, 2014) explaining the reason they have more confidence in taking risks than their private counterparts. Additionally, (Mokni et al., 2016) showed that an off-balanced sheet negatively affects bank risk-taking. The off-balanced sheet is a transaction that occurs in a company, but according to the rules cannot be written in the accounting process (Saunders et al., 2001). Unlike the off-balanced sheet, LDR has a positive relation with bank risk-taking. According to Achmad and Kusno (2003), Loan to Deposit Ratio (LDR) is a ratio showing the ability of a bank to

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