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A Risk Analysis of the Customer for Deposit Products in Islamic and Conventional Banking

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***Abstract*—there are currently two types of deposits in the banking world. Ie deposit products of two different banking systems; conventional banking and Islamic banking. From the years 2011-2013 phenomenon decline in deposits (deposits) on Islamic banking and conventional, as well as the fact there is a deposit as an investment vehicle that attracted many customers. Customers or depositors as investors, of course, customers will consider the level of benefits and the level of risk in investment. This study analyzes the risk of deposits in conventional banks in Islamic banks from the customer point of view. The study used Value at Risk (VaR) method with variance covariance approach. The data were collected from 2011 to 2013. The results showed that in that year the average level of risk in Islamic bank deposits higher than average level of risk deposits in conventional banks.**

Keywords: risk analysis, deposit product, conventional banking

I. INTRODUCTION

According to Philippe Jorion [1], VAR is method of assessing risk that uses standard statistical techniques used routinely in other technical fields. Loosely, VAR summarizes the worst loss over a target horizon that will not be exceeded with a given level of confidence. Further Jorion explained in an illustration: when an investment of $ 1 at the 99% confidence level means that under normal market conditions only 1% chance the investor will lose $ 1.

According to Rifqi Ismal [2], there are at least three methods of computing VaR: (i) historical simulation method; (ii) variance-covariance or analytic method and; (iii) Montecarlo or stochastic simulation method. The first method uses historical changes in market rates and prices to construct a distribution of potential future portfolio profits and losses. The second method is based on assumption that the underlying market factors have multivariate normal distribution. The normal distributions are used to determine the loss that will be equaled or exceeded x percent of the time. Finally, the last method is almost similar with historical simulation and uses a statistical distribution to adequately capture the possible changes in market factors.

Lina Nur [3] describes the VaR may be calculated using three different methods, namely: Variance-Covariance Analytic Approach, Monte Carlo Simulation Approach and Historical Simulation Approach. All three models have advantages and disadvantages of each. The variance-covariance approach or also called delta normal method has advantages in terms of ease of computation and implementation of these methods have drawbacks in terms of accuracy than the other two methods. Historical Simulation Method is the simplest method and is transparent in the calculations. Included in the calculation of the value of its portfolio. Monte Carlo Simulation Method is a method of measuring VaR relatively simple compared to the variance-covariance models, Monte Carlo Simulation Method has advantages in accuracy, but has the disadvantage in computing that is more complicated than historical simulation method.

Of the three types of methods of VaR can be used, and for this research the author chosen Variance-Covariance approach to calculate the level of risk in deposits product. The calculation approach chosen by several reasons, such as the deposit is strongly influenced by market risk, and variance covariance approach not only practical if the calculations performed by the customer, but also transparent and generally of previous research using variance covariance approach.

Several previous studies using the VaR method are "Analysis of Risk and Return The yield on Islamic Banking: Application Methods VaR and RAROC at Bank Syariah Mandiri" By Yudho Prabowo The Results show that investment *mudharabah* deposits at Bank Syariah Mandiri tend profit caused by VaR (zero) indicates a negative value. Prabowo [4]."Analysis of Risk Calculation and revenue side of the Customer at Bank Syariah (BMI, BSM, BMS) in terms of the Financial Statements Year 2008 to 2010 using the method: VaR and RAROC" By Faizal Tahir Rachmat Show that In 2008 the mean VaR best value held by Bank Syariah Mandiri of 0.0012 and worst owned Bank Muamalat Indonesia amounted to 0.00481. In 2009, the VaR mean best owned by Bank Muamalat Indonesia 0.00522 and worst owned by Bank Mega Syariah 0.00811. In 2010 the VaR mean best owned by BMI 0.00337 and the worst 0.00492 owned by BSM. Tahir [5]

“Risk Analysis and Return on Investment on Sharia Banking and Conventional Years 2009-2012: Application Methods Value at Risk (VaR) and Risk Adjusted Return on Capital (RAROC).” By Islamiyah The result show The level of investment risk deposits in conventional banking is smaller than investment risk in Islamic banking and conventional banking potential losses is lower than Islamic banking . Islamiyah [6]

This research is an extension of previous research. As research Rachmat Faizal Tahir [5], which measures the risk of the customer deposits at Bank Syariah (BSM, BMI, BMS) with the VaR method. But in the study there were differences in terms of the object of analysis that Islamic banks (BSM) and conventional banks (Bank Mandiri). Where the two banks use a different system within the mechanism of its deposit products. The study also focused only take into account the risk with VaR method and does not measure the return / RAROC as previous studies.

II. Method

In this study the authors used a descriptive approach to achieve the objectives of the research. The variables were the level of risk that is used to obtain risk on deposits of Islamic banks and conventional banks in conducting business activities. To calculate and measuring the level of risk in deposits product, the author used Value at Risk (VaR) method with variance covariance approach.

Methods of measuring the risk level of deposits with VaR Jorion [1] is a method of measuring the degree of risk using the time and level of trust in calculating VaR can be explained as follows. The measurement method of risk calculated by the estimated percentage of potential losses through the VaR value absolute (zero) and VaR relative value (mean).

Prabowo [4] explains that "VaR (zero) reflects the difference between VaR (mean) with the average rate of return ". Where if VaR (zero) is positive means that there is potential for investment losses due to deposits VaR (mean) is greater than the average rate of return. Meanwhile, if the VaR (zero) is negative means that there are potential gains from investment deposits, which VaR (mean) is smaller than the average rate of return.

Tahir [5] VaR relative or VaR (mean) is the potential risk of loss of the value of the average investment income deposits expected (expected return) μ. The definition of the potential risk of loss of value of the average income is the magnitude of risk of loss calculated from the expected return obtained from the average value of investment income deposits.

Cheung and Powell [7], Ahmed [8], Ali [9] explain that the higher the value of VaR (mean) showed that the greater the potential risk. Conversely the lower the value of VaR (mean), the smaller the risk of potential losses that can be experienced investor.

Source data used are the financial statements of the two banks, namely banks with the largest assets in Islamic banks (Bank Syariah Mandiri) and conventional banks (Bank Mandiri). Data monthly publication of financial statements contained in the official website of each bank, the website of OJK [10], Bank Indonesia website [11]. The reason for choosing Bank Syariah Mandiri (BSM) and Bank Mandiri as the unit of analysis of them because some criteria, they are:

a. Banks that have the greatest assets of each Islamic banks and conventional banks when compared to other banks. BSM is the largest Islamic bank by assets Tahir [5] as well as Bank Mandiri is also a conventional bank with the largest assets Kompas [12].

b. The financial statements used are monthly financial reports from the two banks (Bank Mandiri and BSM) in the period 2011-2013. Due to the economy at that time classified as unstable (decrease of asset growth in general in conventional banking and Islamic banking). And sufficiently describe the risks that will occur in the next year.

c. The availability of complete data is also a consideration.

Where the financial statements of each bank obtained through the official website of each bank. With these criteria are also expected to give a general overview of conventional and islamic banking. So the results of this study can be useful for our customers and others who need the information related to the decision to invest.

III. Results And Discussion

This study analyzed the risk level of deposits with the method of Value at Risk with the approach of the variance-covariance. Before we analyze the level of risk of a deposit which is calculated by VaR variance covariance, we first need to know the rate of return on deposits and the average rate of return on deposits. Rate of return on deposits *mudharabah* the highest which contained 6.68% in 2012 and the lowest is 5.02% in 2013. While the processed data is the average rate of return on deposits *mudharabah* decreased from 2011 to 2013. From the below data it can be seen that in any one year rate of return of deposits *Mudharabah* BSM fluctuate.

TABLE I. Rate of Return Deposit *Mudharabah* BSM

MONTH	*RETURN*		
	2011	2012	2013
January	6,57%	5,57%	4,70%
February	6,33%	5,26%	4,81%
March	6,35%	5,83%	4,85%
April	6,42%	6,51%	4,92%
May	6,43%	6,68%	4,75%
June	6,20%	6,51%	5,02%
July	6,23%	6,36%	4,15%
August	6,25%	5,03%	4,19%
September	6,25%	5,14%	4,24%
October	6,26%	5,15%	4,47%
November	5,94%	5,09%	4,65%
December	5,57%	5,18%	4,70%
MEAN	6,23%	5,69%	4,62%

a. (source: data processed)

From the data below it can be seen that the highest rate of return on deposits contained 6.25% in 2013 and a low of 5% in 2012 and 2013. While the processed data is the average rate of return deposits decreased from 2011 to 2012 and increased in 2013.

TABLE II. Rate of Return Deposit Conventional Bank Mandiri

MONTH	*RETURN*		
	2011	2012	2013
January	5,40%	5,75%	5,40%
February	5,40%	5,50%	5,40%
March	5,40%	5,50%	5,40%
April	5,40%	5,00%	5,40%
May	5,40%	5,00%	5,00%
June	6,00%	5,40%	5,40%
July	6,00%	5,40%	5,00%
August	6,00%	5,40%	5,40%
September	6,00%	5,40%	5,00%
October	5,40%	5,00%	5,00%
November	5,75%	5,00%	6,25%
December	5,75%	5,40%	6,25%
MEAN	5,66%	5,30%	5,41%

b. source: data processed

In order to calculate the level of risk of a deposit which is calculated by the VaR, variance covariance there are some aspects that need to be known in advance. Among them are: Standard deviation of return on deposits, normal distribution based on the level of trust / confidence level, the investment value of deposits, and time deposits. Ahmed [8]

A. Standard Deviation Refund Deposit (σ)

The risk of a deviation from the expected rate. The larger the standard deviation, the greater the risks to be faced Husnan [13] Aryani [14]. The result of the calculation is as follows:

TABLE III. STANDARD DEVIATION DEPOSITS

YEAR	*BSM*	BANK MANDIRI
2011	0,26%	0,28%
2012	0,65%	0,24%
2013	0,29%	0,44%

c. source: data is processed

B. Confidence Level (α)

The higher the level of trust / *confidence* level, the VaR deposits will be greater Aryani [14]. *Confidence level* generally ranges from 95% to 99.99%. In this study, *the confidence level* used (α) is 95% with a value of Z in the normal distribution table by 1.65.

C. Invesment Deposits (Ao)

Value the investment is assumed to Rp.10.000.000, - for deposits in Bank Mandiri and Bank Syariah Mandiri deposits.

D. Deposits in Year Time Lapse (T)

Lapse of time (T) used were obtained from the assumption of selected investments are time deposits of 6 months. Where in one year calculation is 6/12 or 0.5.

E. Comparison Result

After conducting an analysis of the Bank, the author tries to do a comparison between the two Banks. This comparison is done with the aim of knowing the Bank which has seen the lowest risk level of VaR (mean). "Typically, VaR (mean) more widely used because it reflects the difference in price (or losses) from the average value" Wahyudi [15].

In 2011 the VaR value (mean) BSM *mudharabah* deposits amounted to 0.174% lower (better) than VaR (mean) deposits of the Bank amounted to 0.190%. It means that in the year in which market conditions nor mal contained 95% confidence that every Rp. 1 funds that invest in deposits m*udharabah* BSM customers maximum loss which may occur from the average value of return amounted to 0.174% and in normal market conditions with 95% confidence that any Rp.1 funds invested in conventional deposits of the Bank in the year maximum loss which may occur from the average value of return amounted to 0.190%.

In 2012 Value VaR (mean) conventional deposits Bank Mandiri amounting to 0.161% lower (better) than VaR (mean) BSM *mudharabah* deposits amounted to 0.437%. This means that in normal market conditions there is a 95% confidence that any Rp.1 funds invested in conventional deposits of the Bank in the year the maximum loss which may occur from the average value of return amounted to 0.161% and the market conditions nor malls are 95% confidence that any Rp.1 funds invested in deposits *mudharabah* BSM in the maximum loss which may occur from the average value of return amounted to 0.437%.

In 2013 VaR value (mean) BSM *mudharabah* deposits amounted to 0.196% lower (better) than VaR (mean) conventional deposits of Bank Mandiri amounting to 0.292%. This means that in normal market conditions there is a 95% confidence that any Rp.1 funds invested in deposits *mudharabah* BSM in the maximum loss which may occur from the average value of return amounted to 0.196% and in normal market conditions are 95% confidence that any Rp.1 funds invested in conventional deposits of the Bank in the year the maximum loss which may occur from the average value of the return is 0.292%.

Overall in each year, the *mudharabah* deposits have a lower risk than conventional deposits in 2011 and 2013.

Here is a comparison table:

TABLE IV. COMPARISON OF VAR RISK LEVELS (MEAN) DEPOSIT *MUDHARABAH* BSM AND DEPOSIT BANK MANDIRI

YEAR	BSM		BANK MANDIRI	
	VaR (%)	VaR (Rp)	VaR (%)	VaR (Rp)
2011	0,174%	Rp. 17.403	0,190%	Rp.19.045
2012	0,437%	Rp.43.675	0,161%	Rp.16.105
2013	0,196%	Rp.19.650	0,292%	Rp. 29.240
Mean	0,269%	Rp. 26.909	0,215%	Rp. 21.463

d. source: data is processed

By averaged, then the value of VaR (mean) conventional deposits Bank Mandiri amounting to 0.269% or better Rp.26.909 nominal value of VaR (mean) deposits *Mudharabah* amounted to 0.215% or Rp. 21 463. That is, in the period 2011-2013 deposit products *mudharabah* in the Bank Syariah Mandiri more risky than conventional deposit products in the Bank.

IV. CONCLUSION

A. Deposits of Mudharabah Bank Syariah Mandiri

VaR (mean) Highest was in 2012 and the lowest in 2011. As compared to the level of risk in *mudharabah* deposits is higher than conventional deposits. It is means that in the year 2011-2013 the maximum potential loss that will be received by the customer when investing in products deposits *mudharabah* higher than in investing in conventional deposits.

B. Conventional Deposit Bank Mandiri

Value VaR (mean) were the lowest in 2012 and the highest was in 2013. As compared to the level of risk in conventional deposits is lower than *mudharabah* deposits. It is means that in the year 2011-2013 the maximum potential loss that will be received by the customer when investing in conventional deposit products is lower than in investing in deposits *mudharabah*.

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