Role of Risk Appetite Mediating the Effect of Interest Rate Risk and Credit Risk to Profitability

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Abstract

This research aims to analyze and explain the effect of the interest rate risk and credit risk to risk appetite and profitability, the effect of risk appetite to profitability and role of risk appetite mediating the effect of interest rate risk and credit risk to profitability. This research is conducted at Rural Banks in Bali in the period of 2013 to 2015 through the census totaling of 104 units, which 100 units who have complete data. The analysis model performed in this research is Structural Equation Modelling (SEM) with Partial Least Square (PLS) approach. The results found that the interest rate risk has positive effect on risk appetite and profitability, the credit risk has negative effect on risk appetite and profitability, the risk appetite has positive effect on profitability and the risk is mediating the effect of interest rate risk and credit risk to profitability.

Keywords: risk appetite, interest rate risk, credit risk, profitability

1. Introduction

Performance is often interpreted simply as an output that is the quantity of interest or profitability (Njanja, et al., 2010). Bank profitability is the most important instrument of financial system for the economy's prospect. The importance of bank profitability can be assessed at the level of micro and macroeconomics. In the micro level, profit is an important prerequisite of a competitive banking institution and the cheapest source of funds. Meanwhile in the macro level, the profitable banking sector is more capable to withstand the negative shocks and to contribute the stability of financial system (Acaravci and Calim, 2013).

Bank is the intermediary institutions, which have the function of collecting funds from the public in the form of third-party funds and distribute it in the form of credit (Kaaya and Pastory, 2013). The bank is a venture fraught with risk (Haneef, et al., 2012). Based on this, management will be faced with a fundamental question in the conduct of proper oversights, such as how big risk is acceptable in pursuit of these objectives (Rittenberg and Martens, 2012). Risks related to the size of potential and possible losses that will occur (Mukherji, et al., 2008).

Bank function as an intermediary institution will face interest rate risk and credit risk. Interest rate risk and credit risk are the two most important sources of risk for banks (Drehmann, et al., 2008). Interest rate risk is one of the main financial risk that faced by banks (Dhanani, et al., 2008). Interest rate risk is the second important risk after credit risk (Alessandri and Drehmann, 2009). Interest rate risk faced by banks can lead to a decrease in net income due to changes in interest rates.

Interest rates affect net interest margins and finally have effect to profitability of banks (Fathi, et al., 2012). Changes in interest rates have significant influence on the bank's net interest income (Odeke and Odongo, 2014). The Basel Committee on banking supervision reveals that excessive interest rate risk can cause significant threat to revenues (Scannella and Bennardo: 2013).

Research on the effect of interest rate risk on profitability has been found that the risk of interest rate has positive effect on profitability. This suggests that the good credit quality followed with increasing of interest rate risk may increase net interest income that will increase profits and profitability (Wirasukma, 2015). Furthermore, Gerald (1984) found that small banks have higher profitability as a result of changes in interest rates than large banks. On the other hand, Scannella and Bennardo (2013) found that the risk of interest rates led to a decline in net income due to changes in interest rates, resulting in decreased of profitability. Hasibuan (2006) found that the risk of interest rates reflect market risks that arising from changes in market conditions, where rising interest rate risk may harm the banks.

Continuous credit risk lead to decline in profitability of banking sector (Haneef, et al., 2012). The studies on the effect of credit risk to profitability have been investigated by Bahrini, (2011) by using indicators of Non-Performing Loan (NPL) found that credit risk has significant and negative effect on profitability. Similar findings were also found by Kutsienyo (2011); Joseph, et al., (2012); Kolapo (2012); Idowu, et al (2014); Buchory (2012); Clifford (2012); Ogboi and Unuafe (2013); Margaretha, et al (2013); and David (2015). On the other hand, Fiedler (1991) revealed that the increase in credit risk are not always harmful. Credit risk has positive relation to the profitability of banks (Jha and Hui, 2012). Furthermore, Haneef (2012) also found that credit risk has positive effect on profitability, similar findings were also found by Berrios (2013); Ogboi and Unuafe (2013); and Azeem, et al. (2014).

Controversy about the findings of the effect of interest rate risk and credit risk on profitability as

described into this research gap by incorporating risk appetite as an intervening variable. Risk appetite revealed the level of maximum risk that will be borne by the organization to achieve a certain profit or a minimum rate of return that will be obtained for a number of specific risks (Epetimehin, 2013). Furthermore, Epetimehin (2013) revealed that risk appetite has an important role in supporting the design of an organization's strategy and the achievement of the expected goals. Organizations with high-risk appetite may be willing to allocate the majority of the capitals to high-risk areas and new emerging markets. Conversely, organizations with low-risk appetite may limit the allocation of capital by investing in a stable business (Rittenberg and Martens, 2012).

The higher of interest rate risk and credit risk that faced by the bank showed the higher courage of bank's manager to confront the possibility of reduced profits as the impact of changes in interest rates and loan repayments that are not in accordance with the target. The bank's manager courage to confront the possibility of reduced profits reflect the bank's manager risk appetite. The higher risk appetite that decided by the bank's manager with a hope to get higher profitability compared to the risks that will be faced. This happens because managers generally have a characteristic of risk averse, where the higher the risk, the higher the profit expected by managers. Risk appetite as an intervening variable in the effect of interest rate risk and credit risk to profitability is expected to clarify the findings of research on the effect of interest rate risk and credit risk to profitability, because the level of interest rate risk and credit risk that faced by the bank manager is reflecting the high and low of risk appetite.

Interest rate risk is directly related to credit risk, which implies that higher interest rates will increase the possibility of non-performing loans (Funso, et al., 2012). Bank function as intermediary institutions that receive funds from customers which then distribute it in the form of a credit to the other customers, will face risks such as interest rate risk and credit risk. Higher interest rates are the reason for the non-performing loans (Chikoko, 2012), which finally affect the profitability of banks.

Rural bank as this research site is a Micro Finance Institution that has the same function with other banks that collect funds from customers and distribute it to other customers in the form of credit in order to improve the living standard of the communities. This this research analyzed the effect of credit risk and interest rate risk on profitability in rural banks in Bali with risk appetite as mediation variable, which is the freshness of this research. This research is also the development of integrated models of interest rate risk, credit risk, risk appetite and profitability.

The research about risk appetite in terms of banking risk and profitability are still limited. This research aims to analyze and explain the effect of interest rate risk and credit risk on the risk appetite and profitability, the influence of risk appetite to profitability, and role of risk appetite mediating the effect of interest rate risk and credit risk to profitability.

2. Literature Review
2.1 Conceptual Overview
2.1.1 Risk
Every definition of risk has the perspective of subjectivity. It depends on the nature of risk and its application. Therefore, there is no definition that covers all meanings of risk (Haneef, et al., 2012). Risk is a subject that causes actual and directly threat to organizations through reduced income stream and capital loss (Fathi, et al., 2012). Risk is arising from exposure (Horcher, 2005). The main factor that determine the profit to be expected on an asset is the risk level (Weston, and Brigham, 1990). Traditionally, risk has been defined in terms of the possibility of hazard, loss, threat, or other adverse consequences (Collier, et al., 2006). Risk occurs because the future is unknown. The uncertainty of future lead to the possibility of loss. Risks related to the size of the potential loss, such as loss severity, and the possibility that it will occur, such as frequency of occurrence (Bauer and Bushe, 2003).

2.1.2   Types of Risk
2.1.2.1 Interest Rate Risk
Interest rate risk and credit risk are the two most important risks that faced by the banks. Interest rate risk and credit risk respectively are reflecting the possibility of the borrowers fail to repay the debt due to changes in interest rates, resulting in a decrease in profitability of banks. Banks and regulators realize the importance of these risks, but they tend to manage these risks separately. Interest rate risk and credit risk are intrinsically linked to one another and cannot be separated (Drehmann, et al, 2008).

Interest rate risk is one of the main form of financial risk that faced by the institutions (Dhanani, et al., 2008). In the banking system, the impact of changes in interest rates on profitability are significant problem. Banks are more sensitive to changes in interest rates compared to other institutions (Khan and Sattar, 2014). Interest rate risk is a second important risk after credit risk (Alessandri and Drehmann, 2009) that have a negative impact on profitability and asset values as a result of changes in interest rates. Interest rate risk affects many organizations, both borrowers and investors, particularly affecting the capital intensive industrial sector (Horcher, 2005). The excessive interest rate risk can cause a significant threat to revenues (Scannella and

Bennardo, 2013).

Interest rate risk has negative impact on financial results and capital of banks. Interest rate risk lead to a decrease in net income due to changes in interest rates. The interest rate affects the net interest margin and return on assets. Net interest margin showed a sensitivity and elasticity of the organization to interest rate risk (Fathi, et al., 2012). The ratio of loans to total assets ratio is a measure of the relative importance of loans in the bank's balance sheet and can be interpreted as an indicator of interest rate risk (Ballester, et al., 2009).

2.1.2.2 Credit Risk

Credit risk is the possibility that the borrowers will not pay the debt on time or fails to make a payment at all (Akotey and Abor, 2013). Credit risk has been proved as a credit that very difficult to handle (Freeman, et al., 2006) and one of most common financial and business risk. Credit risk is the possibility of losing the loan partially or completely due to a default risk (Funso, et al., 2012). The existence of a bank is not only to accept deposits, but also to provide a credit facility thus exposed to credit risk. Credit risk is the most significant risk that faced by the banks. In addition, business success depend on the accurate measurement and efficiency management of credit risk that higher than other risks (Funso, et al., 2012).

Credit is the number of money that will be paid in the future. Credit risk occurs because such payments may not be made, either installment payment of principal and interest will result in the decrease of return on assets. Therefore, there is an inverse relationship between credit risk and return on assets (Fathi, et al., 2012). For most banks, loans are the source of most of the credit risk (Paruti, and Aggarwal, 2012). Credit risk is the credit that is considered by the banks as a possible loss of funds due to bad credit (Ogboi and Unuafe, 2013). Credit risk is the ratio between loan losses to total assets (Garzaa and Garcia, 2010). Bank credit risk can be measured by dividing the number of outstanding loans by total assets (Abdelaziz, et al., 2012). Credit risk can also be measured by dividing non-performing loans to total outstanding loans (Shehzad, et al., 2010).

2.1.3 Risk Appetite

Risk appetite is an important first step in Enterprise Risk Management, although it is recognized that companies worldwide have difficulty in defining risk appetite (Bennet and Cusick, 2007). In general, risk appetite means that how far the level of uncertainty will be retrieved by the investors against adverse changes in business and their assets. Risk appetite is an integral part of the Enterprise Risk Management and has been widely discussed in modern financial theory. Collier, et al (2006) found that every person has a tendency to take risks, from risk-averse to risk-seeking. The tendency to take risks vary for each person, which is influenced by the potential benefits of risk taking and risk perception that is influenced by experience.

Belghitar and Clark (2010) revealed the relationship between risk appetite and risk aversion. Risk aversion is how far someone does not like risks and avoid those risks. Risk aversion is the most common representation of risk appetite (Belghitar, and Clark, 2010). Risk appetite is not only related to the concept of risk aversion, but also the segment of risk-seeking and risk-averse. Risk appetite is the maximum number of risks that are willing to be borne by an organization in pursuit of its objectives (Epetimehin, 2013). Risk appetite is also called risk preferences, defined as the maximum number of risks that are prepared to accept by an organization in the pursuit of the mission, goals, and plans (Shang, and Chen, 2012). Risk appetite is the boundary line between the unacceptable and acceptable of risks. Risk appetite should be applied at the board and senior management level, so that it can be communicated throughout the organization (Higgins, 2010).

Risk appetite is associated with risk tolerance, but fundamentally different. Risk appetite explain the type and level of risks that are willing and able to take by an organization as far as its exposure is within the limits that have been set out in the risk tolerance (through various subjective and financial metrics). Risk tolerance, on the other hand, is to set the limits or parameters in the overall risk appetite that is selected by the organization to be pursued, giving a clear definition of the level of risk that is willing to be taken by the organization (Higgins, 2010). Risk appetite is about the pursuit of risk, while risk tolerance is the possibility of risk that can be handled by the organization (Anderson, 2012).

The Committee of Sponsoring Organizations of the Treadway Commission (COSO) defined risk appetite as the degree of risk in the management level of the organization, which wants to be taken by the organization or other entity to achieve its goals. The documents of COSO Enterprise Risk Management (ERM) - called the integrated framework of ERM - clearly revealed that organizations must take risks to achieve their goals. The question is, how much risks are the management want to take? How the behavior of the management of all the risks and how the organizations ensure that the operational units take risks in accordance with the organizations' risk appetite? Risk appetite reflects the organization's risk management philosophy and will affect the culture and style of the entity's operation. Risk appetite as a guide in the allocation of resources within the organization has function to help align the organization, human resources and process in building the necessary infrastructure to respond and monitor risks effectively. All organizations that want to succeed must clearly demonstrate their willingness to accept risk in the pursuit of goals. The organization will be able to improve control, enhance decision-making, rearrange how to reduce risks and make better decisions on the deployment of resources to achieve business goals, if the organization determines the number of risks that are ready to be

accepted (Higgins, 2010).

**2.2 Conceptual Framework and Hypothesis Development**
2.2.1 Conceptual Framework
Interest rate risk and credit risk are the two most important risks for banks. Interest rate risk is one of the main form of financial risk that faced by the organization (Dhanani, et al., 2008). Interest rate risk is the possibility that can reduce profitability and asset values as a result of changes in interest rates. Interest rate risk affects many organizations, both borrowers and investors, particularly affecting the capital-intensive industrial sector (Horcher, 2005). Interest rate risk is a type of financial risk that affects all financial institutions. Excessive interest rate risk can pose a significant threat to the banks (Scannella and Bennardo, 2013). Fluctuations in market interest rates, frequency and extent of movement also have an impact on the structure of intermediation activities of financial institutions and trade. It can significantly affect the profitability of banks and finally affect the solvability. The effective implementation of interest rate risk management is very important to protect consumers of financial products and to maintain the financial strength of banks.

Credit risk has an important role on the profitability of banks because most of the banks' revenue come from the loan interest. Credit risk is directly related to interest rate risk which reveal that higher interest can increase the possibility of non-performing loans. Credit risk and interest rate risk are intrinsically linked to one another and cannot be separated. Credit risk and interest rate risk are reflecting the possibility of the borrowers fail to repay their debts and the decline in bank profitability due to changes in interest rates (Drehmann, et al., 2008). The size of the interest rate risk and credit risk reflect the level of risk that is willing or ready to be taken by the management. The number and types of risks that are willing to be accepted, pursued, maintained or taken called the risk appetite. In the literal sense, appetite means determining how "courage" someone against risk-taking. The higher risk appetite is reflecting the increasing of interest rate risk and credit risk that will be borne by the banks. The number of risks that will be borne by the banks will affect the size of profitability.

Based on the above explanations, the conceptual framework of this research can be seen as Figure 1 below.

Figure 1: Research Conceptual Framework
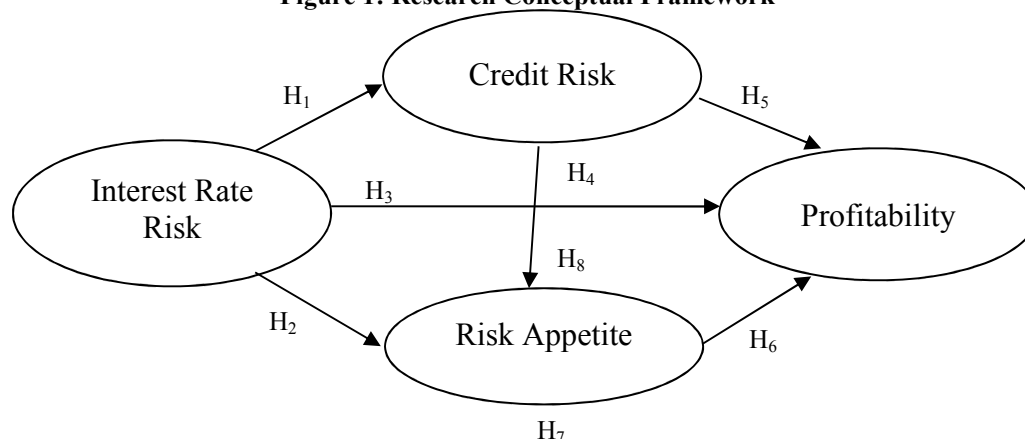
2.2.2 Hypothesis Development
2.2.2.1 The Effect of Interest Rate Risk to Credit Risk
Interest rate risk and credit risk are type of financial risks that affect all banks. The risk of higher interest rates will increase the probability of default (Garzsa - Garcia, 2010). Interest rate risk is directly related to credit risk which implies that higher interest rates can increase the possibility of non-performing loans (Funso, et al., 2012). Higher interest rates are the reason for non-performing loans (Chikoko, 2012). Interest rate risk and credit risk are intrinsically linked to one another and cannot be separated (Drehmann, et al., 2008). This suggests that the increased of risk of interest rates may result in increased of credit risk, as the impact of their non-performing loans. Conversely, the decreased of risk of interest may result in decreased of credit risk. Based on the above explanation, the hypothesis can be formulated as follows.
H_1 : Interest rate risk has significant positive effect to credit risk
2.2.2.2 The Effect of Interest Rate Risk and Credit Risk to Risk Appetite
Belghitar and Clark (2010) linked the term of risk appetite and risk aversion. Risk aversion is defined as how far the agents avoid the risks. Risk aversion is the most common representation of risk appetite (Belghitar and Clark, 2010). Risk appetite refers to "the number and types of risks that are willing to be accepted, pursued, maintained or taken by the organizations". Empirical studies on the effect of interest rate risk and credit risk to the risk appetite is still limited, but can be described in the concept that the higher interest rate risk and credit risk that

faced by the banks are reflecting the manager's higher risk appetite. Conversely, the lower interest rate risk and credit risk that faced by the banks are reflecting the manager's lower risk appetite. Based on the above explanation, the hypothesis can be formulated as follows.

H_2 : Interest rate risk has significant positive effect to risk appetite

H_3 : Credit risk has significant positive effect to risk appetite

2.2.2.3 The Effect of Interest Rate Risk and Credit Risk to Profitability

Interest rate risk is the possibility of declining profitability and value of assets as a result of changes in interest rates. Interest rate risk affects many organizations, both borrowers and investors, particularly capital-intensive industrial sector (Horcher, 2005). Interest rate risk is a type of financial risk that affect all financial institutions and the usual risks that faced by banks. Companies with a large amount of debt may be experiencing financial difficulties if interest rates rise dramatically. On the other hand, a decrease in interest rates will reduce interest income of an organization. Conversely, rising interest rates can affect the organization's business, because customers may be reluctant to make a purchase when interest rates are high (Dhanani, et al., 2005). Bennardo, (2013) found that excessive interest rate risks can pose a significant threat to the bank's earnings and authorized capital. Hasibuan (2006) found that risk of interest rates reflect the market risks that arise from changes in market conditions, which can harm the bank. Scannella and Bennardo (2013) found that risk of interest rates led to a decline in net income due to changes in interest rates, thus resulting in decreased profitability. Based on the above explanation, the hypothesis can be formulated as follows.

H_4 : Interest rate risk has significant negative effect to profitability

Credit risk management that is not properly applied will reduce the profitability of banks, affect the asset quality and increase the loan losses and non-performing loans that may lead to financial difficulties (Nawas, et al, 2012). Non-performing loans have a significant effect on the profitability of commercial banks (Akhtar, et al., 2011). The continuous non-performing loans lead to lower profitability of the banking sector (Haneef, et al., 2012). Credit risk occurs because such payments may not be made. Delayed payments may lead to a decrease in bank assets, so that the provision of total assets also decreased. As a result, ROA will be reduced (Fathi, et al., 2012). Credit risk has a negative relationship and statistically significant to the profitability of banks. It implies that the higher bank credit risk lead to the lower profitability (Kutsienyo, 2011). Higher credit risk can lead to lower profitability because of the possibility of uncollectible amount due by bank customers (Berrios, 2013). Bahrini (2011) found that credit risk which measured by non-performing loans has significant negative effect to profitability. The same results were found by Kolapo (2012); Buchory (2012); Clifford, et al (2012); Ogboi and Unuafe (2013); Margareth and Marsheilly (2013); Idowu (2014) and David, et al., (2015). Based on the above explanation, the hypothesis can be formulated as follows.

H_5 : Credit risk has significant negative effect to profitability

2.2.2.4 The Effect of Risk Appetite to Profitability

Based on the description of the effect of interest rate risk and credit risk to risk appetite, the effect of interest rate risk to profitability and the effect of credit risk to profitability can be understood that the level of bank manager's risk appetite reflects the level of bank manager's risk-taking, which expects to increase the bank's profitability. Bank managers generally have a characteristic of risk averse. This revealed that bank managers who dare to face high risk will expect to get higher profitability. Based on the above explanation, the hypothesis can be formulated as follows.

H_6 : Risk appetite has significant positive effect to profitability

2.2.2.5 The Role of Risk Appetite Mediating the Effect of Interest Rate Risk and Credit Risk to Profitability

The high courage to bear the interest rate risk and credit risk indicate the higher management company's risk appetite. Determining the risk appetite of an organization will assist in determining the limits of acceptable risk, which finally affect the company's profitability positively. The company's ability to determine risk appetite, also to determine risk management that can be applied to reduce the risk which in turn will affect the profitability of the company. The increased of interest rate risk and credit risk management along with the courage to determine the limits of acceptable risk are expected by the management to increase the profitability. Based on the above explanation, the hypothesis can be formulated as follows.

H7 : Risk appetite is mediating the effect of interest rate risk to profitability.

H8 : Risk appetite is mediating the effect of credit risk to profitability.

3.   Research Methodology

3.1 Research Design

This research is a quantitative research which is based on the positivism perspective, the data and theories are tested through hypothesis testing. A quantitative approach is useful for verification and confirmation of data. Another reasons the use of quantitative approach because this approach has a strong theoretical basis which is so reliably in generalizations.

3.2 Population and Sample Research

The population in this research are the rural banks in Bali that published their financial statements that consisting of balance sheet, income statements and other information (the number of outstanding loans, non-performing loans, and earning assets). According to the Bali PERBARINDO, the number of rural banks in accordance with this classification are as many as 104 rural banks. This research was conducted by census, which is examine all rural banks in Bali that are still active during period of 2013 until 2015.

3.3 Research Variables

3.3.1 Profitability

Profitability (Y_3) is the average ability of rural banks in Bali to make a profit with total assets used during period of 2013 to 2015. Profitability measured by the following formula.

a. Return on Asset (ROA) (Y_{31}) is the ratio between income after taxes and total assets with the following formula (Fathi, et al., 2012).

$$ROA = \frac{Income\ after\ Taxes}{Total\ Assets}$$

b. Return on Equity (ROE) (Y_{32}) is the ratio between income after taxes and shareholders' equity with the following formula (Fathi, et al., 2012).

$$ROE = \frac{Income\ after\ Taxes}{Shareholders'Equity}$$

c. Profit Margin (PM) (Y_{33}) is the ratio between income after taxes and bank's net income with the following formula (Brigham and Daves, 2010).

$$PM = \frac{Income\ after\ Taxes}{Bank's\ Net\ Income}$$

PM indicates the percentage of the income after taxes that derived from lending to the public which conducted by the management of rural banks in Bali.

3.3.2 Interest Rate Risk

Interest Rate Risk (X) is the average risk that faced by rural banks in Bali due to changes in interest rates during period of 2013 to 2015 as measured by the following indicators.

a. Net Interest Margin (NIM) (X_1) is the ratio between loan interest income less deposit interest expense and total assets with the following formula (Fathi, et al., 2012).

$$NIM = \frac{Loan\ Interest\ Income - Deposit\ Interest\ Expense}{Total\ Assets}$$

b. Total Loans to Total Assets (LA) (X_2) is the ratio between total outstanding loans and total assets with the following formula (Ballester, et al., 2009).

$$LA = \frac{Total\ Outstanding\ Loans}{Total\ Assets}$$

c. Gap Ratio (GAP) (X_3) is the ratio between Rate Sensitivity Asset (RSA) and Rate Sensitivity Liability (RSL) with the following formula (Charumathi, B, 2010).

$$GAP = \frac{RSA}{RSL}$$

3.3.3 Credit Risk

Credit Risk (Y_1) is the average risk of non-performing loans by customers of rural banks in Bali as a result of credits issued during period of 2013 to 2015. The credit risk is measured by the following indicators.

a. Non-Performing Loan (NPL) (Y_{11}) is the ration between non-performing loan and total outstanding loans with the following formula (Rotinsulu, et al., 2015).

$$NPL = \frac{Non - Performing\ Loan}{Total\ Outstanding\ Loans}$$

b. Total Equity to Total Assets (TETA) (Y_{12}) is the ratio between total equity and total assets with the following formula (Paruthi and Aggarwal, 2012).

$$TETA = \frac{Total\ Equity}{Total\ Assets}$$

c. Total Loans to Total Equity (LEQ) (Y_{13}) is the ration between total outstanding loans and total equity with the following formula (Paruthi and Aggarwal, 2012).

$$LEQ = \frac{Total\ Outstanding\ Loans}{Total\ Equity} \times 100\%$$

3.3.4 Risk Appetite

Risk appetite (Y_2) is the maximum limit of risk that is borne by the manager of rural banks in Bali. The measurement of risk appetite that is used in this study in accordance with the Circular Letter of Bank Indonesia No. 13/23/DPNP dated October 25, 2011, which contains about how much credit risk and interest rate risk that

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can be borne by the rural banks. In addition, according to the Circular Letter of Bank Indonesia No. 13/23/DPNP dated October 25, 2011, risk appetite is also used as the measure of the maximum limit of loss that can be accepted by the rural banks in Bali.

The questionnaire is used to measure the credit risk and interest rate risk that are allowed to be borne, as well as the maximum loss that can be accepted by rural banks in Bali. The questionnaire contains three questions that reveal three things as following.

a. The level of maximum loss that can be accepted by the rural banks every year, notated as Y_{21}.
b. The level of decrease in interest income as the impact of fluctuating interest rate every year that are borne by the rural banks, notated as Y_{22}.
c. The level of loans that may not be paid by the customers that are borne by the rural banks every year, notated as Y_{23}.

3.4 Data Analysis

The analysis model used to test the hypothesis that are formulated in this research using Structural Equation Modeling (SEM) with Partial Least Square (PLS) approach. The software used in the calculation process is SmartPLS.

4. Research Result
4.1 Evaluation of Measurement (Outer) Model

Table 1: Cross Loadings

	X	Y_1	Y_2	Y_3
X_1	0,233	0,236	0,010	0,127
X_2	0,998	-0,307	0,326	0,488
X_3	0,145	-0,042	0,020	0,021
Y_{11}	-0,303	0,978	-0,479	-0,704
Y_{12}	0,074	-0,224	0,177	0,108
Y_{13}	0,125	-0,238	0,005	0,021
Y_{21}	-0,060	-0,035	0,180	0,089
Y_{22}	0,280	-0,462	0,859	0,602
Y_{23}	0,295	-0,404	0,870	0,663
Y_{31}	0,493	-0,641	0,704	0,972
Y_{32}	0,431	-0,722	0,719	0,936
Y_{33}	0,459	-0,618	0,649	0,936

Source: Data Analysis

Indicators are valid if the loading factors are above 0,5 to the intended construct. The output of SmartPLS in Table 1 showed that only indicator LA (X_2) has loading factor above 0,5, which is amounted to 0,998. On the other hand, indicator NIM (X_1) and GAP (X_3) have loading factor by 0,233 and 0,145, which is below 0,5. Therefore, LA (X_2) is the only valid indicator that reflect interest rate risk construct (X).

The construct of credit risk (Y_1) is reflected by indicators NPL (Y_{11}), TETA (Y_{12}), and LEQ (Y_{13}). According to Table 1, NPL (Y_{11}) is the only valid indicator that reflect construct of credit risk (Y_1) that has loading factor above 0,5, which is amounted to 0,978. Conversely, indicators TETA (Y_{12}) and LEQ (Y_{13}) have loading factor below than 0,5, that is -0,224 and -0,238.

The construct of risk appetite (Y_2) is reflected by the level of maximum loss that can be accepted by the rural banks every year (Y_{21}), the level of decrease in interest income as the impact of fluctuating interest rate every year that are borne by the rural banks (Y_{22}) and the level of loans that may not be paid by the customers that are borne by the rural banks every year (Y_{23}). Based on Table 1, indicator Y_{21} has loading factor by 0,180, which is below 0,5, while indicators Y_{22} and Y_{23} have loading factor by 0,859 and 0,870, which are above 0,5. This means that only two indicators (Y_{22} and Y_{23}) are valid to define construct of risk appetite (Y_2).

The constructs of profitability (Y_3) is reflected by the indicators ROA (Y_{31}), ROE (Y_{32}), and PM (Y_{33}). According to Table 1, ndicators ROA (Y_{31}), ROE (Y_{32}) and PM (Y_{33}) have loading factor by 0,972, 0.936 and 0,936, which are below 0,5. Therefore, the constructs of profitability (Y_3) is defined by the three indicators, namely ROA (Y_{31}), ROE (Y_{32}) and PM (Y_{33}).

Figure 2 is diagram of the t-statistic value that based on the output of SmartPLS
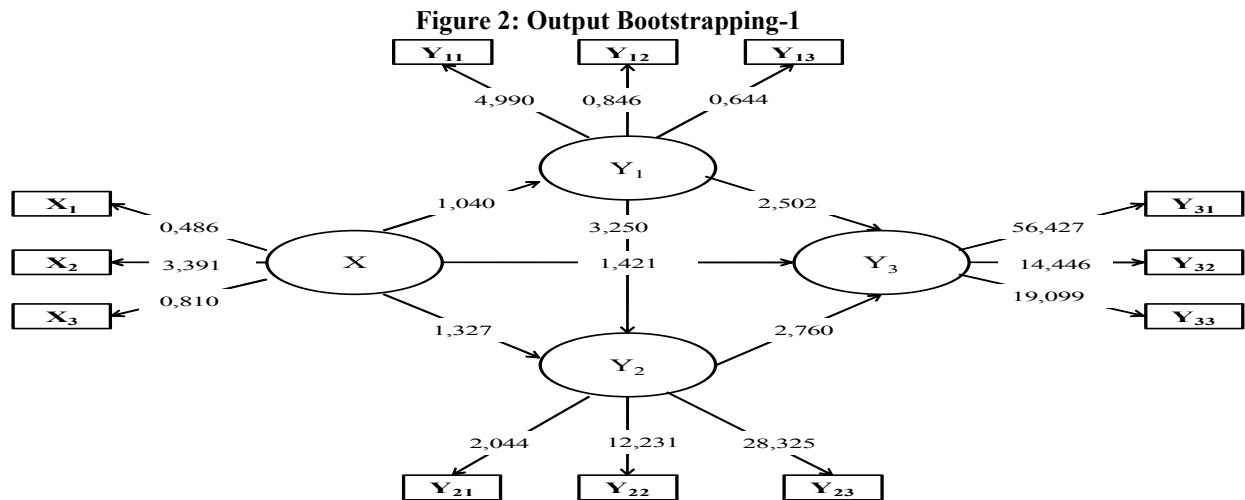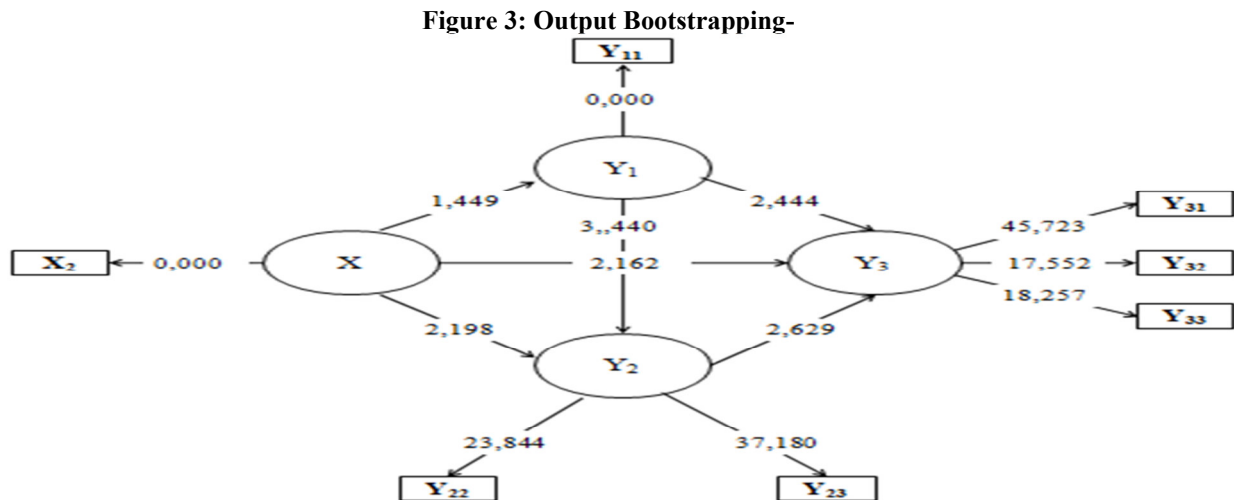
Figure 2: Output Bootstrapping-1

Figure 3 is diagram of the t-statistic value that based on the output of SmartPLS, by observing valid indicator variables.

Figure 3: Output Bootstrapping-

4.2 Hypothesis testing

4.2.1 Testing of Direct Path Coefficient

Testing the hypothesis of this research consisted of testing the hypothesis of path coefficient with direct effect and mediating effect. At the output of the PLS model, hypothesis testing is viewed from the original value of path sample and the significance t-statistics value on the 5% significance level, as shown in Table 2. Table 2 showed that there are 3 direct effect of paths that are not in accordance with the hypothesis (hypotheses are not accepted). The 3 hypothesis are: (1) interest rate risk has not significant effect to credit risk (H_1); (2) credit risk has significant positive effect to profitability (H_3); and (3) interest rate risk has positive effect to risk appetite (H_4). According to Table 2, there are also 3 direct effect of paths that are in accordance with the hypothesis (the hypothesis is accepted), namely: (1) interest rate risk has positive effect to risk appetite (H_2); (2) credit risk has significant negative effect to profitability (H_5); (3) risk appetite has positive effect to profitability (H_6).

Table 2: Analysis Results of Direct Path Coefficient

	Original Sample	t-statistics	Explanation	Hypothesis
Interest Rate Risk (X) → Credit Risk (Y_1)	-0,295	1,449	Not Significant	Not Accepted
Interest Rate Risk (X) → Risk Appetite (Y_2)	0,209	2,198	Significant	Accepted
Interest Rate Risk (X) → Profitability (Y_3)	0,212	2,162	Significant	Not Accepted
Credit Risk (Y_1) → Risk Appetite (Y_2)	-0,418	3,440	Significant	Not Accepted
Credit Risk (Y_1) → Profitability (Y_3)	-0,421	2,444	Significant	Accepted
Risk Appetite (Y_2) → Profitability (Y_3)	0,459	2,629	Significant	Accepted

4.2.2.2 Testing of Mediating Effect Path Coefficient

According to Solimun (2008), analysis of mediating variables can be made through coefficient differences. Coefficient differences approach use methods of inspection to perform analysis with and without involving the mediating variable. Inspection method is performed by two analysis, the analysis with mediating variables and

analysis without mediating variables.

Based on SmartPLS analysis, obtained the results as shown in Figures 4 and 5 that contains the value of estimate sample original and t-statistic with direct relationships between variables or constructs that are analyzed in this study.

Figure 4: The Role of Risk Appetite Mediating the Effect of Interest Rate Risk to Profitability
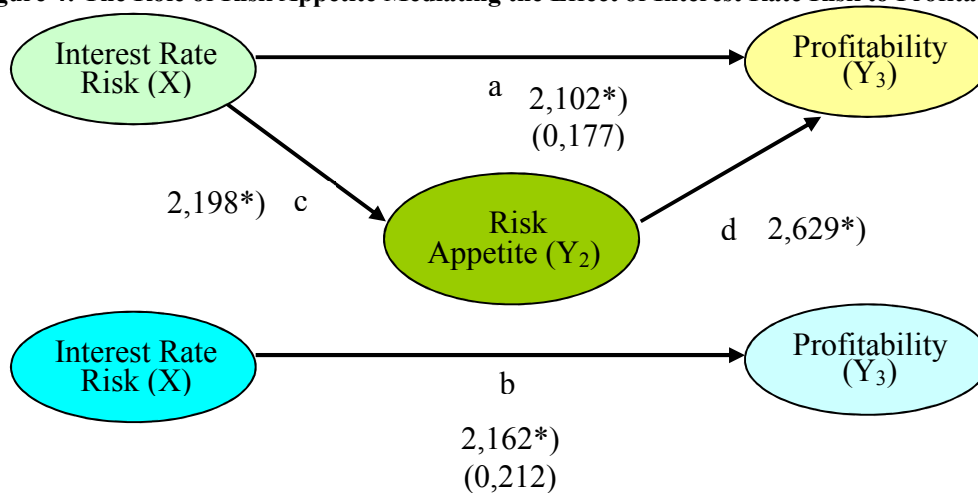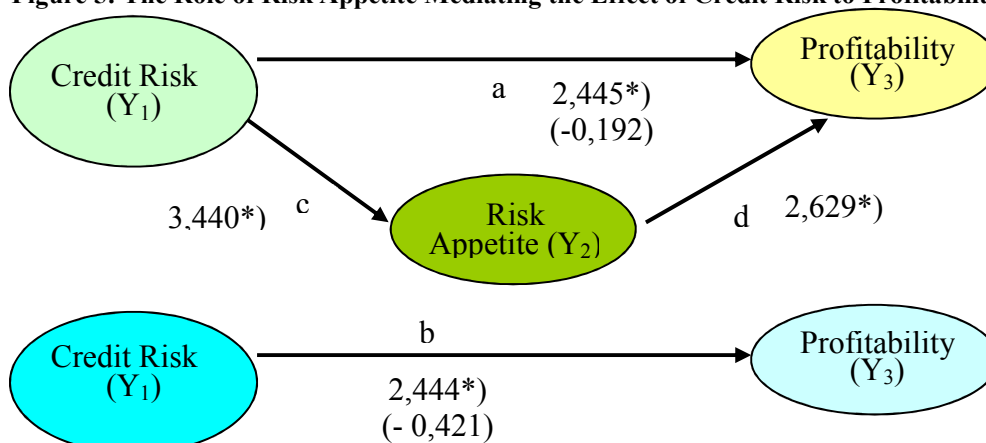

Figure 5: The Role of Risk Appetite Mediating the Effect of Credit Risk to Profitability

Based on Figure 4 and 5 above, it appears that the indirect relationship between interest rate risk and credit risk to profitability is significant with level of t-statistic respectively 2,102 and 2,445, which is above 1,96. The results of the coefficient estimate indirect effect of interest rate risk to profitability decrease by 0,177, as well as credit risk to profitability decrease by -0,192. In accordance with the provisions, if (c), (d) and (a) are significant, where the coefficients (a) decrease or smaller than the coefficient (b), then the risk appetite is partial mediation (Solimun, 2008 and Hair, et al., 2011).

5. Discussion
5.1 The Effect of Interest Rate Risk to Credit Risk
The research results showed that interest rate risk has not significant effect to credit risk of rural banks in Bali. This means that interest rate risk, as measured by total loans to total assets (LA), which is the ratio between the total outstanding loans and total assets owned by the bank does not lead to changes in credit risk as measured by Non-Performing Loan (NPL), which is the ratio between the bad loans and total outstanding loans by rural banks to the public. The results of this research are not in line with the explanation mentioned earlier that the interest rate risk is directly related to credit risk, which implies that the high interest rate risk will increase the possibility of bad loans (Funso, et al., 2012). The results also contradict the statement that the high interest rate risk is the reason for the bad loans (Chikoko, 2012).

5.2 The Effect of Interest Rate Risk to Risk Appetite
Research on the effect of interest rate risk to risk appetite become attractive considering that not many research examine the relationship between them. This research found that the interest rate risk that is reflected by total

loans to total assets (LA) has significant positive effect to risk appetite. Construct of risk appetite is reflected by the following indicators: (1) the amount of decrease in interest income as a result of changes in interest rate that are borne by the rural banks every year and (2) the amount of loans that might not be paid by the customers that are borne by the rural banks every year. Both indicators of risk appetite are positively influenced by the size of total loans to total assets (LA) that are reflecting the interest rate risk, which is the balance between total outstanding loans and total assets owned by the rural banks in Bali.

5.3 The Effect of Interest Rate Risk to Profitability
The effect of interest rate risk to profitability is significantly positive. The higher interest rate risk will lead to the higher level of profitability of rural banks in Bali. Conversely, the lower interest rate risk will lead to the lower of profitability of rural banks in Bali that are reflected by Return on Assets (ROA), Return on Equity (ROE) and Profit Margin (PM). As described earlier, the interest rate risk is measured by total loans to total assets (LA), which is the ratio between the total loans and total assets owned by rural banks. The results also showed that the increase of interest rate risk is not always harmful. Contrary to what is stated by Scannella and Bennardo (2013), which found that the increased of interest rate risk led to decrease in net income, resulting in decreased profitability or in other words the interest rate risk negatively affect the profitability.

5.4 The Effect of Credit Risk to Profitability
Indicator of credit risk is NPL. The effect of credit risk to profitability is significantly negative. The higher credit risk will lead to the lower level of profitability of rural banks in Bali. Conversely, the lower the credit risk will result in higher levels of profitability of rural banks in Bali, which is measured by the indicators of ROA, ROE and PM. When comparing the effect of interest rate risk to profitability with the effect of credit risk to profitability, then the interest rate risk has positive effect to profitability, while credit risk has negative effect to profitability. Credit risk has more dominant effect than the effect of interest rate risk to profitability. Findings of credit risk negatively affect the profitability indicating that the higher credit risk increase the credit problems in rural banks in Bali, thus reduce interest income, which in turn have an impact on the decline of the rural banks' profitability. The results are consistent with the research on the effect of credit risk to profitability that has been done by Bahrini (2011) that used NPL as the indicator. Bahrini (2011) found that credit risk has significant negative effect to profitability. Similar findings were also found by Kutsienyo (2011); Joseph, et al. (2012); Kolapo (2012); Idowu, et al. (2014); Buchory (2012); Clifford (2012); Ogboi and Unuafe (2013); Margaretha, et al. (2013) and David (2015).

5.5 The Effect of Credit Risk to Risk Appetite
The effect of credit risk to risk appetite is significantly negative. It showed that the higher credit risk faced by the management of rural banks in Bali will result in the lower risk appetite and vice versa. The size of the NPL that are borne by the rural banks refer to Circular Letter of Bank Indonesia No. 3/30/DPNP dated December 14, 2001. Bank Indonesia set a maximum of 5% NPL to rural banks. The rural banks will try to monitor the size of NPL that may occur by choosing the borrowers more carefully. It certainly can affect the size of outstanding loans to borrowers and directly affect the size of NPL. This effort is conducted so that the rural banks will not over the maximum levels of NPL that set by Bank Indonesia.

5.6 The Effect of Risk Appetite to Profitability
The research on the effect of risk appetite to profitability of company, especially financial institutions, are still limited. Risk appetite management of rural banks in Bali has positive and significant effect to the profitability, which measured by indicators ROA, ROE and PM. Therefore, the development and determination of the different risk appetite by the management of rural banks in Bali will affect the profitability improvement efforts. This is in accordance with Rittenberg and Martens (2012), which found that every organization will develop a risk appetite that differ from one another to reach the goal and the manager's attitude on risks will determine the appropriate behaviors to be followed.

5.7 The Role of Risk Appetite Mediating the Effect of Interest Rate Risk to Profitability
The direct relationship between interest rate risk and risk appetite is significant, as well as the direct relationship between risk appetite and profitability is also significant. On the other hand, the indirect relationship between profitability and interest rate risk is statistically significant at the level of t-statistic by 2,702 (> 1,96). The result of the indirect effect coefficient estimation of interest rate risk to profitability has increased by 0,277, but the result is almost the same with the direct effect coefficient estimation of interest rate risk to profitability by 0,212. This research found that the risk appetite is capable of mediating the effect of interest rate risk to profitability of rural banks in Bali. This indicates that the increase of interest rate risk which is accompanied by the increase of risk appetite of the management of rural banks in Bali will able to increase profitability. This proves that the

indirect effect of interest rate risk to profitability through risk appetite and the direct effect of interest rate risk to profitability are equally significant. The findings of this research in accordance with Rittenberg and Martens (2012), which found that an organization should consider the risk appetite and at the same time decide how to pursue the goals.

5.8 The Role of Risk Appetite Mediating the Effect of Credit Risk to Profitability
The direct relationship between credit risk and profitability is significant and direct relationship between credit risk to risk appetite is also significant. On the other hand, the indirect relationship between credit risk and profitability is significant. The result of indirect effect coefficient estimation of risk credit risk (Y_1) to profitability (Y_3) is decreased by -0,192, which at first the result of direct effect coefficient estimation of credit risk to profitability is decreased by -0,421. This research found that risk appetite is capable of mediating the effect of credit risk to profitability of rural banks in Bali. This indicates that credit risk is increased along with the increase of risk appetite. This proves that the indirect effect of interest rate risk to profitability through risk appetite and the direct effect of credit risk to profitability are equally significant.

6. Conclusion and Recommendations
Based on the previous explanation, it can be concluded as follows.
a. The results of direct effect: (1) interest rate risk has not significant effect to credit risk; (2) interest rate risk has significant positive effect to risk appetite; (3) interest rate risk has significant positive effect to profitability; (4) credit risk has significant negative effect to risk appetite; (5) credit risk has significant negative effect to profitability; and (6) risk appetite has significant positive effect to profitability.
b. The results of mediation effect: (1) Risk appetite is able to mediating the effect of interest rate risk to profitability; and (2) Risk appetite is able to mediating the effect of credit risk to profitability.

This study is limited to the use of interest rate risk and credit risk as a measure of bank risk, so the further research need to consider other banking risks such as liquidity risk, operational risk and others in order to managing the business better, especially banking. The further research also need to consider another indicators beyond the three indicators that are used in this research to measure the risk appetite as mediating variable.

Reference
Abdelaziz, H., Mouldi, D. and Helmi, H. (2012). Financial Liberalization and Banking Profitability: A Panel Data Analysis for Tunisian Banks. *International Journal of Economics and Financial Issues*, 1(2): 19-32.
Acaravci, S.K. and Çalim, A. E. (2013) Turkish Banking Sector's Profitability Factors. *International Journal of Economics and Financial Issues*, 3(1).
Akhtar, M. F., Ali, K. and Sadaqat, S. (2011). Factors Influencing the Profitability of Conventional Banks of Pakistan. *International Research Journal of Finance and Economics*, (66).
Akotey, J. O. and Abor, J. (2013). Risk management in the Ghanaian insurance industry, *Qualitative Research in Financial Markets*, 5(1): 26-42.
Alessandri, P. and Drehmann, M. (2009). An Economic Capital Model Integrating Credit and Interest Rate Risk in the Banking Book. *Working Paper Series*, (1041).
Anderson, R. (2012). Risk Appetite and Tolerance, Executive Summary (A guidance paper from the Institute of Risk Management).
Azeem, Aamir and Amara (2014). Impact of Profitability on Quantum of Non-Performing Loans. *Journal Accounting & Finance University of Pakistan*.
Bahrini, Raef (2011). Empirical Analysis of Non-Performing Loans In The Case Of Tunisian Bank. *Journal of Business Studies Quarterly*, 3(1): 230-245.
Ballester, L., Ferrer, R., Gonzales, C. and Soto, G. M. (2009) *Determinants of Interest Rate Exposure of Spanish Banking Industry*.
Bauer, L. and Bushe, D. (2003). *Identifying Risk Attitudes*, Third Edition, Faculty of Extension University of Alberta.
Bennet, C. and Cusick, K. (2007). *Risk Appetite: Practical Issues for the Global Financial Services Industry*, Institute of Actuaries of Australia Biennial Convention, Christchurch, New Zealand
Berrios, Myrna R. 2013. The Relationship between Bank Credit Risk and Profitability and Liquidity. *The International Journal of Business and Finance Research*, 7(3): 105-118.
Brigham, E. F., Phillip R. and Daves, P. R. (2010). *Intermediate Financial Management*, Tenth Edition, University of Florida, University Of Tennessee, South-Western Cengage Learning.
Buchory, Herry Achmad. (2012). Analysis of the Effect of Capital, Credit Risk and Profitability to implementation Banking Intermediation Function. *International Journal of Business, Economics and Law*, 4(1): 133-144.

Charumathi, B. (2010). Interest Rate Risk Measurement in Indian Banking Industry: An Analytical Research Study. *Internatinal Journal of Economic Research*, 7.

Chikoko, L., Mutambanadzo, T. and Vhimisai, T. (2012). Insights on Non-Performing Loans: Evidence from Zimbabwean Commercial Banks in a Dollarised Environment (2009-2012). *Journal of Emerging Trends in Economics and Management Sciences (JETEMS)*, 3(6): 882-886.

Clifford, Mutibvu (2012). Non-Performing Loans in Commercial Banks: A Case of CBZ Bank Limited in Zimbabwe. *Interdisciplinary Journal of Contemporary Research in Business*, 4(7).

Dhanani, A., Fifield, S., Helliar, C. and Stevenson, L. (2005). Interest Rate Risk Management - An Investigation into the Management of Interest Rate Risk in UK Companies. *The Chartered Institute of Management Accountants 26 Chapter Street London SW1P 4NP*, 2(4).

_____ (2008). The Management of Interest Rate Risk: Evidence from UK Companies. *Journal of Applied Accounting Research,* 9(1).

Drehmann, M., Sorensen, S. and Stringga, M. (2008). *The Integrated Impact of Credit and Interest Rate Risk on Bank: An Economic Value and Capital Adequacy Perspective*, Bank of England.

Epetimehin, F. M. (2013). Impact of Risk Appetite on the Value of the Firm**.** *European Scientific Journal*, 9(22).

Fathi, S., Zarei, F. and Esfahani, S. S. (2012). Studying the Role of Financial Risk Management on Return on Equity. *International Journal of Business and Management*, 7(9).

Fiedler, E. R. (1991). *The meaning and Importance of Credit Risk*.

Freeman, M. C., Cox, P.R. and Wright, B. (2006). Credit Risk Management - The Use of Credit Derivatives by Non-Financial Corporations. *Managerial Finance*, 32(9).

Funso, K. T., Yeni, A., Kolade, R., Oke and Ojo, M. (2012). Credit Risk and Commercial Banks' Performance in Nigeria: A Panel Model Approach. *Australian Journal of Business and Management Research*, 2(2): 31-38.

Garza and Garcia, J. G. (2010) What Influences Net Interest Rate Margin? Developed Versus Developing Countries. *Banks and Bank Systems*, 5(4).

Hair, J., Black, W., Babin, B. and Anderson (2011). Multivariate Data Analysis: A Global Perspective, New Jersey: Pearson.

Haneef, Shahbaz (2012). Impact of Risk Management on Non-Performing Loans and Profitability of Banking Sector of Pakistan. *International Journal of Business and Social Science*, 3(7): 307-315.

Haneef, S., Riaz, T., Ramzan, M., Rana, M. A., Ishaq, H. M. and Karim, Y. (2012). Impact of Risk Management on Non-Performing Loans and Profitability of Banking Sector of Pakistan. *International Journal of Business and Social Science*, 3(7).

Higgins, R. (2010). *What Feeds an Organization's Risk Appetite?*, University of Kentucky, College of Business.

Horcher, K. A. (2005). *Essentials of Financial Risk Management*, John Wiley & Sons, Inc., Hoboken, New Jersey.

Idowu, Abiola and Olausi, Samuel (2014). The Impact of Credit Risk Management on the Commercial Banks Performance in Nigeria. *Journal Faculty of Management Sciences Ladoke Akintola University of Technology Ogbomoso, Oyo State*.

Jha, S. and Hui, X. (2012). A Comparison of Financial Performance of Commercial Banks: A Case Study of Nepal. *African Journal of Business Management*, 6(25): 7601-7611.

Kaaya, I. and Pastory, D. (2013). Credit Risk and Commercial Banks Performance in Tanzania: A Panel Data Analysis. *Research Journal of Finance and Accounting,* 4(16).

Khan, W. A. and Sattar, A. (2014). Impact of Interest Rate Changes on the Profitability of Four Major Commercial Banks in Pakistan. *International Journal of Accounting and Financial Reporting*, 4(1).

Margaretha, Farah and Zai, Marsheilly Pingkan (2013). Faktor-Faktor yang Mempengaruhi Kinerja Keuangan Perbankan Indonesia. *Jurnal Bisnis dan Akuntansi*, 15(2): 133-141.

Mukherji, A., Desai, A. B. and Wright, P. (2008). *A Contingent Relationship between Risk and Return: Toward a Behavioral Model of Decision Making*, Institute of Behavioral and Applied Management, Texas.

Njanja, W., Pelissier, R. and Ogutu, M. (2010). An Investigation into the Effect of Management Factors on Performance (Micro, Small and Medium Enterprises) in Kenya. *International Journal of Business and Management*, (11).

Odeke, S. and Odongo, J. (2014) Interest Rate Risk Exposure and Financial Performance Of Commercial Banks In Ugnada, *Research Journal of Finance and Accounting*, 5(2).

Ogboi, Charles and Unuafe, Okaro Kenneth (2013). Impact of Credit Risk Management and Capital Adequacy on the Financial Performance of Commercial Banks in Nigeria. *Journal of Emerging Issues in Economics, Finance and Banking (JEIEFB)*, 2(3).

Paruthi, R. and Aggarwal, S. (2012). Evaluation of Credit Risk Ratios between Public and Private Sector Banks in India. *IJRFM*, 2(10).

Protiviti, Early Mover Series (2012). Defining Risk Appetite, Integrating Corporate Performance Management

and Risk Management, Risk & Business Consulting, Internal Audit.

Rittenberg, L. and Martens, F. (2012). *Enterprise Risk Management, Understanding and Communicating Risk Appetite*, COSO (Committee of Sponsoring Organizations of the Treadway Commission).

Rotinsulu, D. P., Kindangen, P. and Pandowo, M. (2015). The Analyze of Risk based Bank Rating Method on Bank's Profitability in State-Owned Banks, 3(1): 95-106.

Scannella, E. and Bennardo, D. (2013). Interest Rate Risk in Banking: A Theoretical and Empirical Investigation through a Systemic Approach (Assets & Liability Management). *Business System Review*, 2(1).

Shang, K. and Chen, Z. (2012). *Risk Appetite: Linkage with Strategic planning, Sponsored by CAS/CIA/SOA*, Joint Risk Management Section.

Solimun (2008). *Memahami Metode Kuantitatif Mutakhir Structural Equation Modelling & Partial Least Square*, Program Studi Statistika FMIPA Universitas Brawijaya, Malang.

Weston, J. F. and Brigham, E. F. (1990). *Manajemen Keuangan (Managerial Finance)*, 7th edition, Erlangga Publisher, Jakarta.