INFLUENCE OF INTEREST RATE RISK MANAGEMENT PRACTICES ON FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN KENYA, A CASE OF BANKS IN KAKAMEGA COUNTY

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ABSTRACT

Following the global economic crisis in 2008, which led to the collapse of several financial institutions, there is a heightened emphasis on risk management practices in financial institutions in the world. Banks and their supervisors have spent considerable time and effort in recent years developing systems for monitoring and managing interest rate risk. Unfortunately, there is little data available concerning the interest rate risk for banks. Also, there are limited comprehensive empirical studies, particularly in emerging markets, that critically analyze the interest rate risk exposures of commercial banks as well as quantitative approaches of evaluating interest rate risk. The general objective of this study was to determine the influence of interest rate risk management practice on performance of commercial banks in Kenya. This study adopted a descriptive research design and a panel data analysis. The target population was all 9 commercial banks that were licensed and allowed to carry out business of banking in Kakamega County. The study was census because the target population was small. This study used both primary data and secondary data from the financial statements of the banks. Primary data was collected through issuance of questionnaires. Primary data analysis was done using SPSS version 23.0 and the panel data was analyzed using STATA version 12.0. Data was presented in tables and models. The study revealed that interest rate risk management had a significant influence on financial performance of commercial banks after introduction of lagged dependent variable (Financial performance). The study recommended that it was important for banks to have a robust framework that effectively manage financial risks because they affect financial performance of commercial banks.

Keyword: Financial Risk Management, Interest Rate Management, Performance, Commercial Banks

INTRODUCTION

Wealth development is one of the most significant roles of commercial banks as they are able to conduct the intermediation mechanism by taking deposits from the public and in turn advance loans (McLeay, Radia & Thomas, 2014). As all companies they seek to make money by offering a sum of interest on loans and advances to the creditors of funds which is the primary source of their revenue. Profit revenue shapes the majority of profits (about two thirds) while the remaining part comes from other payments. This demonstrates how critical it is for the commercial banks to handle the fluctuations in interest rates as they derive the key source of their incomes from loans and securities portfolio that they keep (Thanyaku, 2010).

Interest rate is the premium charged by a creditor for the usage of funds to the lender. Interest compensates lenders for the consequences of inflation as well as for the losses they face. It's a calculation of the expense of keeping capital as it represents the opportunity cost of holding money. For an investor such as a bank, interest pays the expense of remaining in operation and often generates income (Taiwo & Adesola, 2013). Changes in interest rates may have detrimental impacts both on a bank's profits and its economic value. Variation in earnings may reduce the earnings or include outright losses which can threaten the financial stability of a bank by undermining its capital adequacy and by reducing investor trust (Lopez, Rose & Spiegel, 2020).

A bank's interest rate exposure represents the degree to which its financial position is influenced by shifts in market interest rate. This is the present or prospective danger to earnings and resources resulting from detrimental fluctuations in interest rates. Interest rate risk can come in various forms which include repricing risk, yield curve risk and basis risk (Anbar & Alper, 2011).

A bank would face repricing danger if either the average yield on its liabilities is more susceptible to adjustments on market interest rates. Yield curve vulnerability represents the likelihood that shifts in the form of the yield curve could have differential consequences on the bank's assets and liabilities (Zou, Miller & Malamud, 2011). Floating rate assets and liabilities that repeat at identical periods and have separate base rates for their instruments are subject to a basic risk by the bank, indicating the likelihood that the two base rates can suddenly diverge due to different characteristics of credit risk or liquidity. Banks can often be exposed to interest rate danger by the sensitivity of interest to their non-interest profits, such as mortgage interest. A bank will normally have a mixture of all these forms of interest rate vulnerability in practice, with the consequence of possibly offsetting or improving one another (Ekinci, 2016).

An effective application of financial risk management moves through the processes of risk assessment, risk measurement and risk management. Interest rate risk management is a systematic mechanism for regulating, tracking and controlling unpredictable interest rate fluctuations exposed to banks (Chen et al., 2018). Instead of spending their capital in real estate, foreign currency or other risky practices, savers see the interest rate as an opportunity to put their money in banks and other deposit taking institutions. They aim to optimize their returns while guaranteeing a fair safety measure.

Commercial banks, financial companies and other sources of credit aim to receive, at low interest rates, deposits and lend at the best practicable rates. The key monetary policy goal of the government, however, is to establish positive real interest rates and stabilize nominal exchange rates in order to boost economic growth (CBK 2015). Policy makers and bankers have long been concerned with the possible effect of shifts in market interest rates on the profits, prices, and profitability of commercial banks.

A fairly conventional understanding of banks' activities is that they invest in the short run and lend in the long run. In other words, banks are

engaged in financial intermediation operations in such a way that their assets' maturity structure can surpass the maturity structure of their liabilities. The profits and net worth of the bank may also be adversely influenced by unanticipated interest rate rises. This exposure of the bank's earnings and net worth due to unexpected interest rate adjustments is referred to as the danger of interest rates (Kugler, 2010). The problem is that market dynamics can decide interest rates. Banks sell loan contracts to depositors optimally (deposit taking) and embrace entrepreneurial debt contracts (lending). In a stable setting, actual interest rates are paid to borrowers, whereas in an unstable environment, high rates are levied on deposits, thus exposure to high interest rate risk.

The bank should decide how complicated its interest rate risk management should be, but a well-managed bank would provide a mechanism that helps the management of the bank to define, calculate, track and regulate interest rate risk in a timely and systematic manner (Bikker & Vervliet, 2018). The fundamental risk emerging from the mismatch of the interest rate basis for the assets and liabilities of a business and the difference risk resulting from mismatch periods of rising interest rate adjusted assets and liabilities are the key categories of interest rate risks. Others involve the possibility of repricing that occurs from the disparity in the timing of cost increases and the cashflow timing. Interest rate uncertainties emerge from variations in the maturities of the assets and liabilities of a bank as a consequence of re-pricing mismatches resulting either from short-term borrowing to finance long-term assets or from long-term borrowing to support short-term assets (Vickery, 2008).

Interest rate vulnerability can often occur as a consequence of an incomplete association when changing the prices received and charged on multiple instruments with otherwise identical re-pricing functions. Mismatches in the maturity of rate-sensitive assets and liabilities, i.e. the re-pricing cycle of an asset or liability whose interest

rates may adjust for a given future duration, result in sales and valuation fluctuations as interest rates change (Godspower-Akpomiemie, 2012).

Matthieu, Augustin, and Thesmar (2016) did an analysis in the United States of America entitled 'Banks' Vulnerability to Interest Rate Danger and the Dissemination of Monetary Policy. The analysis aimed to demonstrate that banks' vulnerability to interest rate risk or income difference in cash flows has an effect on the transmission of monetary policy shocks to bank lending and actual operations. Matthieu et al.(2016) used a broad panel of U.S. banks to prove that even as banks use interest rate futures, the exposure of bank earnings to interest rates rises dramatically with the calculated income difference.

Matthieu et al., (2016) found that banks hold considerable interest rate risk exposure. Our collection consists of quarterly data from 1986 to 2013 on US bank holding firms. The wage difference in the cross-section of banks estimates bank lending's vulnerability to interest rates. In terms of magnitudes, the impact of the income difference is greater or equivalent to that of variables previously established, such as debt, bank size or even asset liquidity. The distribution of interest rate exposure through agents (banks, households, companies, government) is an important variable for understanding how an economy reacts to monetary policy, according to Matthieu et al. (2016). In particular, in order to examine the redistributive impact of monetary policy and thus track the origin of the transmission of monetary policy, the distribution of interest rate risk among agents is essential. We use loan-level evidence to mitigate the fear that this outcome is motivated by the endogenous matching of banks and businesses and equate the supply of credit to the same firm by banks with distinct income differences (Matthieu et al., 2016).

Santhosh and Prakash (2016) have currently published another research on interest rate risk management in India, which was a comparative study by Bank of Baroda and ICICI Bank. Santhosh

and Prakash (2016) pointed out that the Indian banking sector is exposed to different types of threats, such as liquidity risk, interest rate risk, credit risk, currency risk, etc., impacting the Net Interest Income (NII) of the business, which is the fundamental source of profitability for a bank. The phased deregulation of interest rates and the operating versatility provided to banks also exposed the financial sector to interest rate danger (IRR) while pricing most assets and liabilities. In order to determine the interest rate danger situation at Bank of Baroda and ICICI Bank, the analysis used analytical test style. Santhosh and Prakash (2016) used secondary data from the RBI website and from Bank of Baroda and ICICI bank's annual reports. During the 2009-2014 study span, the Bank of Baroda and the ICICI Bank were exposed to interest rate risk. A few tactics that banks should adopt, according to Santhosh and Prakash (2016).

Statement of the Problem

High interest rates have remained a macroeconomic problem that has been difficult to eliminate. According to Mang'eli (2018), fluctuations of market interest rates exert significant influence on the performance of financial institutions. In 2017 citing interest rates volatility the Standard Chartered Bank and Family bank issues profit warnings as indication of poor performance (Business Daily, 2017). A year before, the Central Bank of Kenya (CBK, 2015) through its Bank Supervision Report indicated that non-performing loans among commercial banks had increased by 2. 4 % in year 2016 from a 6.9 % that was reported in the year 2015. This indicates that credit risk management was a challenge among commercial banks in Kenya. In a period of three years, three banks namely Chase Bank, Imperial Bank and Dubai were put under receivership indicating the financial sector in Kenya had a much bigger problem than that indicating by shrinking profits (Wamalwa & Mukanzi, 2018).

The Kenyan economy has been characterized by rising interest rates to the extent of the Parliament enacting the interest rate capping law.

The CBK (2018) noted that this had impacted negatively on the economy and performance of banks that has led to downsizing in form of staff retrenchments. All these points to one direction; that risk management is important for sustained performance in a competitive and highly turbulent environment. A number of studies have been done in Kenya. Maniagi et al. (2017) found that interest rate risk management had a significant positive relationship with performance. However, employing fixed effect regression method, Kolapo and Fapetu (2015) found that interest rate risk is found to have insignificant effect on bank performance. As a result, this study sought to determine the influence of interest risk management practice on performance of banks in Kenya.

Research Objective

The study sought to find out the influence of interest rate risk on performance practices of commercial banks in Kenya

Research hypothesis

Basing from the specific objective, the study sought to test the following null hypothesis; H_0: There is no significant impact of interest rate risk management practices on performance of commercial banks in Kenya.

LITERATURE REVIEW

Theoretical Review

The theory of risk management is concerned with how individuals and organizations allocate resources through time to recover from or avoid risks (Arrow, 1965). The theory seeks to explain how solutions to the problems faced in allocating resources through time are facilitated by the existence of risks in an organization (David, 2007). The concept of risk management theory involves studying the various ways by which businesses and individuals can avoid, mitigate, transfer and accept risk (Sarkis, 2011).

Tseng (2007) posit that risk management theory focuses on how an organization or an

individual can adopt a systematic and consistent approach to manage all kinds of risks. According to this theory, one component in an organization affect the next level therefore there is need to adopt multi-directional approach in risk management. The theories considered include risk management models developed within the body of the following the agency theory, stakeholder theory and new institutional economics (Klimczak, 2007).

Agency theory extends the analysis of the firm to include separation of ownership and control, and managerial motivation. In the field of risk management agency issues have been shown to influence managerial attitudes toward risk taking (Smith and Stulz, 1985). Theory also explains a possible mismatch of interest between stakeholders, management and shareholders due to asymmetries in earning distribution, which can result in the firm taking too much risk or not engaging in positive net value projects. Consequently, agency theory implies that defined hedging policies can have important influence on firm value (Fite and Pfleiderer, 1995).

Finance theory hypotheses are associated with financing structure, and give predictions similar to financial theory. Managerial motivation factors in implementation of risk management have been empirically investigated in a few studies with a negative effect (Faff and Nguyen, 2002). Notably, positive evidence was found however by Tufano (1996) in his analysis of the gold mining industry in the US. A different perspective on risk management is offered by new institutional economics. The focus is shifted here to governance processes and socio-economic institutions that guide these processes, as explained by Williamson (1998).

Although no empirical studies of new institutional economics approach to risk management have been carried out so far, the theory offers an alternative explanation of organization behavior. Namely, it predicts that risk management practices may be determined by institutions or accepted practice within a market or industry. Moreover, the theory links security with specific assets purchase (Williamson, 1987), which implies that risk management can be important in contracts which bind two sides without allowing diversification, such as large financing contract or close cooperation within a supply chain.

The most promising contribution to risk management is the extension of implicit contracts theory from employment to other contracts, including financing (Cornell and Shapiro, 1987). In certain industries, particularly education, client trust in the organization being able to continue offering its services in the future can substantially contribute to organization value. However, the value of these implicit claims is highly sensitive to expected costs of financial distress and bankruptcy. Since organizational risk management practices lead to a decrease in these expected costs, organization value rises (Klimczak, 2005). Therefore, contract theory provides a new insight into possible rationale for risk management in regard to interest rate risk by commercial banks in Kenya.

Interest Rate Risk Management Practice	Financial performance of banks
▪ Type of assets ▪ Interest on loans ▪ Net Interest Margin Interest rates ▪ Default on loans	▪ Return on Assets

Independent Variables   Dependent Variable
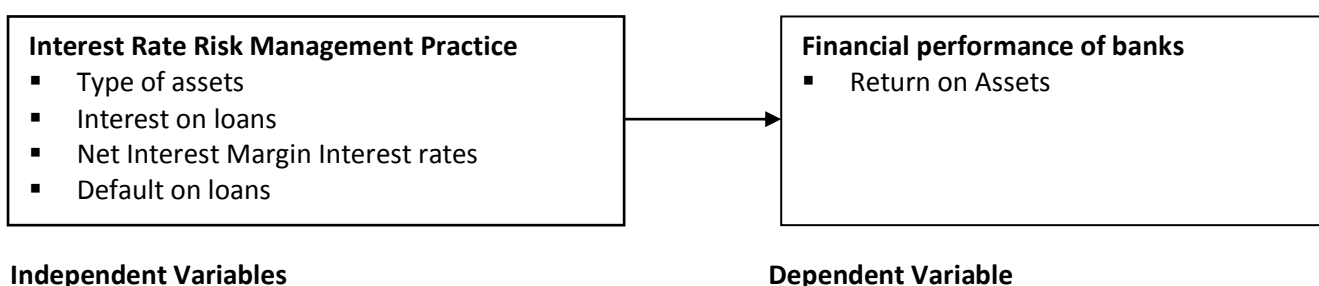
Figure 1: Conceptual Framework

Empirical Studies

Ariffin, and Tafri (2014) did a study on financial risks on profitability of banks for Islamic religion. The study sought to access the impacts of financial risk on the profitability of Islamic banks worldwide. The study adopted Generalized Least Square (GLS) panel data analysis. A sample of 65 Islamic commercial banks was selected for data analysis. The result of the study was that interest rate risk has statistically negative significant effect on return of asset which is a major determinant on Islamic commercial banks profitability. This indicates that interest rates volatility affected performance of banks in a negative way.

Aruwa and Musa (2014) did a study on evaluation of risks and performance of banks in Nigeria. The study sought to assess the effect of interest risks. The study had a target population of all banks in Nigeria where data was collected for the time period between 1997 and 2011.The study revealed that a large extent of variations in performance of deposit taking banks in Nigeria was influenced by financial risks. In particular, the study revealed that interest rates had a negative impact on financial performance of deposit taking banks in Nigeria.

Fauziah, Hamid and Omar (2009) did a study on the effects of risks among the commercial banks in Malaysia. The study sought to assess the effect of interest rates fluctuation on financial performance of the banks. The study adopted a panel data analysis where data was collected from a sample of banks for the period of 1995 to 2005. The study expressed financial performance in terms of Return on Equity and Return on Assets. It was established that interest risk had a positive and significant impact on the ROE and ROA of banks in the country.

Khan (2014) did a study that sought to assess the effect of interest rates changes on performance of banks in Pakistan. The study adopted a correlation analysis and data was collected for a period of five years between 2008 and 2012. The study used secondary data that was extracted from the financial records and statement of four tier one

banks. The study revealed that there was a significant and positive effect of interest rates changes on profitability of commercial of banks. This was attributed to the fact that interest was the income for banks and when they increased, the profitability of banks increased too.

Another study was done by Muhammad and Khan (2014) on effect of interest rates on performance of commercial banks in Malaysia. The study sought to examine whether changes in interest rates affected Return on Assets of banks. The study had a target population of all banks in the country. A sample of ten banks was selected, six from public and four in the private sectors. On data analysis, the study revealed that interest rates, if increased, had a positive effect on profitability of commercial banks in the country. However, it was revealed that banks in the private sector exhibited more profits due to volatility of interest rates when compared to those in the public sector.

METHODOLOGY

Descriptive research design was adopted so as to establish the extent of relationship between variables. This study had a target population of all the commercial banks in Kakamega County. Since the target population of this study was all the 9 commercial banks in Kakamega County, a census was done. This study used both primary data and secondary data from the specific banks financial statements in order to analyse data with the objective of achieving the objectives. Data was collected from the financial statements of the banks for the period of 2011 to 2016. The study collected data on interest rate risk management (Interest income less Interest paid) and Return on Assets (EBIT/Total Assets). The study issued six questionnaires for each banks which was done using convenience sampling. In total the study issued 54 questionnaires for each of the bank through convenience sampling. The researcher used an expert in the field of taxation and tax compliance in order to help evaluate the validity of the questionnaire. The questionnaire was tested and retested to remove elements of vagueness and

ensure it is well understood by the respondents. The study adopted regression analysis where secondary data was analysed. This study used a 95 % confidence level in data analysis. Data analysis was done using STATA version 23.0. The study carried out an ANOVA and F-test in order to evaluate the variations in Return on Assets of commercial banks in Kenya that is determined by interest rate risk management.

FINDINGS AND DISCUSSIONS

Descriptive Statistics

The study sought to determine the influence of Interest rate risk management practices on financial performance of banks. The findings were indicated on Table 1.

Table 1: Descriptive Statistics for Interest Risk Management Practices

Interest Risk Management Practices	N	Mean	Std. Deviation
The volatility of interest rates affects the income for the bank thus influencing performance	43	4.81	.394
Highly escalating interest rates makes the banks loans unattractive thus hampering profitability in the long run	43	4.53	.505
Short run increases in interest rates increases loans interest for the banks	43	4.74	.441
Sudden increases in interest rates make it hard for loanees to repay the credit	43	4.58	.499
Due to increase in interest rates, the bank has recorded a high rate of non-performance	43	4.56	.502

As indicated on Table 1, a mean of 4.81 with a standard deviation of 0.394 was established on if the volatility of interest rates affects the income for the bank thus influencing performance. This meant that volatility of interest rates affected interest income for the banks which at the overall had an effect on financial performance of banks. A mean of 4.53 with a standard deviation of 0.505 was found on if highly escalating interest rates makes the banks loans unattractive thus hampering profitability in the long run. This means that high interest rates did not increase the number of borrowers which had in turn lowered performance of banks.

A mean of 4.74 with a standard deviation of established on if short run increases in interest rates increases loans interest for the banks. This means that in the short run increase in interest rates improved performance of banks but the finding was on the contrary on long term effects of escalating interest rates. This is because loans were not affordable at very high interest rates. The

respondents agreed that a sudden increase in interest rates make it hard for loanees to repay the credit as evidenced by the high mean of 4.58 with a standard deviation of 0.499. it is important to note that increase in interest rates may increase the income for banks if borrowers will still be able to afford the loans otherwise it has a negative effect.

A mean of 4.56 with a standard deviation of 0.502 was established on if due to increase in interest rates, the banks have recorded a high rate of non-performance. This means that the respondents agreed. Perhaps, this is because, where loans become unaffordable due to high interest rates, the existing borrowers also may find it hard to keep up with the periodic loan repayments. Thus, interest rates increases have a negative influence on financial performance of commercial banks in Kenya.

Model Selection and Fitting

Model selection entails carrying out of tests that guide on whether to use Random Effects (RE)

regression or Fixed Effects (FE) regression which is based on whether the given set of data had endogenous repressors. This study adopted the Hausman test for model selection as it is a good test that establishes the endogenous repressors. It is important to understand what is meant by the term Endogenous variables in order to interpret the test. Endogenous variables are those variables (independent) that are determined by other variables and this basically invalidates the regression model. This is because; the OLS assumes that there exists no correlation between the error term and the predictor variables.

The FE model is used when is probable that the group means are fixed and that panel specific effects are capable of affecting the predictor variables. In other words, the model assumes that time is invariant and this is one of its shortcomings. On the other side, RE model assumes that panel specific effects are random and thus the model includes time variant. This is its advantage in that it

assumes that there are no fixed effects but individual effects as it assumes data is obtained from a kind of hierarchy linear model. This study adopted the Hausman Test on order to decide whether to use RE or FE regression model. The rule of the thumb is that we use Random Effects model when the Hausman test value is more than 0.05 meaning that we shall be accepting the alternative hypothesis as opposed to the null hypothesis.

The Fixed Effects is used when the Hausman test value is less than 0.05 meaning that we reject the null hypothesis in favor of the null hypothesis. The study found a Hausman Test statistic of 0.327 which is more than 0.05 meaning that we ought to use the Random Effects regression model. However, the data has heteroscedasticity problem and therefore we are forced to use the Prais Winstein regression model that accounts for standard robust errors. These findings were presented on Table 2.

Table 2: Hausman Test for Model Specification

	Coefficients
Chi-square test value	4.63
P-value	.327

Panel Unit Root Test

The study carried out a unit root test to ensure that there was no presence of unit roots (the panel data are stationary). Unit root test were conducted to ensure that the series were stationary and check the problem of having a spurious regression. A variable can only be said to be stationary when it

has no unit root. The study used both Levin-Lin-Chu and Augmented Dickey-Fuller (ADF) which is based on hypothesis

Ho: All panels contain unit roots
Ha: At least one panel is stationary
The results were as shown in Table 3

Table 3: Unit Root Tests

	Levin-Lin-Chu		Augmented Dickey-Fuller	
	Statistics	P-Value	Statistics	P-Value
Interest Rate risk Management	-6.8802**	0.000	16.0518**	0.000
Financial Performance	-8.1085**	0.000	28.0321**	0.000

** sig at 1% level

Table 3 showed the summary results for Stationarity test. A p-value of more than 0.05 indicates the presence of unit roots while a p-value of less than 0.05 was an indication that there was

no presence of unit roots for both Levin-Lin-Chu and Augmented Dickey-Fuller tests. The results indicated that there was absence of unit root for the study variables. This showed that all variables

are stationery and there was no problem of unit root and the results can proceed for further inferential statistics.

Regression Model Fitting

The study adopted the Prais Winsten Regression with robust standard errors in modeling a function that explains the influence of interest rate risk management practice on financial performance of commercial banks in Kakamega. The findings were presented on Table 4.

Table 4: Prais Winsten Regression

Prais-Winsten regression, heteroskedastic panels corrected standard errors					
Mean dependent var	0.259	SD dependent var			0.225
R-squared	0.729	Number of obs			54.000
Chi-square	37.930	Prob > chi2			0.000
ROA	**Coef.**	**St.Err**	**t-value**	**p-value**	**Sig.**
Interest Risk	-0.1627	0.032436	-5.02	0.000	***
Lag Financial Peformance	1.329078	0.105877	12.55	0.000	***
_cons	-0.017	0.118	-0.15	0.883	

*** p<0.01, ** p<0.05, * p<0.1

According to the results, chi square test statistic of 0.0000 which indicates that overall model was statistically significant in explaining the financial performance of commercial banks in Kakamega. The study found an R^2 of 72.94 % indicating that the variable accounts for 72.94% of variations in Return on Assets of the commercial banks. The other 27.06 % is accounted for by other factors that were not assessed. This means that financial risk management greatly affects financial performance of commercial banks in Kenya. The regression coefficient of interest risk management was -0.1627 implying that a decrease in ROA following an increase in 1 unit of interest rate risk management.

Further, looking at the P-Value, it shows that interest rate risk management practices have statistically significant influence on financial performance of commercial banks in Kakamega after introducing lag for financial performance (dependent Variable). This is because, the P-Value are less than 0.05 at 0.001 and 0.000 for interest rate risk management practices meaning that we reject the null hypothesis. Thus H_0: There is no significant influence of interest rate risk management practices on performance of commercial banks in Kenya is rejected. The findings of this study disagrees with those of of Khan (2014) who did a study that sought to assess the effect of interest rates changes on performance of banks in Pakistan and revealed that there was a significant and positive effect of interest rates changes on profitability of commercial of banks. His finding was attributed to the fact that interest was the income for banks and when they increased, the profitability of banks increased too. Also, Muhammad and Khan (2014) undertook a study on effect of interest rates on performance of commercial banks in Malaysia and revealed that interest rates, if increased, had a positive effect on profitability of commercial banks in the country.

CONCLUSION AND RECOMMENDATION

The study concluded that interest risk management affects financial performance of banks in a negative way. In addition, the study concluded that the relationship between interest risk management and financial performance of commercial banks was statistically significant after introduction of lagged dependent variable. It is important to note that when interest rates are volatile, they may negatively affect the performance of banks particularly if they are on a

declining trend. The study recommended banks to have a robust mechanism for dealing with interest rates risk as it was found to affect performance negatively. In General, the study recommends that a robust framework of financial risk management should be established since financial risk management affects financial performance of banks. To this end, an effective risk and compliance department that ensures that financial risks are identified and mitigated should be established.

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