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## Article

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# THE EFFECT OF RISK MANAGEMENT ON FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN ETHIOPIA

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## Abstract

Efficient and effective performance of banking industry over time is an index of financial stability in any nation. Risk management is a key issue to sustain the financial stability. The presence of different risks in financial industry appeals for effective risk management procedures. As a result, this study examined the effect of risk management on financial performance of 17 Ethiopian Commercial Banks. Quantitative research approach was applied using secondary data for the sample period covered from 2013 to 2017. The collected data was analyzed by using panel random effect regression model. The result of the study shows that credit risk, liquidity risk, operating risk and market risks have significant negative impact on financial performance of commercial banks in Ethiopia. Whereas, bank size as control variable has positive impact on financial performance of commercial banks. The study concludes that credit, liquidity, operation and market risks have significant effects on financial performance of commercial banks in Ethiopia. The study suggests that commercial banks in Ethiopia should manage their loan portfolio and hedge their business risks in the market so as to sustain their financial performance.

**Keywords:** Effective Risk Management, Financial Stability

**JEL Classification:** G32, L25

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## **1. Introduction**

The banking sector plays a crucial role in intermediating surplus units to the deficit units for the development and growth of the economy. It is an important source of financing for most businesses by maximizing the wealth of shareholders. But, while the sector plays those mentioned roles, it has so many risks that challenge the industry. In today's dynamic finance world supervisors and financial institutions have increased the focus on the importance of risk management (Christine & Beverly, 2001). As a result, both public and private banks have engaged on upgrading their risk management and control systems for sustaining their better financial performance.

International Monetary fund's country report (2015) (as cited in Belay, 2016) shows that the overall financial soundness indicator of Ethiopia's banking sector appears to be healthy. The report shown that capital adequacy of the banking industry as of March 2015 is 16.6% whereas the minimum requirement set by NBE is 8%. The ratio of non-performing loans was 2.4%. But short-term liquidity problems are reported to have appeared at few banks in the course of the year 2015. Ethiopia does not have stock market and the financial sector is highly dependent on the banking system. The fact that the country's financial sector relies on the bank system requires great care in ensuring its elasticity and sustainability, particularly from different risk that impairs banks financial performance. As a result, the NBE regulates, supervises and issues different directives. Consequently, relying on the fact it is obvious the general belief on the risk position of the Ethiopian banking industry it appeals to examine the risk management effect on financial performance of commercial banks in Ethiopia. Since, it is difficult to make an inference based on the results of other countries to Ethiopia context due to unique financial sector policy of banks in Ethiopia like dominance of state owned banks, individual bank size littleness and deterrence of foreign banks ownership might make it difficult to make conclusion to Ethiopian context. Besides, some variables are overlooked, such as market risks (Bagh et.al, 2017; Muthiet el, 2017; studies tried to fill those mentioned gaps, by including some overlooked variables by assessing the effect of risk management on financial performance of Ethiopian commercial banks.

The main objective of the study was to examine the effect of risk management on financial performance of Ethiopian commercial banks.

## **2. Literature Review**

### **2.1. Theoretical frameworks**

The study relied on the following theories, namely:

- Finance distress theory, which is linked with the credit, operational and liquidity risks;
- Extreme value theory which is linked with market risks.

### **2.2. Empirical Review**

Al-Khoury (2011) examined the impact of overall banking environment on the performance of 43 commercial banks operating in 6 of the Gulf Cooperation Council countries over the period 1998-2008. He found that credit risk, liquidity risk and capital risk are the major factors that affect bank performance when profitability is measured by return on assets while the only risk that affects profitability when measured by return on equity is liquidity risk.

Kargi (2011) studied the impact of credit risk on the profitability of Nigerian banks. Financial ratios as measures of bank performance and credit risk were collected from the annual reports and accounts of sampled banks from 2004-2008. The findings revealed that credit risk management has a significant impact on the profitability of Nigerian banks inversely influenced by the levels of loans and advances, non-performing loans and deposits thereby exposing them to great risk of illiquidity and distress.

Adeusi and Akeke, (2013) examined risk management practices and bank financial performance in Nigeria. Panel data was used. Financial performance of banks and doubt loans, capital asset ratio and managed fund was found to be positive and significant.

Oluwafemi et. al, (2013) examined the association of risk management practices and bank financial performance in Nigeria. Secondary data of 4years annual reports of 10 banks used. The result implies cost of bad loan was found to be a negative but significant influence of bank performance.

Gathigia (2016) examined the effect of financial risk on financial performance of commercial banks in Kenya. The quantitative research design was adopted in the study. The target population of this study was the 43 commercial banks. Panel data was used and secondary data was obtained from published financial statements for ten years from 2005 to 2014. Researcher found that credit, market, liquidity and operational risks have significant negative effect on return on equity. The component of financial risk that had the most impact on financial

performance was cost to income ratio, i.e. operational risk. Despite, researcher looked at major risks impact on financial performance of commercial banks, but we have some context difference that needs to be customized as per Ethiopian context, particularly financial liberalization aspect.

Worku (2006), conducted the study on the impact of liquidity risk on the performance of commercial banks of Ethiopia. He argued that liquidity has an impact on the performance of commercial banks in Ethiopia and there was an inverse relation between deposit/net loan and ROE. And the coefficient of liquid asset to total asset was positive and directly related with ROE. In addition, the study also found that the capital adequacy of all banks in Ethiopia were above threshold, means there was sufficient capital that can cover the risk-weighted assets. Depositors who deposit their money in all banks were safe because all the studied banks fulfilled NBE requirement.

Similarly, Tseganesh (2012), conducted the study on the determinants of banks liquidity and their impact on financial performance. The study used balanced fixed effect panel regression model with eight commercial banks in the sample covered the period from 2000 to 2011. The result of the study revealed that, liquidity capital adequacy and bank size had positive impact on financial performance whereas, non-performing loans and short-term interest rate had negative impact on financial performance. Interest rate margin and inflation had negative but statistically insignificant impact on financial performance.

Shibiru and Mebratu (2017) assessed the impact of credit risk management on the performance of six private commercial banks in Ethiopia for a 14 period (2000 to 2013). The data were collected from audited financial statement and National Bank of Ethiopia. The collected data were analyzed by using panel data regression model and the result showed capital adequacy ratio, total loan ratio, non-performing ratio, bank size and liquidity ratio have a significant impact on the performance (ROA and ROE). Though, the study attempted to examine credit risk from different perspective, it was limited to credit risk only instead of inculcating other risks and it missed government commercial bank which has lion share in the market.

Endaweke (2015) investigated the impact of risk management on bank performance on the Ethiopian bank performance. Balanced fixed effect panel regression was used for the data of eight commercial banks from 2002 to 2013. Four risks were seen as independent

variables that affects banks performance were used and analyzed. The results of panel data regression showed that credit risk indicator (NPLR), Liquidity risk indicator (LIQR) and operational risk indicator (CIR) had negative and statistically significant impact on banks performance. Despite his approach is more pragmatic, but he was missed market risks impact assessment on banks performance.

Although, various studies have been conducted so far in the field of risk management, but the main focuses of those studies were on credit risk and there was little work have been done on other risks, particularly most of the studies missed market risks. Secondly, new empirical testing to the debate is required due to in consistent findings. Hence, there are some limitation in literature and requires enhancement on the underlying impact of risk management on Banks financial performance, particularly in Ethiopian commercial banking sector context. Hence, this study aims to fill those gaps in the literature by focusing on the risk management practices of the commercial banks of Ethiopia and linking the practices with the financial performance of the commercial banks.

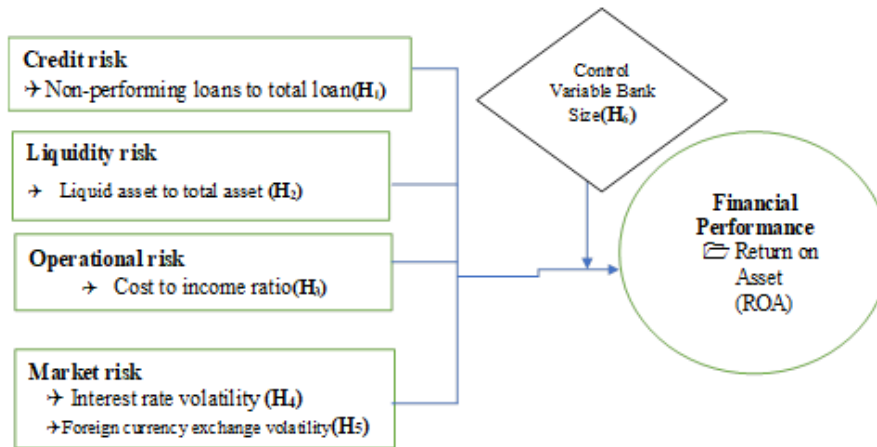
### **2.3. Conceptual Framework**

A conceptual framework is a research tool intended to assist a researcher to develop awareness and understanding of the situation under scrutiny and to communicate it. When clearly articulated, a conceptual framework has potential usefulness as a tool to assist a researcher to make meaning of subsequent findings. It forms part of the agenda for negotiation to be scrutinized, tested, reviewed and reformed as a result of investigation and it explains the possible connections between the variables (Smith, 2004).

To guide the study, the variables of financial performance of banks was affected by credit, liquidity, operational, interest rate volatility, foreign exchange rate volatility and firm size discussed above is presented in the conceptual framework model shown in Figure 1.

Figure 1

Conceptual Framework



Source: Authors' representation

### 3. Methodology

The study employed explanatory research design. This design is further supported by quantitative research approach to generalize about the effect of risk management on financial performance of commercial banks. For mentioned approach, the main source of data for the study was secondary sources that collected from audited financial statements of seventeen selected banks and NBE Report for five consecutive years (2013-2017) were used.

Financial performance was measured using return on asset (ROA) by dividing net income over total asset.

$$Y_{it} = \alpha + \beta x_{it} + \varepsilon_{it}$$

In this equation,  $y_{it}$  represents the dependent variable, and  $x_{it}$  contains the set of explanatory variables in the model. The subscripts  $i$  and  $t$  denote the cross-sectional and time-series dimension respectively. Also,  $\alpha$  is taken to be constant over time  $t$  and specific to the individual cross-sectional unit  $i$ .

The following regression model was used to establish the relationship among the study variables.

$$ROA_{it} = \beta_0 + \beta_1 (NPLR)_{it} + \beta_2 (LCR)_{it} + \beta_3 (CIR)_{it} + \beta_4 (IRV)_{it} + \beta_5 (ERV)_{it} + \beta_6 (FS)_{it} + \varepsilon$$

Y = Financial performance of banks (ROA); X<sub>1</sub> = NPLR= credit risk management indicator (Non-performing loans); X<sub>2</sub> = LCR = Liquidity risk management indicator (Liquidity coverage ratio); X<sub>3</sub> = CIR = operational risk management indicator (Cost to Income ratio); X<sub>4</sub> = IRV- Interest rate volatility market risk management indicator; X<sub>5</sub> = ERV = Exchange rate volatility market risk management indicator; X<sub>6</sub> = FS- Control Variable Firm size; β<sub>0</sub> = regression constant; β<sub>1</sub>, β<sub>2</sub>, β<sub>3</sub> and β<sub>5</sub>= coefficients associated with predictor variables; ε = Residual (error) term.

In order to address the stated objectives and formulated hypothesis, the necessary regression analysis diagnostic tests such as the assumption of homoscedasticity, autocorrelation, normality and test for multicollinearity were conducted to ensure that the data fits the basic assumptions of classical linear regression model or not, and the result of all tests satisfy the basic assumptions of linear regression model.

**Random effect (RE) versus fixed effect (FE) models**

According to Gujarati (2004), if T (the number of time series data) is large and N (the number of cross-sectional units) is small, there is likely to be little difference in the values of the parameters estimated by fixed effect model/FEM and random effect model/REM. On the contrary, REM may be preferable. Since the number of time series (i.e. 5 year) is less than the number of cross-sectional units (i.e. 17 commercial banks), REM is preferable in this case. This fact is further triangulated by using Hausman test that as REM is more appropriate on table 1 , since p-value is greater than 0.05 (i.e 0.4615)

**Table 1**

**Hausman test**

Correlated Random Effects - Hausman Test

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	4.638963	6	0.4615

*Source: Secondary data-E-Views output and own computation.*



#### 4. Result Presentation and Analysis

The estimation result of random effect panel regression model is presented in table 4.1 indicates that R-squared and Adjusted-R squared statistics of the model was 82.87% and 81.55% respectively, the result indicates that the changes in the independent variables explain 81.55% of the changes in dependent variables. That is credit risk liquidity risk, operational risk and market risks and size of firm collectively explain 81.55% of the changes in return on asset. The remaining 18.45% of changes of return on asset was explained by other variables which are not included in the model. Thus, these variables collectively are good explanatory variables of the return on asset of commercial banks in Ethiopia. The regression F-statistic and the p-value of zero attached to the test statistic reveal that the null hypothesis that all of the coefficients are jointly zero should be rejected. Thus, it implies that the independent variables in the model were able to explain variations in the dependent variable. The collected data was analyzed using panel random effect regression. Hence, its regression result is presented in table 2, as follows:

**Table 2**

#### Regression result

Dependent Variable: ROA  
 Sample: 2013 2017  
 Included observations: 85

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.445984	0.323166	4.474426	0.0000*
NPLR	-0.216859	0.102695	-2.111677	0.0379**
LCR	-0.206390	0.102132	-2.020817	0.0467**
CIR	-0.833383	0.049905	-16.69925	0.0000*
IRV	-0.367990	0.033456	-10.99933	0.0000*
ERV	-0.149093	0.012393	-12.03069	0.0000*
FS	0.107459	0.030488	3.524589	0.0007*
R-squared	0.828666	F-statistic		62.87534
Adjusted R-squared	0.815487	Prob(F-statistic)		0.000000

*\*and\*\*, represent significant at 1% and 5%, respectively.*

*Source: Audited Financial statements of commercial banks, NBE reports and e-views output.*

In the model return on asset (ROA) was used as dependent variable, credit risk -Non-performing loans, and Liquidity risk -Liquidity coverage ratio were found to be negatively affects the financial performance of the commercial banks at 5% significance level. Whereas, operational risk -Cost to Income ratio, Interest rate volatility market risk, Exchange rate volatility market risk were found significantly affect ROA negatively at 1%. Control variable firm size has found as it has positive impact on ROA.

### **Analysis**

This section of the chapter discusses some of the main implications of the results. The analysis is based on the regression result which indicates the relationship between dependent and independent variables presented in table 2. The result obtained under this study is analyzed as follows.

- **Credit risk**

H<sub>1</sub>: estimates significant negative relationship between credit risk and bank's financial performance as expected the coefficient of credit risk which was measured by the non-performing loan to total loan ratio was negative and statistically significant at 5% significance level (p-value = 0.0379). The coefficient of credit risk implies that if credit risk increased by 1% ROA decrease by 21.69%. The negative coefficient indicates that an increase in provision for loan losses implies a higher cost of bad debt write offs which ultimately reduce banks profitability. Given the risk-averse behavior, banks facing higher credit risk are likely to pass the risk premium to the borrowers, leading to higher interest charge to the borrower. Hence, the higher the risk, the higher the pricing of loans and advances to compensate for likely loss, will result to increase further default risk that ultimately decrease the financial profitability of commercial banks in Ethiopia. So, from the findings we can conclude that credit risk was one of the main risks that adversely affect commercial banks in Ethiopia. Further, unlike with Elias (2015); the finding is also consistent with previous studies of Girma (2011), Tseganesh (2012), Adeusi and Akeke, (2013), Oluwafemiet. al, (2013), Cynthia (2014), Endaweke (2015), Million et. al. (2015), Gathigia (2016), Shibiru and Mebratu (2017), Bagh et.al. (2017).

- **Liquidity risk**

H<sub>2</sub> predicts significant negative relationship between liquidity risk and bank's financial performance. Based on estimated the coefficient of liquidity risk which was measured by the ratio of liquid

assets to deposits and short-term funding was negative and statistically significant at 5% significance level (p-value=0.0467). The coefficient of liquidity risk implies that if liquidity risk increased by 1% financial performance-ROA by 20.64%. The negative coefficient implies that the banks with high liquidity risk push commercial banks to borrow emergency funds at high cost and this leads for paying a interest expense that is reflected in higher margins. This reveals that the bank with high liquidity risk pays high costs in order to compensate the risk premium; as a result, this will obligate the banks to reduce their return. The finding of this study is consistent with Worku (2006), Al-Khoury (2011), Kargi (2011), Adeusi and Akeke, (2013), Elias (2015) , Endaweke (2015) ,Gathigia (2016),Bagh et.al, (2017) and Shibiru and Mebratu (2017).

- **Operational risk**

H<sub>3</sub> estimates significant negative relationship between operating risks and bank's financial performance. Similar to projected, the coefficient of operating risks which was calculated by the ratio of operating expense to operating income was negative and statistically significant at 1% significance level (p-value=0.0000). The coefficient of operating risks entails that if operating risk increased by 1% risk and ROA decrease by 83.33%. Other things remain constant, the higher negative coefficient that existed between operating risk and ROA, clearly shows as the Ethiopian commercial banks. An increase in costs for a given level of income will reflect decreased profits and vice versa. Decreased profits, in turn, will reduce return on asset of the bank which ultimately results for deteriorated share prices. Unlike Elias (2015), this result is consistent with Endaweke (2015), Gathigia (2016) and Bagh et.al, (2017).

- **Market Risks**

Market risk is the risk that the value of a portfolio, either an investment portfolio or a trading portfolio will decrease due to the change in market risk factors. The four standard market risk factors are stock prices, interest rates, foreign exchange rates, and commodity prices. In this study we have used two proxies, to measure market risks, namely interest rate risk and foreign exchange risk.

- **Interest rate volatility**

H<sub>4</sub> predicts significant negative/positive relationship between interest rate volatility and banks performance. Among study's dual prediction. the coefficient of interest rate volatility which is measured

by standard deviation of annual money market interest rate was found negative and statistically significant at 1% significance level (p-value=0.0000) for ROA. The coefficient of interest rate volatility implies that if interest rate volatility increases by 1%, decrease ROA by 36.80%. The negative relationships between interest rate volatility and dependent variable ROA suggest the volatility in money market interest rate creates reinvestment and refinancing risks arising from fluctuations in interest rates, due to the maturity mismatch between banks assets and liabilities accordingly, banks risk increase. As a result, as a risk hedging mechanism, banks are pushed to incur higher loss. This means an increase in interest rate volatility will lead to an increase in interest rate loss by increasing uncertainty. This finding is consistent with Gathigia (2016), and Bagh et.al, (2017).

- **Exchange rate volatility**

H<sub>5</sub> forecasts significant negative/positive relationship between exchange rate volatility and banks performance. Despite, the prediction has dual expectation, the result shows that the coefficient of exchange rate volatility which was measured by the standard deviation of the percentage change in the real exchange rate was found negative and statistically significant at 1% significance level (p-value=0.0000). The coefficient of exchange rate volatility shows that if exchange rate volatility increased by 1%, ROA decrease by 14.91%. The negative relationship between exchange rate volatility and ROA implies that an increased in macroeconomic instability heightens the risk faced by commercial banks, as a result the banking sector will exposed more to market risk, incur more costs to protect against the increased risk for hedging. The finding is consistent with Gathigia (2016).

- **Firm size**

H<sub>6</sub> forecasts significant *positive relationship between firm size and bank's financial performance. As control variable, the prediction result shows that* the coefficient of firm size which was measured by the natural logarithm of total asset was found positive and statistically significant at 1% significance level (p-value=0.0000). The coefficient of firm size shows that if firm/bank size increased by 1%, ROA increase by 10.75%. The positive relationship between bank size and ROA implies that an increased bank size promotes better diversification which minimizes risks and enables banks to enhance their operations with better capital and stable funding. It also signifies as the size becomes larger; it enables to operate in a different market segment. Furthermore, the higher banks size has a comparative advantage in

market-based activities which require significant fixed costs and enjoy economies of scale. The finding is consistent with Laeven et al., (2014) and Gathigia (2016).

### **5. Conclusion**

Risk management is crucial for banking sector to sustain their better financial performance since banking sectors has great contribution in the allocation of nation's limited savings among the most productive investments and enhance the efficient allocation of risks of those investments. The objective of this study was to investigate to examine the effect of risk management on financial performance on financial performance of 17 Ethiopian Commercial Banks covering the period of 2013-2017. Quantitative research approach was used, and the secondary data was collected from audited financial statement of banks and NBE annual report. The collected data was analyzed by using panel random effect regression model and by using Eviews 9 software. The finding of the study shows that credit risk, liquidity risk, operational risk, market risks have statistically significant and negative relationship with financial performance of commercial Banks in Ethiopia. On the contrary, bank size has a positive and statistically significant relationship with financial performance of commercial Banks in Ethiopia. Generally, the finding of this study was consistent with theory of financial distress (credit, liquidity and operational risks, and extreme value theory consistent with market risks variable finding.

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