



Monetary Policy Instruments and Financial Performance of Commercial Banks in Kenya

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Abstract

The commercial banks in Kenya have witnessed a general decline in their profitability over the years occasioned by the global financial crisis of 2008 which ravaged the banking sector. Financial performance of Kenyan banks has since declined from 4.43% in 2010 to 2.8% in 2018. Consequently, some banks were put under receivership a few years after the crisis while others navigated through the difficult times, albeit with declining profitability. The main objective of this study was, therefore to investigate the influence of these monetary policy instruments and the mediating effect of capital adequacy ratio on the relationship between monetary policy instruments and financial performance of commercial banks in Kenya. The specific objectives of the study were: To examine the effect of open market operations, cash reserve, and central bank rate on the performance of commercial banks. The theoretical framework of the study was guided by the Loan pricing theory of money, the neo-classical theory of interest, efficiency theory, and financial intermediation theory. The study was anchored on the positivism philosophical orientation. Both the descriptive and the explanatory research designs were used for the study. Secondary data obtained from archival data of the Central Bank of Kenya and specific data from the various banks



under study were used. Data was then edited, presented, and analysed using Microsoft Excel spread sheets, and STATA. The study was a census of all the 42 commercial banks licensed and supervised by the Central Bank of Kenya. Data analysis was done using descriptive and inferential statistical techniques such as mean, standard deviation, correlation, coefficient of determinant, and tables. The analysis showed that 58.4% of the variability of financial performance was accounted for in the model. The p-value for the overall model was 0.000, which is significant at 5% level of significance, implying that monetary policy has a significant influence on commercial banks' performance. The correlation analysis showed a very weak negative correlation between OMO and ROA, a strong negative correlation between CRR and ROA, a very weak positive correlation between CBR and ROA and a very strong positive correlation between capital adequacy ratio and ROA. The study concluded that open market operations, cash reserve, and central bank rate have a statistically significant influence on the performance of commercial banks. The analysis also showed that the capital adequacy ratio partially mediates the relationship between monetary policy and financial performance of commercial banks. The study recommends that the regulator make OMO more appealing to commercial banks, increase the volume of trade in the open market, and keep CRR and CBR at manageable levels to enhance banks' profitability. Capital requirements need to be reviewed regularly to keep banks liquid.

Keywords: Open Market Operations, Cash Reserve, Central Bank Rate and Financial Performance



Background of the study

Financial intermediation as undertaken by commercial banks across the globe is vital for the survival of the global economy (Imeokpararia, 2013). Banks provide long-term financing to all other sectors of the global economy. The excellent return of commercial banks underpins the existence of banks and global economic growth. With intensifying competition in the banking industry on the one hand and the rising cost of intermediation on the other, banks must respond with higher levels of operational efficiency if they have to avoid crises (Mahorta *et al.*, 2011).

The financial environment of Sub-Saharan African economies, which is a host to many banking institutions, has been categorized as both risky and volatile in nature. These economies also have weak legal institutions (Trust, 2018). To strengthen the legal framework and to avert a further slump in the performance of Kenyan banks, the Central Bank of Kenya, like other regulators across the globe, introduced a raft of measures to protect the industry. The use of monetary policy instruments implemented these measures (Kamaan, 2014). The CBK uses the monetary policy as the principal tool to preserve the value of the shilling in our economy. The tool is used to regulate the economy's liquidity to levels in harmony with GDP and inflationary levels to effectively manage the economy (Central Bank of Kenya, 2013). The financial performance of commercial banks has been poor over the years (from a return on asset of 4.43% in 2010 to 2.8% in 2018). Besides the declining performance, the regulator had also put some institutions under receivership. This is in line with IMF report, that Sub-Saharan African banks recovery from the financial crisis is not yet complete (Adrian & Shin, 2009). Regulators therefore must use necessary policies to stabilize the financial sector.

In Kenya, the CBK regulates the banking sector through the actions of the MPC. The stance of the MPC is signalled by the changes in the rates of the CBR (Mulwa, 2015). Such instruments as OMO, CRR and transactions in the foreign exchange are also used to operationalize the MPC's directive. As lender of last resort, it also offers the commercial banks Overnight Discount Window (Central Bank of Kenya, 2013). As these tools are implemented through transmission into the financial system, their results are generally felt in the entire economy through stabilization of



prices in the economy. This, therefore created the need to study the effect of monetary policy instruments on the financial performance of commercial banks in Kenya.

Studies by Gertler & Gilchrist (1994), Kashyap & Stein (1994), Punita & Somaiya (2006), and Knight (1970) only attempted to examine the special effects of monetary policy instruments on bank credits and their stimulating impact on the economic growth of the country but not on the financial performance of commercial banks. Vikram (2012) researched on the use of monetary policy instruments in curbing inflation in an economy but did not study the effects of the instruments on the performance on Indian banks. There was therefore left a methodological problem to be solved by other scholars. Analytically, Nasserinia *et al.*, (2014) included six other banks specific factors making monetary policy instruments have less weight in their study. Kiganda (2014) only considered one bank (Equity bank) making generalisation difficult. Njiru (2014) only concentrated on the CBR as a monetary instrument in all her work, leaving out other monetary policy tools.

Kamaan (2014) failed to contextualise the study to sectoral performance while Ananchotikul & Seneviratne (2015) could not reveal the response by all banks in the industry to monetary policy transmission. Meshack & Nyamute (2016) only considered a small population of 11 banks. Time scope was also limited to financial report as at 30th June 2015, which has been overtaken by major monetary policy cycles. Nguyen *et al.*, (2017) failed to consider the effect of OMO, which is a significant tool for transmitting monetary policy stance. Kemboi & Tibbs (2018) used a limited time scope that has been overtaken by many policy cycles. The aforementioned researchers did not also consider capital adequacy ratio in their study while studies by Ariwidanta & Wiksuana (2018), and Simbolon & Simanjuntak (2020), were not based on monetary policy instruments.

A careful analysis of the previous literature and research works reveal a research and knowledge gap in the current literature regarding the effects of monetary policy instruments and the performance of Kenyan commercial banks after the 2008 global economic meltdown. The preceding literature is a manifestation that, whereas much effort by the government is placed



through the CBK to influence the quantity of money flowing in the economy, the net effect of these tools on commercial banks' financial performance remains inconclusive with scholars reaching different conclusions (Kamaan, 2014). Following the deteriorating performance of commercial banks and inconclusive attempts to explain the trend, it is imperative to conduct this study in Kenya. Therefore, this research explored the effect of principal monetary policy instruments and the mediating effect of capital adequacy ratio on the financial performance of commercial banks in Kenya during the period immediately following the 2008 financial crisis.

1. Review of Existing Literature

Monetary policy is one of the key macro-economic management tools to direct the performance of the economy in a certain desired direction. It is more often used by the government to manage economic shocks. Other than the main objectives of the CBK, it also works to promote growth in the economy, reduce unemployment, and contain economic crises, thereby smoothening business cycles.

1.1 Open Market Operations and financial performance

An open market operation is the trading of government securities in the open market. The securities include treasury bills and bonds. The government swaps bonds and bills for currency (Guillaume *et al.*, 2018). OMO was measured by treasury bills rate in this thesis. Regarding the open market operations, the CBK can expand the economy by purchasing government securities, thereby increasing the mount in the hands of the commercial banks to lend. This generally increases the credit that can be advanced to consumers and hence improved profitability over the years. Conversely, the CBK can contract the economy by selling government securities to banks, thereby reducing the capacity to create credit and hence reduction in the level of profitability (Central Bank of Kenya, 2009).

Kubasu & Mutwol (2016), researched on the effects of selected monetary policies on loans portfolio performance among commercial banks in Kenya. They sampled 30 out of the 42 commercial banks and used both primary and secondary data. Their findings indicated a mild



positive correlation between OMO and performance of commercial banks. A change in OMO registered a mild positive effect on performance. They concluded that OMO has no statistically significant relationship between OMO and performance of banks proxied by loans portfolio performance.

Adesina *et al.*, (2018) explored the impact of monetary policy on financial performance of Nigerian deposit money banks (DMBs). The study was done during the period following the restructuring of the Central Bank of Nigeria. The autoregressive lag model was used in analysis. They found out that OMO significantly affected financial performance of Nigerian DMBs in the short run. They however, asserted that this effect became insignificant in the long run. This conclusion partly agrees with that of Meshack & Nyamute (2016) who conducted their study in Kenya.

Meshack & Nyamute (2016) investigated effect of monetary policy on financial performance of the commercial banks listed on the Nairobi securities exchange. Their study was a survey of the eleven listed banks as at 30/06/2015. The study revealed that open market operations positively influenced ROA of the listed firms. The correlation between OMO and ROA was also positive. The study concluded that OMO significantly affected the financial performance of Kenyan banks listed at the NSE. This study however suffers generalization problems since the sample size was small. It also patterns itself after cross sectional analysis as the data used were as at a specific time.

Kemboi & Tibbs (2018) also conducted a study on the monetary policy and performance of commercial banks in Kenya. Their findings show that monetary policy contributes to 72% of banks profitability and that OMO had the biggest effect of financial performance of Kenyan banks. Research findings point to a positive correlation between open market operations and performance of banking institutions. According to the findings, a unit increase in OMO translates into a 0.057 increase in the financial performance of commercial banks. Time scope (2011-2015) they used, however, was small and overtaken by major monetary policy changes.

Thuc *et al.*, (2019), researched on the relationship between monetary policies and financial performance of Kenyan banking institutions. The research was, however, a case study of



commercial banks within Nairobi City. Secondary data was used and SPSS was used in the analysis. The findings show that open market operations had a positive influence on the financial performance of Kenyan banks. The study findings indicate that an increase in OMO leads to a corresponding increase in financial performance of banks in Kenya by 0.036 units. OMO was also found to be statistically significant determinant of banks' performance.

1.2 Cash Reserve and financial performance

Cash Reserve is also another monetary policy tool for controlling the economy. It is measured by use of a ratio called cash reserve ratio (CRR) in this thesis. Cash reserve ratio is that percentage of deposits by commercial banks that must be deposited at the CRR Account maintained by the CBK at no interest. Commercial banks are required to preserve their CRR as a monthly average for a cycle running from the 15th of the month to the 14th of the next month and not to reduce to a level below a CRR of three per cent each day. This preserves liquidity of commercial banks. A decrease in the CRR relieves liquidity, hence improving the ability of commercial banks to increase credit. Liquidity is tightened when the CRR is increased, and this may depress demand-driven inflationary pressures (Central Bank of Kenya, 2014).

Meshack & Nyamute (2016) investigated the effect of monetary policy on financial performance of the commercial banks listed at the NSE. They found out that monetary policy tools have different degrees of relationship with financial performance of commercial banks listed on the NSE. CRR, particularly, negatively influenced financial performance of the listed banks. They concluded that the cash reserve rate significantly influenced the financial performance of banks. The research was however limited to a sample of only 11 commercial banks that were listed at the NSE at the time of the study. The same findings corroborate the findings of Ibe (2013), who asserted that there was a significant connection between CRR and bank profitability. His study was however limited to only tree banks.

Rao (2006), researched on the impact of monetary policy on the profitability of banks in India. The paper discussed financial sector reforms in the light of monetary policy and the impacts on



profitability on Indian banks. The study findings found out that cash reserve does not have a statistically significant effect the financial performance of Indian banks. Thuc *et al.*, (2019), also arrived at the conclusion that cash reserve ratio has a negative influence on the financial performance on commercial banks in Kenya. According to this study, CRR does not statistically significantly affect the performance of commercial banks.

Oganda *et al.*, (2018), investigated the effect of cash reserves on performance of commercial banks in Kenya. Their study was a comparative study between Equity Bank Kenya Limited and National Bank. They found out that CRR had a strong negative relationship with financial performance as measured by return on equity. CRR nonetheless had a significant relationship with the performance of Equity Bank Limited. They concluded that an increase in CRR is harmful to the profitability of banks since these reserves are not generating any income to the banks.

MacCarthy (2016) investigated the effect of CRR on the financial performance of commercial banks. The study also incorporated the engagement of these banks in corporate social responsibility in Ghana. The study used data on the 20 commercial banks in Ghana from the 2013 annual reports. Cash reserve ratio had a positive relationship with the financial performance of commercial banks in Ghana. CRR was also a statistically significant predictor of financial performance of commercial banks as measured by their return on investment rates. This study was however a cross-sectional as it only considered the returns for the year 2013.

Abid & Lodhi (2015) also researched on the impact of changes in reserve requirements on banks profitability. The research was a case study of Pakistani commercial banks. Reserve requirements were measured by cash reserve ratio while profitability was measured by return on assets. Secondary data was used. The analysis followed quantitative time series data from 2005 to 2014. The findings indicate that reserve requirements had a significant negative relationship with the financial performance of Pakistani banks. An increase in CRR leads to a decrease in profitability by Pakistani banks. The study, however, was limited to only 17 commercial banks in Pakistan and used CRR as the only measure of monetary policy.



1.3 Central Bank Rate and financial performance

CBR is the rate at which the CBK rediscounts bills and offers advance to commercial banks against approved securities. It is, essentially, the rate at which the Central Bank rediscounts bills of exchange. It is considered the lowest rate of interest charged on loans extended to commercial banks by the Central Bank is the CBR (Ngugi, 2001). Upon review of the level of the CBR at least every two months, it is then communicated to industry players by the Monetary Policy Committee (MPC) and its effects and movements, both in direction and extent, gives a signal of the stance of the monetary policy. Therefore, MPC has made CBR be the basis for all monetary policy operations to foster transparency and confidence in monetary policy implementation (Central Bank of Kenya, 2014).

This makes CBR to be the minimum acceptable rate under the law whenever the Central Bank is adding liquidity by use of other instruments, including Reverse Repo. The opposite is true in that when the Bank wants to shrink the quantity of money circulating in the economy by use of Vertical Repo, then the Bank will set CBR as the maximum rate that it will pay for any bid that it receives. Ngugi (2001) opined that movements in the CBR are conveyed to changes in short-term interest rates. A decline in the CBR indicates an easing of monetary policy and want for prevailing market interest rates to move down. When interest rates are low, firms and households are signaled of favorable business environment; hence economic activities are encouraged, and this fosters economic growth (Central Bank of Kenya, 2012).

Gambacorta & Mistrulli (2003) used short term rates of interest in their study of Italian banks between 1992 and 2001 and found out that well-capitalized banks can shield their loaning from monetary policy shocks because they can easily access non-deposit funds. Bernake & Blinder (1988) further revealed that if one takes into consideration the influence of monetary policy on the ability of the banking system to lend, credit succeeds as an intermediate variable where monetary aggregates fail. This happens when the demand for money is not stable, for instance, when an economy is going through a course of financial reengineering and growth. Under these conditions,



legislators and policy making authorities may get a clearer picture of inflation, a longer-term economic growth by looking at credit instead of monetary aggregates.

Nguyen *et al.*, (2017) conducted a study on the impacts of monetary policy on commercial banks' profits in Vietnam. They concluded that monetary base (central bank rate) had a significant positive influence on banks' profits albeit at 10% significance level. Ajayi & Atanda (2012) researched on monetary policy and bank performance in Nigeria, using a two-step co-integration methodology. They found out that CBR registered a positive but statistically insignificant influence on the financial performance of Nigerian commercial banks.

Njiru (2013) also investigated the effects of monetary policy and commercial banks' lending rates in Kenya in 2014. The findings of the study pointed to a long-run relationship between banks' profitability and CBR. The study revealed that commercial banks' profitability is positively responsive to CBR. In addition, CBR as an instrument of monetary policy is indeed effective as it increases lending rates and relieves demand pull pressures in the economy. The overall effect is increased profitability of commercial banks. The study did not however link CBR directly to the performance of banks, but to lending rates.

Simiyu & Ngile (2015), researched on the effect of macroeconomic variables on profitability of commercial banks listed in the Nairobi Securities Exchange for the years 2001 to 2012. Analysis was done using panel data. Their study findings indicated that interest rates had a negative effect on profitability of commercial banks listed at the NSE. This implies that as real interest raises, profitability of commercial banks declines, and vice versa. According to the study, increase in real interest rate, occasioned by increase in CBR, makes loans to be expensive. Expensive loans reduce the demand for loan able funds. It also increases default rates. The net effect is reduced interest revenue to banks, hence reduced profitability.

Chepkorir *et al.*, (2018), studied the link between interest rate and performance of Kenyan commercial banks. The study sampled commercial banks that were licensed by the CBK before 2011. They used primary data and found out that a unit decrease in central banks rate decreases



performance of commercial banks by 0.025 units, and vice versa. The findings indicate a positive direct relationship between performance of commercial banks and interest rate. In conclusion, they maintained that CBR had a very weak, but positive association with financial performance of Kenya banks. Their research findings also revealed that CBR was an important determining factor for banks' performance.

2. Objective of study

This study has the following specific objectives-

- i. To examine the influence of open market operations on the financial performance of commercial banks in Kenya.
- ii. To assess the influence of cash reserve on the financial performance of commercial banks in Kenya.
- iii. To determine the influence of central bank rate on the financial performance of commercial banks in Kenya.

3. Hypothesis of the study

Hypothesis 1: There is no statistically significant effect of open market operations on the financial performance of commercial banks in Kenya.

Rejection of the null hypothesis point towards a statistically significant relationship between open market operations and the financial performance of commercial banks in Kenya

Hypothesis 2: There is no statistically significant effect of cash reserve on the financial performance of commercial banks in Kenya.

Rejection of the null hypothesis indicates a statistically significant association between cash reserve and the financial performance of commercial banks in Kenya.

Hypothesis 3: There is no statistically significant effect of central bank rate on the financial performance of commercial banks in Kenya.

Rejection of the null hypothesis indicates a statistically significant association between central bank rate and the financial performance of commercial banks in Kenya.



4. Database and methodology of the study

The descriptive and explanatory research designs were employed since they helped to give a detailed account of how exactly things are (Kombo & Tromp, 2009). Cooper & Schindler (2003) asserted that a descriptive study marks out a phenomenon, mostly by profiling or a group of phenomena through data collection and tabulating the frequencies on research variables or their interactions. The purpose of this study was well matched by the features of the descriptive research design. This guaranteed an in-depth account of the state of activities as they were in the financial system as well as postulated in the explanatory and descriptive research designs. The explanatory design was used because it allowed the researcher to present crucial research problems by gathering facts on scientific lines to ensure that this research is completed successfully (Kathuri & Pals, 2003).

Target population comprises the specific set of elements that the researcher intends to carry the study (Mugenda & Mugenda, 2012). It is the whole cluster of persons, occasions, elements, or items that exhibit mutual observable features that follow a particular description. The target population in this thesis was 42 commercial banks licensed and supervised by the CBK. A study of the entire industry players gave a generalized feature of the banking sector. With the study being a census, the sample was all the commercial banks licensed and supervised by the CBK. These are enumerated in the first Appendix hereunder. Secondary data was used in this research to allow analysis of facts, figures, and principles in documentary sources. This data was collected from published financial statements of the commercial banks under study, monetary policy reports, and other relevant documents and reports from the CBK, from Kenya National Bureau of Statistics and Nairobi Securities Exchange, covering the period under study; that is 2010-2018.

A multiple regression analysis was run to test the effect of monetary policy instruments on the financial performance of commercial banks in Kenya. A correlation matrix showing the interrelationships within the variables under study was done. An ANOVA table, which is used to assess the usefulness of a regression model's independent variables in explaining the dependent variable, was also generated. The study tested the hypothesis at 5% significance level.



The functional relationship of the empirical model used is as under:

$$Y = \beta_{01} + \beta_1\chi_1 + \beta_2\chi_2 + \beta_3\chi_3 + \varepsilon_1 \dots\dots\dots 3.1$$

Where:

Y= Performance of commercial banks

χ_1, χ_2, χ_3 = Treasury bills rate, cash reserve ratio and central bank rate

$\beta_{01}, \beta_1, \beta_2, \beta_3$ = Coefficients of monetary policy instruments

ε_1 = error term.

5. Major findings of the study

5.1 Descriptive Results

Table 1.1 below summarizes the results of descriptive analysis for all the variables in the study. The mean scores, standard deviation and the number of observations are captured.

Summarize OMO CRR CBR ROA					
Variable	N	Mean	Std. Dev.	Min	Max
OMO	108	.0874164	.0363211	.016	.2165
CRR	108	.0488426	.0027857	.045	.0525
CBR	108	.097963	.0299184	.0575	.18
ROA	108	.0370333	.0080113	.027	.047

Table 1.1: Summary of descriptive analysis Source: Research data (2020)

The data was collected and averaged for the nine years (2010-2018) and 42 banks under study and analysed using STATA. The result shows 108 observations which were monthly figures from January 2010 to December 2018. The mean treasury bills rate was 0.0874164 (8.74164%) while its standard deviation is 0.0363211 (3.632%). The mean cash reserve ratio was 0.0488426 (4.884%); with $\delta=0.0027857$ (0.27857%). The mean central bank rate was 0.097963 (9.76963%) with $\delta=0.0299184$ (2.992%). The mean return on assets (ROA) was 0.0370333 (3.703%) with



$\delta=0.0080113$ (0.8011%). The maximum and minimum values for every variable across the period under study are also tabulated as above.

5.2 Diagnostic Tests

Heteroscedasticity Test: In order to inspect whether or not there was a difference in the residual variance of the observation period to another period of observation, the researcher tested for heteroscedasticity by Breusch-Pagan/Cook-Weisberg test for heteroskedasticity. The output is as in the table below. The results showed that the $\text{prob}>\chi^2 = 0.1074$ which is greater than 0.05 indicating the null hypothesis of the constant variance can be rejected at 95% confidence interval. This implies that the data used had no problem of heteroscedasticity.

Normality Test: In testing for normality, the researcher employed a statistical procedure assuming that the data follows a normal distribution. The researcher analysed this assumption using the Skewness/Kurtosis test for normality and the output. The Skewness/Kurtosis test for normality above also shows that the individual variables were all drawn from a normally distributed population as all the $\text{Prob}>\chi^2$ are all less than 0.05. Therefore, according to the Skewness/Kurtosis test for normality, there is no violation of the normal distribution assumption of the error term since the data used was normally distributed.

Autocorrelation: The researcher used Breusch-Godfrey LM test for autocorrelation in testing for the relationship between the variables under study to establish if they are separated from each other by a given time lag in the residuals from the regression analysis. The null hypothesis was that the errors are not serially correlated against the alternative that the errors follow a first order auto regression process. From the Breusch-Godfrey LM test for autocorrelation above, the $p\text{-value}=0.0000$ implying that the data used has no autocorrelation problem.

Multicollinearity Test: After the normality of the data in the regression model was ascertained, the next step was to find out whether there was similarity between the independent variables in the equation. Similarities between the independent variables results in a very strong correlation. There should not exist correlation between the independent variables for a good model and this is



revealed by the multicollinearity test. The test was on the basis of VIF value of multicollinearity test results. The decision making rule in multicollinearity test states that if the VIF value lies between 1-10, then there is no multicollinearity. If the $VIF < 1$ or > 10 , then there is multicollinearity. The $1/VIF$ shows tolerance or degree of collinearity. The value should be less than 0.1, otherwise variables with tolerance values of less 0.1 depict linear combination of other explanatory/independent variables. The measure of amount of multicollinearity in the regression set (Variance Inflation Factor) gave a mean of 2.68 that implied a significantly very low correlation. With a VIF of less than 10, we can conclude that there is no multicollinearity problem. Since the tolerance values are greater than 0.1, we can conclude that there is no correlation between the variables under study thus no presence of multicollinearity in the model.

Unit Root Test: Unit root test was done using Bartlett's (B) statistic (Cumulative periodogram white-noise test). The null hypothesis (H_0) is that there is unit root in the data. The rule of thumb is H_0 is rejected if $p \leq 0.05$. Since $p < 0.05$, the data used for OMO, CRR, CBR, CAR and return on assets were non-stationary. The researcher therefore rejected the null hypotheses which stated that there is unit root in the data.

5.3 Regression Analysis

The researcher also conducted analysis of variance and multiple regression analysis in order to test the relationship between the independent variables, mediating variable and the dependent variable. The analysis was done on STATA and the results are as below:

. regress ROA OMO CRR CBR						
					Number of obs	= 108
Source	SS	df	MS		F(3, 104)	= 48.66
Model	.00401033	3	.001336777		Prob > F	= 0.0000
Residual	.00285703	104	.000027471		R-squared	= 0.5840
Total	.00686736	107	.000064181		Adj R-squared	= 0.5720
					Root MSE	= .00524



ROA	Coef.	Std. Err. T	P>t	[95% Conf.	Interval]
OMO	-.0437964	.0213338 -2.05	0.043	-.086102	-.0014907
CRR	-2.218902	.1860148 -11.93	0.000	-2.587776	-1.850028
CBR	.1029114	.0262524 3.92	0.000	.0508519	.154971
_cons	.1391573	.0089072 15.62	0.000	.121494	.1568205

Table 1.2: Regression analysis and model summary

Source: Research data (2020)

The empirical model used was as under:

$$Y = \beta_{01} + \beta_1\chi_1 + \beta_2\chi_2 + \beta_3\chi_3 + \varepsilon_3$$

Where:

Y= return on assets

χ_1, χ_2, χ_3 = Treasury bills rate, cash reserve ratio and central bank rate

$\beta_{01}, \beta_1, \beta_2, \beta_3$ = Coefficients of monetary policy instruments

The functional relationship therefore is:

$$Y = 0.1392 - 0.0438\chi_1 - 2.219\chi_2 + 0.1029\chi_3$$

According to the above regression equation, taking all factors into account, (OMO, CRR, and CBR) constant at zero, the return on assets is expected to be 0.1392 denoting that without monetary policy intervention, the banking sector would be operating at 13.92% return on asset if the resources at the disposal of the management are efficiently used.

5.3.1 Model Summary

The number of observations was 108, which was records for all the variables from January 2010 to December 2018. The coefficient of determination (R²) was 0.584. This denotes that 58.4% of the variability of financial performance was accounted for by the monetary policy (open market operations, cash reserve ratio and central bank rate) in the model. This means that 41.6% of the variations can be accounted for by other external factors not studied in this research. This leaves room for further studies on how other monetary policy instruments, and other factors, not studied in this research influence profitability of commercial banks. The F (3,104) =48.66 is significant since it is larger than the critical value of 2.70 at 5% significance level.



5.3.2 ANOVA

As far as analysis of variance (ANOVA) is concerned, all the p-values were less than the significance level of 0.05. The researcher concluded that there are significant differences between the groups OMO, CRR, and CBR in the model summary. The overall p-value was 0.000 which is less than 0.05 implying that the overall model is statistically significant at 5% level of significance. This study therefore concluded that the effect monetary policy instruments used was statistically significant at five per cent level of significance since the p-value for the model less than 0.05 (Prob>F =0.000).

The above conclusion is supported by several other researchers. Kiganda (2014), concluded that monetary policy has a significant impact on the performance of Kenyan commercial banks. Adesina *et al.*, (2018) asserted that monetary policies of the Central Bank of Nigeria significantly affect financial performance of DMBs in the short run. Kemboi & Tibbs (2018) also arrived at the conclusion that monetary policy controls a large proportion of banks' profitability hence significantly affecting performance of deposit money banks. Nasserinia *et al.*, (2014), concluded that monetary policy significantly influences the financial performance of commercial banks. The relationship was however negative.

Kubasu & Mutwol (2016), on the other hand arrived at the conclusion that there was no significant relationship between OMO, and CBR (monetary policy) and performance of commercial banks. Ogbeifun & Akinola (2019), concluded that monetary policy tools do not statistically significantly affect financial performance of banks. Meshack & Nyamute (2016), however, concluded that monetary policy tools have erratic degrees of relationship with financial performance of commercial banks. Adesina *et al.*, (2018), were more elaborate in their conclusion that monetary policies of the Nigerian Central Bank significantly affect financial performance of DMBs in the short run but the effect turns insignificant in the long run.



Conclusions

The analysis revealed that 58.4% of the variability of financial performance is accounted for by the model after considering the number of predictor variables in the model and that 41.6% of the variations can be explained by other external factors outside of the model. The study also revealed that the influence of monetary policy instruments on financial performance of commercial banks is statistically significant at 5% significance level.

The influence of open market operations on financial performance of commercial banks in Kenya was found to be statistically significant. OMO exhibited a very weak negative relationship with financial performance. The researcher therefore concluded that open market operations (changes in treasury bills rate) affect the financial performance of commercial banks mildly.

The influence of cash reserve on the financial performance of Kenyan commercial banks was found to be statistically significant. Correlation analysis showed a strong negative correlation between cash reserve ratio and return on assets. The researcher therefore concluded that a change in the cash reserve ratio inversely influences the financial performance of Kenyan commercial banks.

Central bank rate was also found to be significantly influencing the financial performance of commercial banks in Kenya. There was a weak positive relationship between CBR and ROA. A change in CBR therefore proportionately influences return on assets. The analysis also showed that capital adequacy ratio partially mediates the relationship between monetary policy and financial performance of commercial banks.

6. Recommendations

Grounded on the above findings, the study makes the following recommendations;

It is the recommendation of this study that the Central Bank should make treasury bills and bonds more appealing for commercial banks to trade in them. Higher rates will attract commercial banks, and this will translate into more returns. The government will also find it easy to pump more



liquidity into the economy or withdraw the volume of money circulating through the operations in the open market. The finding justifies that open market operation statistically significantly affect banks' operations, hence profitability. The study also recommends that CBK should innovate more ways of trading the T-bills to even household units. This will encourage more activities in the open market; increase the volume of trade through the banks, thereby influencing the profitability of banks.

The researcher also recommends the lowering of CRR using expansionary monetary policy to enable commercial banks to hold more cash. This, correspondingly, increases their capacity to advance loans to deficit units, increasing the money supply in the economy, thereby accelerating economic growth rate. This could influence the performance of banks since the more they lend, the higher their returns, as found by the study that CRR significantly influence banks' performance. As CRR increased during the time scope under review, the profitability correspondingly dropped.

Lastly, the study also recommends that CBR should be lowered to allow banks reduce the cost of credit and to create more credit. This, coupled with prudential guidelines, will help banks of different tiers to have sufficient money to advance more credit, which leads to better returns. When these two rates are revised upwards, banks remain with limited funds to advance as loans. This is revealed by the declining ROA during the period of study with a corresponding increase in CBR.



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