

## Macroeconomic Factors and Bank Performance in Kenya

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### Article History

Received: 28.01.2018

Accepted: 12.02.2018

Published: 20.02.2018

### DOI:

10.21276/sb.2018.4.2.4



**Abstract:** Banks are important in the economy because they provide the security to the savings of customers, control the supply of money and credit and encourage public confidence in the working of the financial system. The current study sought to establish the influence of macroeconomic factors on bank performance. This study adopted the descriptive survey research design. The 44 commercial banks registered by central bank participated in the study. The study utilized secondary data which was sourced from CBK annual bank supervision reports over a 10-year period between 2006 and 2015. Descriptive statistics were used to organize the data while regression analysis was also be conducted to establish the relationships between variables in the study. The study found that macroeconomic factors have a strong positive correlation with bank performance. Exchange rates were significant. The study concludes that macroeconomic factors as a whole are important to bank performance. The study recommended that banks should enhance their risk management practices to shield them from grave exchanger rate exposure. This can be achieved through keen monitoring of fluctuations.  
**Keywords:** Macroeconomic factors, bank performance, exchange rates, interest rates and inflation.

### INTRODUCTION

A country's banking sector is tightly integrated into the overall political, economic and institutional setting. Biggar and Heimler [1] indicate that regulation originates from microeconomic concerns over the ability of bank creditors (depositors) to monitor the risks originating on the lending side and from micro and macroeconomic concerns over the stability of the banking system in the case of a bank crisis.

Financial institutions are therefore regulated on issues like market entry, deposit insurance and reserve requirements. Drigã and Dura [2] indicate that the elements of economic environment is the totality of economic factors, such as employment, income, inflation, interest rates, productivity and wealth that influence the buying behaviour of consumers and institutions. A bank is a financial institution that provides banking and other financial services to their customers. DeYoung and Rice [3] define a bank as a lawful organisation, which accepts deposits that can be withdrawn on demand. It also lends money to individuals and business houses that need it. Driga [4] indicates that a bank can be associated with a financial service conglomerate able to provide basic financial services and properly function within the economic, political, legal and international environment that determines its profit and expansion opportunities, interest rates, exchange rates and the particular resources a bank need. Banks are important in the economy because they provide the security to the savings of customers, control the supply of money and credit and encourage public confidence in the working of the financial system, increase savings speedily and efficiently. Banks also avoid focus of financial powers

in the hands of a few individuals and institutions. They set equal norms and conditions to all types of customers

Banks are essential for each country's economy, since no growth can be achieved unless savings are efficiently channelled into investment. In this respect, the lack of a full-fledged banking system has often been identified as a major weakness of the centrally planned economies [5]. Drigã and Dura [2] indicate that banks as financial intermediaries are expected to provide basic financial services for everyone. Banking, considered as mirror of economic growth, can contribute to economic development in at least two ways: directly, by increasing balance sheet items, and indirectly, through financing. Banks also create jobs for their communities and generate returns for their stockholders, thus contributing to the economic growth of local communities and the nation as a whole.

Banks make money by lending and charging interest. The money banks lend, comes primarily from deposits in checking and savings accounts, certificates of deposit, money market accounts, and other deposit accounts that consumers and businesses set up with the bank. According to Heffernan [6] these deposits often

earn interest for their owners, and accounts that offer checking, provide owners with an easy method for making payments safely without using cash. Apart from lending, DeYoung and Rice [3] indicate that banks make money from transaction services like checking and cash management; safe-keeping services like insured deposit accounts and safety deposit boxes; investment services like trust accounts and long-run certificates of deposit (CDs); and insurance services like annuity contracts. According to World Economic Forum [7], Canada has the world's best banking system. It is followed by Sweden, Luxembourg and Australia. The concentration of the banking sector is calculated as the ratio of total assets of the three largest banks of a country to total assets of the country's banking sector. In Germany, the total assets of the three largest banks made up 41% of total assets in the banking sector. The developed countries with the highest concentration in the banking sector, as of 2015, are the United States, the United Kingdom, Switzerland and Japan. Apart from South Africa and Mauritius financial sectors across sub-Saharan Africa (SSA) are still largely underdeveloped the financial sectors. South Africa leads the SSA pack in relation to the size of the banking industry with assets of over US\$361bn. Nigeria boasts the second largest banking sector in the SSA region, with total assets reaching roughly US\$156bn in 2014 [8]. The data shows that despite many challenges, the rise of Africa's financial services sector in recent years has been remarkable; this sector is considered to be one of the continent's brightest prospects.

The banking sector in Kenya currently consists of 44 commercial banks, one mortgage finance company, nine microfinance banks, seven representative offices of foreign banks, 94 foreign exchange bureaus, seven money remittance providers and two credit reference bureaus. Of the total commercial banks, 13 of them have over 50% foreign ownership. At the end of 2014 Q3, the number of bank customer deposit and loan accounts stood at 26,603,385 and 4,068,304, respectively [8]. According to the Central Bank of Kenya [9] the increase in assets was largely driven by higher demand for credit in 2014 as compared to 2013 while the rise in deposits resulted largely from increased deposit mobilization by banks as they expanded their outreach and service networks to tap unserved segments of the market. The Central Bank of Kenya was established in 1966 through an Act of Parliament - the Central Bank of Kenya Act of 1966. Following the promulgation of the new constitution on August 27th, 2010, the Central Bank of Kenya is now established under Article 231 of the Constitution [10]. Under this Article the Central Bank has the responsibility of formulating monetary policy, promoting price stability, issuing currency and performing any other functions conferred on it by an Act of Parliament. One of the Central Bank of Kenya's mandate is fostering the liquidity, solvency and proper functioning of a market-based financial system [11].

### Statement of the Problem

There is no question as to the importance of banks in the economy. The more developed a banking system is in a nation, the more efficient and healthy will be that nation's economic growth. Given the importance of banks in a financial system, the financial performance of commercial banks and its predictors are of great interest to researchers. There exists a wealth of research of how bank performance is affected by central bank regulation, competition and credit risk management. However, few studies had focused on macro-economic factors such as inflation on the performance of banks. This is surprising considering that inflation has the potential to bring the financial sector and in extension the economy to its knees. Several studies such as Athanasoglou *et al.*, [12], Drigã and Dura [2] and Kutan *et al.*, [13] have been reviewed which sought to establish the influence of macro-economic factors on performance of commercial banks. The researcher notes that majority of these studies have been carried out in Europe and America. Studies assessing macro-economic factors and bank performance are scarce in Kenya and much of sub-Saharan Africa. Due to the variance in economic levels between Kenya and developed countries, majority of the findings of the said studies cannot be wholly applied in Kenya. A study was therefore needed on macroeconomic factors and bank performance.

### Purpose of the Study

To establish the influence of macroeconomic factors on bank performance for the period between 2006 and 2015

### Objectives of the Study

- To determine the influence of exchange rate on banks performance for the period between 2006 and 2015
- To determine the influence of inflation on bank performance for the period between 2006 and 2015
- To determine the influence of interest rates on bank performance for the period between 2006 and 2015

### Hypotheses

- Inflation has a significant relationship with bank performance
- Exchange rates have a significant relationship with bank performance
- Bank performance has a significant relationship with economic growth.

## LITERATURE REVIEW

### Bank Performance

Performance measurement plays a critical role in defining the level of success in achieving objectives and identifying where improvement efforts are required [14]. Luyendijk [15] indicates that the biggest problem in banking is measuring performance. The efficiency and competitiveness of financial institutions cannot easily be measured, since their products and services

are of an intangible nature [16]. Thaguna and Poudel [17] add that evaluating the economic performance of banks, is a complicated process because number of variables such as profits, liquidity, asset quality, attitude toward risk, and management strategies must be accounted for. Measures of after-tax rates of return, such as the return on average total assets (ROA) and the return on total equity (ROE), are widely used to assess the performance of firms, including commercial banks [18].

A basic measure of bank profitability that corrects for the size of the bank is the return on assets (ROA), which divides the net income of the bank by the amount of its assets [19]. ROA is a useful measure of how well a bank manager is doing on the job because it indicates how well a bank's assets are being used to generate profits [20]. However, it is not what the bank's owners (equity holders) care about most; they are more concerned about how much the bank is earning on their equity investment, an amount that is measured by the return on equity (ROE). However, European Central Bank [21] points out that ROE is a short-term indicator and must be interpreted as a snapshot of the current health of institutions. It does not take into account either institution's long-term strategy or the long-term damages caused by the crisis.

Banks' performance is affected by numerous of factors, among these factors are internal and external factors which has direct impact on its performance. Internal factors include management decisions, size of the bank, capital, risk management, expenses management affect the profitability of the bank credit and liquidity [6]. External factors are basically found in the macroeconomic environment, such as inflation, interest rates and cyclical output, and variables that represent market characteristics such as market concentration, industry size and ownership status [22]. Ostrup [23] argues that the level of real bank earnings is affected by inflation, constituting a channel through which money can influence the real economy. Due to the impact of inflation on real bank earnings, the author further argues that the banks' willingness to undertake lending is determined by fluctuations in the inflation rate which are effected by the monetary regime.

### **Inflation and Bank Performance**

Economic theory reveals that developed financial sector mobilizes savings efficiently and reallocates the resources to productive projects and hence stimulates economic activities in the country. However, high rate of inflation worsens the efficiency of financial sector through financial market frictions and slows down the economic performance [24]. Umar and Maijama'a [25] argue that inflation affects banks in two ways. On one hand, inflation has a negative effect on banking because it affects the purchasing power and bank exchange rate regime, opportunity cost of holding currency in the future, worsen loans policy, disrupt

business plans and the equity holding performance of banks. On the other hand, inflation leads to an increase in bank performance as long as the banks can be able to anticipate future inflation and adjust interest rate to generate higher revenue than cost which leads to higher profit and performance as a result of adjusting the rate of interest. There is a strong relationship between inflation and lending by the financial sector to the private sector. Boyd *et al.*, [26] show that as inflation rises, the marginal impact of inflation on banking lending activity and stock market development diminishes rapidly. Tolulope and Oyeyinka [27] also indicate that both anticipated and unanticipated inflation have a negative effect on the financial sector performance, especially on the activities of the banking sector. Boyd and Bruce [28] indicate that evidence is mounting that inflation is harmful to economic activity even at fairly modest rates of inflation because of the way it adversely affects the banking sector and investment.

Korkmaz [29] indicates that if inflation is not under control, as an effective economic structure cannot emerge, and also development of banking sector will be hindered and bank credits will not be expected to increase investments. Inflation should always be kept under control by following an effective monetary policy and banking system should be strengthened. According to Tolulope and Oyeyinka [27] high inflation rate is inimical to financial sector performance, irrespective of the economy involved, and the government should employ necessary measures to control inflation as a way of improving the performance of the financial sector. Davydenko [30] study examined the determinants of bank profitability in Ukraine. It related bank specific, industry specific and macroeconomic indicators to the overall profitability of Ukrainian banks. The study used a panel of individual banks' financial statements from 2005 to 2009. The study used increase of the Consumer Price Index over the previous quarter, to proxy for the expected inflation. The study found that holding other factors constant, inflation is not significant in a dynamic model. However, FE results are significant for all banks besides ten largest banks. Inflation is positively related to banks profitability, which could imply that during the period of our study the levels of inflation were anticipated by banks management. Correctly predicting inflation gave banks an opportunity to adjust the interest rates accordingly and consequently to earn higher profits. Yet, foreign banks appear to successfully anticipate inflation enhancing their profits with increasing inflation. The period under study (2005-2009) is relatively short to make substantive conclusions. This study will therefore study a 10 year period for more reliable findings.

By using bank level data, Sufian and Habibullah [31] examine how bank specific characteristics and the macroeconomic environment affects the profitability of the Thailand and Malaysian

banking sectors over the period 1992-2003. All the variables are significant although their impact is not always the same for Thailand and Malaysian banks. The impact of inflation is positive on Thailand banks' profitability during the crisis and post-crisis periods, while inflation is negatively related to Malaysian banks' profitability during the crisis period. The point of departure is that study only used return on assets as a measure of bank performance. ROA has the limitation in that it does not provide information on how much the bank is earning. The current study will therefore use multiple indicators ROA, ROE and Net profit to come up with more generalizable findings. Krakaha and Ameyaw [32] sought to provide a framework to investigate the factors or indicators intrinsic in the bank's asset structure that had impacted on their profitability, and their performance for that matter. The paper used data from secondary sources mainly, annual reports of the two commercial banks namely Merchant Bank (Ghana) Limited and Ghana Commercial Bank Limited over the period, 1990–2009. Least square regression model was used to estimate the determinants of the profitability of banks or the relationship that exist between Ghana's commercial bank's profitability and bank specific determinants. The results from paper reveals that annual rate of inflation has a positive impact on profitability, and very significant driver in the performance of commercial banks in Ghana.

Osuagwu [33] investigated the determinants of bank profitability in the light of bank specific variables, industry related factors and macroeconomic influences, using a panel of selected banks that account for over 60% of total bank assets in Nigeria. A linear regression model with logarithmic transformation where applicable. Inflation rate and exchange rate were the most feasible macroeconomic variables that demonstrate tremendous impact on bank profitability according to the literature. In this study both variables were collinear, which to a larger extent is as a result of the macroeconomic policies adopted in Nigeria since the late 1980's. Tan and Floro [34] find that there is a positive relationship between bank profitability, cost efficiency, banking sector development, stock market development and inflation in China. Sufian and Habibullah [31] work on 37 commercial banks from Bangladesh to assess the performance for a period ranges from 1997 to 2004. They don't find any significant impact on profitability without for inflation that has a negative impact on banks performance during the period under study. Sufian [31] took an initiative to investigate the performance of 77 commercial banks taken from Pakistan, Sri Lanka and Bangladeshi during the period from 1997 to 2008. Regarding the macroeconomic determinants, the findings reveal that there is a positive and significant association between bank profitability and economic growth, while the association between profitability and inflation is not significant. Hussain and Hassan [35], Khrawish [36] and Syafri [37] show that there is a significant negative

impact of inflation on profitability. However, Studies by Vong and Chan [38] and Tan and Floros [34] show that high inflation rates lead to higher bank profitability. All these studies used panel data. Panel data suffers from several limitations such as problems in the design, data collection and data management of panel surveys [39]. This study will therefore adopt the descriptive survey research design.

### **Interest Rates and Bank Performance**

Borio, Gambacorta and Hofmann [40] investigated how monetary policy affects bank profitability. They use data for 109 large international banks headquartered in 14 major advanced economies for the period 1995–2012. They find a positive impact of the interest rate structure on net interest income dominates the negative one on loan loss provisions and on non-interest income. They also find that the effect is stronger when the interest rate level is lower and the slope less steep, ie that non-linearities are present. All this suggests that, over time, unusually low interest rates and an unusually flat term structure erode bank profitability. This study used multinational banks in advanced economies. The findings may therefore not be wholly generalizable in the Kenyan Context creating a need for the current study. Khan and Sattar [41] analyzed the impact of interest rates changes on the profitability of commercial banks being operated in Pakistan by examining the financial statements of four major banks during 2008 to 2012. In this paper interest rate was an independent variable and bank profitability was a dependent variable. To examine the impact of interest rate changes on the profitability of commercial banks in Pakistan, Pearson correlation method was used in this study. As a result it was found that there is strong and positive correlation between interest rate and commercial bank's profitability. It means if the value of interest rate is increases/decreases then as result value of bank's profitability will also increases/decreases. The sample size of this study was very small (4 banks). In addition, the timeframe used by the study was very small (5 years). This study will study 44 banks over a 10-year period so that data is more comprehensive.

Ene *et al.*, [42] examined the effect of Interest Rates Deregulation on the performance of Deposit Money Banks in Nigeria between 1986 and 2014 using OLS regression method. The study found that deregulated interest rates has positive and significant impact on the ROA of deposit money banks. It showed that as interest rates increase, the ROA also appreciates. It also showed that the higher the rates of interests, the higher the performance of deposit money banks. In Dabo [43] assessed interest rate liberalization as part of financial sector reforms and its effects the performance of banks that experienced the first phase of the financial liberalization in Nigeria. Therefore, the results of the study lend support to the proposition that banks in Nigeria witnessed performance improvement following government's liberalization programme. These two



studies were conducted in Nigeria and focused more on the liberalization aspect. Ngure [44] sought to determine the effect of interest rates on financial performance of commercial banks in Kenya. The study used descriptive research design using secondary data obtained from Central Bank of Kenya for the period of five years from 2009 to 2013 using SPSS version 21 and results obtained tested for significance using ANOVA. The study found that interest rates have significant positive effect on financial performance of commercial banks in Kenya at 95% confidence level. The relationship between interest rates and financial performance was also found to be linear with increase in interest rates leading to higher profitability. The timeframe used by the study was very small (5 years). This study will use a 10-year period so that data is more comprehensive.

**Foreign exchange rates and bank performance**

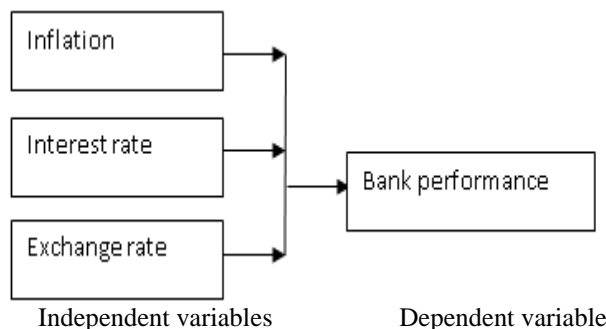
Foreign exchange rate fluctuations affect banks both directly and indirectly. The direct effect comes from banks’ holdings of assets (or liabilities) with net payment streams denominated in a foreign currency. Foreign exchange rate fluctuations alter the domestic currency values of such assets. This explicit source of foreign exchange risk is the easiest to identify, and it is the most easily hedged. A bank without foreign assets or liabilities can be exposed to currency risk because the exchange rate can affect the profitability of its domestic banking operations. He *et al.*, [45] investigated whether the performance of 22 large U.S. commercial banks is affected by foreign exchange fluctuations over a 40-year period. They find that these large U.S. banks are exposed to foreign exchange risk and that specific bank performance is related to the value of the dollar relative to market baskets of other currencies Using data sourced mainly from Central Bank of Nigeria publications, Ngerebo [46], empirically examined the relationship between exchange rate fluctuation and commercial banks intermediation index with using annual average exchange rate as independent variables while Commercial Banks Intermediation Index (CBII) represented the dependent variable. Using SPSS to conduct the regression and correlation analysis, the study found that there is a positive relationship between foreign exchange fluctuation and CBII, that

only about 28% of the changes in CBII is accounted for by variations in foreign exchange(that is, after adjusting for sample size), since the adjusted R2 = 0.278. It also revealed that at 5% significance level, the critical T-value of 2.042 is less than the computed T-value of 3.754, hence, the rejection of Ho. The result led to the conclusion that exchange rate fluctuation has significant impact on banks’ intermediation.

Limo [47] study sought to establish the effect of foreign exchange risk management on the financial performance of commercial banks in Kenya. The study used census approach to pick all the 43 commercial banks in Kenya since the population is not large. The study made use of secondary data. The multiple linear regression analysis was applied to examine the extent of influence of the independent variable on the dependent variables. The regression analysis established that  $ROA = 1.627 + 13.491*Options + 3.113*Forward\ Contracts + 4.820*Cross\ Currency\ Swaps + 0.720*Leading\ and\ Lagging - 0.071*Price\ Adjustments + 0.044*Netting$ . The study further found that there is a strong relationship between dependent and independent variables given an R2 values of 0.856 and adjusted to 0.801. This shows that the independent variables (Options, Forward Contracts, Cross Currency Swaps, Leading and Lagging, Price Adjustments, Netting) accounts for 80.1% of the variations in profitability as measured by ROA. Ahmed [48] research sought to evaluate the effects (if any) that variations in the exchange rate has in the financial performance of the selected listed commercial banks in Kenya in the Nairobi Stock Exchange. The research used both secondary and primary data. The study utilized descriptive design. Data was analysed using Statistical Package for Social Sciences (SPSS). The study found that first; interest rates have an insignificant positive effect on commercial bank performance, secondly, foreign exchange exposure has negative effect on the performance of listed commercial banks in Kenya and finally, inflation has negative effect on bank performance.

**Conceptual framework**

The conceptual framework shows the variables in the study



**Fig-1: Conceptual framework**

**RESEARCH METHODOLOGY**

**Research design**

This study adopted the descriptive survey research design. This design was deemed appropriate because it is able to collect accurate data on and provide a clear picture of the phenomenon under study as indicated by Mouton and Marais [49].

**Target population**

This study collected data for all the 44 commercial banks registered by Central Bank as at December 2015 [11].

**Data collection**

The study utilised secondary data. Specifically longitudinal time series data was collected from CBK annual bank supervision reports for a 10-year period between 2006 and 2015.

**Table-1: Operationalization of variables**

Variable	Indicators	Source of data
Inflation	Consumer price index	Annual CBK bank supervision reports
Exchange rate	KES/USD	
Bank performance	Profit before tax	

**Data analysis**

Descriptive statistics in the form of frequencies and percentages were used to organize the data that was presented in form of tables and charts. In this study, the following diagnostics were conducted: normality, multicollinearity, autocorrelation and stationarity tests were conducted. Multiple regression analysis was conducted

to investigate the macroeconomic determinants of bank performance in Kenya. In this study, stepwise method of regression was used. With the help of Statistical Package for Social Sciences (SPSS) software the researcher carried out regression analysis which was carried out at 95% confidence level. The model to be used are shown below

$$BPF = \beta_0 + \beta_1 INF + \beta_2 EXC + \beta_3 INT + e$$

Where,  
 BPF= bank performance  
 $\beta_0$  = constant,  $\beta_1, \dots,$   
 $\beta_3$  = Coefficients of variables  
 INF = Inflation  
 EXC = Exchange Rate  
 INT = Interest Rate  
 e = Error term

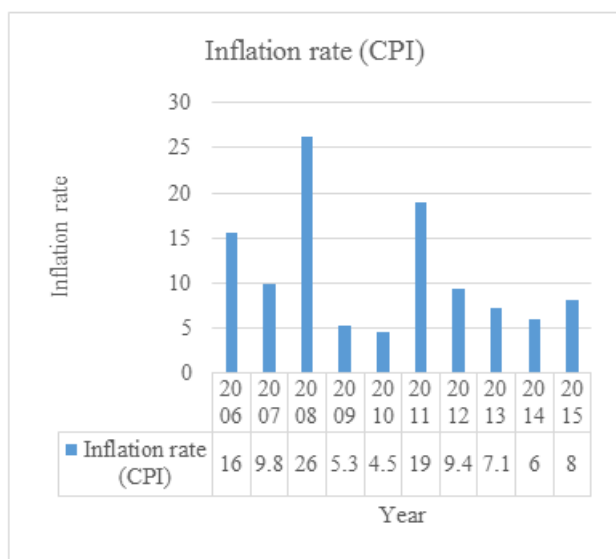
**FINDINGS**

**Descriptive Analysis**

**Inflation**

Inflation was assessed by noting the average Consumer Price Index for the period under review. Findings in Figure 4.2 show that inflation has been unstable in the period under review. Inflation changed

from 15.6 percent in 2006 to 8 percent in 2015. The highest inflation was observed in 2008 where it hit a high of 26.2 percent while 2010 saw the least inflation at 4.6 percent. This growth was mainly supported by a stable macroeconomic environment and improvement in outputs of agriculture; construction; finance and insurance and real estate sectors.

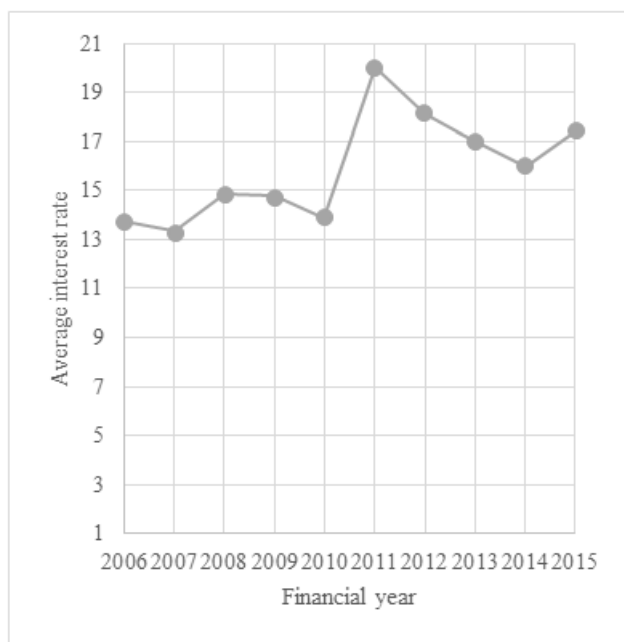


**Fig-2: Inflation Trends**

**Interest Rates**

Interest rates in the period under review were assessed by noting the average interest rates charged by

banks. Interest rates were stagnant between 2006 and 2010 and then drastically rose in 2011 before gradually falling and rising again in 2015.



**Fig-3: Interest Rate Trends**

**Exchange rates**

Exchange rates were assessed by checking the rate of exchange rate between Kenya shilling and US Dollar. The Kenyan shilling has been gradually weakening against the US Dollar. The exchange rate at 2015 stood at 105.27 up from 69.63 in 2006. The lowest

rate was observed in 2007 at 63.3. The findings show continued strengthening of the U.S dollar against most currencies following the recovery in the U.S. economy, the anticipated increase in the U.S. interest rates and the impact of the devaluation of the Chinese Yuan.

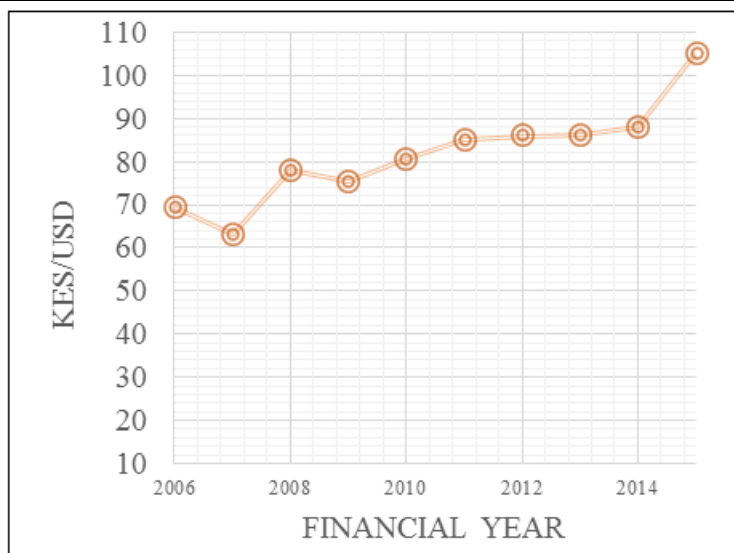


Fig-4: Exchange rate trends

**Regression Analysis**

Regression analysis was conducted between macroeconomic factors (inflation, interest rates and

exchange rates) and bank profitability. The findings are presented in this section

**Table-2: Model summary for macroeconomic factors and bank profitability**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.915	.837	.756	21.38272

Findings in Table-2 show that the R value is 0.915 indicating that macroeconomic factors have a strong positive correlation with bank profitability. The R square value of 0.837 indicates that macroeconomic

factors contribute 83.7% to bank profitability. The findings therefore show that macroeconomic factors are important to bank performance.

**Table-3: ANOVA output for macroeconomic factors and bank profitability**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14128.558	3	4709.519	10.300	.009b
	Residual	2743.325	6	457.221		
	Total	16871.882	9			

Findings in Table-3 show that the F value 10.300 is significant (p=0.009) at 95% confidence level. This means that macroeconomic factors are significant

to bank profitability. The findings also suggest that the model adopted is significant in assessing bank profitability.

**Table-4: Coefficients for macroeconomic factors and bank profitability**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-170.857	58.021		-2.945	.026
	Inflation	-2.095	1.123	-.336	-1.866	.111
	Exchange	2.258	.907	.598	2.490	.047
	Interest	5.746	4.686	.292	1.226	.266

Findings in Table-4 show that of the three macroeconomic factors only exchange rates (p=0.047) is significant. Substituting the unstandardized

coefficients into the model gives us the new model shown below

$$Y = -170.87 - 2.095 \text{ INF} + 2.258 \text{ EXC} + 5.746 \text{ INT} + 21.38272$$

Where,

Y= bank profitability, INF = Inflation, EXC = Exchange Rate, INT = Interest Rate



The new model suggests that without macroeconomic factors, the banking sector would make a loss of 1.7 Billion Kenya Shillings. The findings also show that a unit change in inflation reduces profitability by 2.095 times, a unit change in exchange rates increases profitability by 2.25 times while a unit change in interest rates increases profitability by 5.746 times.

## **DISCUSSION**

The study sought to determine the influence of exchange rate on banks performance for the period between 2006 and 2015. The study found that there was a significant relationship between exchange rates and bank profitability. In particular, the finding showed that there was a strong positive correlation between exchange rates and profitability. This means that a rise in exchange rates led to an increase in bank performance. This can be attributed to the fact that Exchange rate variation might affect the price of domestic products, import, export, and FDI; this in turn might influence banks portfolio and operation in different ways. The indirect effects of the exchange rate on the banks performance can be channeled through its effect on the demand for loans, the extent of competition, and other aspects of banking conditions. The findings are in agreement with Ngerebo [46] who found that exchange rate fluctuation has significant impact on banks' intermediation. The findings are also in agreement with He *et al.*, [45] who found that banks are exposed to foreign exchange risk and that specific bank performance is related to the value of the dollar relative to market baskets of other currencies. However, the findings are in disagreement with Ahmed [48] who found that foreign exchange exposure has negative effect on the performance of listed commercial banks in Kenya.

The study sought to determine the influence of inflation on bank performance for the period between 2006 and 2015. The study found that there was a weak positive correlation between inflation and profitability of commercial banks and inflation was not statistically significant. This shows that inflation has little influence on bank performance. This is despite inflation being wildly unstable in the period under review. This may be attributed to bank behavior where banks adjust interest rates and lending in relation to the inflation rate. This ensures that banks protect themselves from instability of inflation by passing the costs to borrowers and those with savings accounts. The findings are in disagreement with Hussain and Hassan [35] and Khrawish [36] and Syafri [37] show that there is a significant negative impact of inflation on profitability. However, the findings are in disagreement with Davydenko [30] inflation is not significant in a dynamic model.

The study sought to determine the influence interest rates on bank performance for the period between 2006 and 2015. Interest rates were found not to be statistically significant. The second hypothesis is

therefore rejected and the study concludes that interest rates have a significant relationship with bank performance. A unit change in interest rates would increase performance by 27.8%. This shows that interest rates had only a small positive effect on bank performance. This finding is in contrast with Khan and Sattar [41] who find that there is strong and positive correlation between interest rate and commercial bank's profitability. The finding is in disagreement with Ene *et al.*, [42] who found that deregulated interest rates has positive and significant impact on the ROA of deposit money banks. Ngure [44] also found that interest rates have significant positive effect on financial performance of commercial banks in Kenya at 95% confidence level.

## **CONCLUSION**

The study concludes that macroeconomic factors as a whole are not significant to bank performance. Inflation, interest rates and exchange rates are not significant to bank performance. Inflation and exchange rates have negative effect on bank performance while interest rates enhance bank performance to a small extent.

## **RECOMMENDATIONS**

The study concludes that macroeconomic factors as a whole are not significant to bank performance. Inflation, interest rates and exchange rates are not significant to bank performance. Inflation and exchange rates have negative effect on bank performance while interest rates enhance bank performance to a small extent.

## **Suggestions for Further Studies**

On exchange rates, interest rates and inflation were considered for the current study. Future studies should include other macroeconomic factors to get a deeper understanding of the influence of macroeconomic factors on bank performance. A similar study should be conducted in other financial institutions such as SACCOs. A similar study should also be conducted in future when the capped interest rates have taken effect.

## **Acknowledgements**

I thank the Almighty God for his love and mercies. I appreciate all the lecturers of Dedan Kimathi University of Technology who taught me. I am indebted to my supervisors Dr. Ithinji and Dr. Ngunyi who guided me tirelessly in this research project. I cannot forget my family and friends who gave me moral support throughout the time I was at the University.

## **REFERENCES**

1. Biggar, D., & Heimler, A. (2005). An Increasing Role for Competition in the Regulation of Banks. Antitrust Enforcement in Regulated sectors – Subgroup 1, ICN. Bonn.

2. Drigă, I., & Dura, C. (2010). The financial sector and the role of banks in economic development, Anon.
3. DeYoung, R., & Rice, T. (2004). How do banks make money? The fallacies of fee income. *Economic Perspectives*.
4. Driga, A., Lu, P., Schaeffer, J., Szafron, D., Charter, K., & Parsons, I. (2006). Fastlsa: a fast, linear-space, parallel and sequential algorithm for sequence alignment. *Algorithmica*, 45(3), 337-375.
5. Rostowski, J. (2012). Feasibility of the German-type model of Universal Banks in the Post-Communist Economies. The Case of Russia. Central European University.
6. Heffernan, S. (2005). *Modern banking*: John Wiley and Sons Ltd, West Sussex.
7. World Economic Forum. (2012). *The Global Competitiveness Report*. WEF.
8. KPMG. (2015). *Sector Report: Banking in Sub-Saharan Africa*. KPMG.
9. Kirui, E., Wawire, N. H., & Onono, P. O. (2014). Macroeconomic variables, volatility and stock market returns: a case of Nairobi securities exchange, Kenya. *International Journal of Economics and Finance*, 6(8), 214.
10. Szczeklik, A., & Praktyczna, M. (Eds.). (2010). *Choroby wewnętrzne: stan wiedzy na rok 2010*. Medycyna Praktyczna.
11. CBK, K., & Kenya, F. S. D. (2016). *The 2016 FinAccess Household Survey on financial inclusion*.
12. Athanasoglou, P. P., Brissimis, S. N., & Delis, M. D. (2005) "Bank-Specific, Industry-Specific and Macroeconomic Determinants of Bank Profitability.
13. Kutan, A., Rengifo, E., Ozsoz, E. (2012). Evaluating the effects of deposit dollarization in bank profitability. Fordham University, Discussion Paper No. 07.
14. Santos, S. P., Belton, V., & Howick, S. (2008). "Enhanced performance measurement using OR: A case study". *Journal of the Operational Research Society*, 59(6): 762-775.
15. Luyendijk, J. (2013). Former HR head at ABN Amro: 'We are beta-male chimpanzees'. Retrieved from The Guardian: <https://www.theguardian.com/commentisfree/joris-luyendijk-banking-blog/2013/sep/25/hr-abn-amro-beta-male-chimpanzees>.
16. Kosmidou, K., Zopounidis, C. (2008) "Measurement of Bank Performance in Greece", *South-Eastern Journal of Economics*, vol. 6, no 1, 79-95.
17. Thagunna, K. S., & Poudel, S. (2013). Measuring Bank Performance of Nepali Banks: A Data Envelopment Analysis (DEA) Perspective. *International Journal of Economics and Financial Issues* 3(1), 54-65.
18. Gilbert, R. A., & Wheelock, D. C. (2007). Measuring commercial bank profitability: Proceed with caution. *Federal Reserve Bank of St. Louis Review*, 89(6), 515-532.
19. Eken, M. H., Kale, S. (2011). Measuring bank branch performance using Data Envelopment Analysis: The case of Turkish bank branches. *African Journal of Business Management*, 5, 889-901.
20. Barros, C., Ferreira, C., & Williams, J. (2007). Analysing the determinants of performance of best and worst European banks: A mixed logit approach. *Journal of Banking & Finance* 31, 2189-2203.
21. Kaltenthaler, K., Anderson, C. J., & Miller, W. J. (2010). Accountability and independent central banks: Europeans and distrust of the European Central Bank. *JCMS: Journal of Common Market Studies*, 48(5), 1261-1281.
22. Iannotta, G., Nocera, G., & Sironi, A. (2007). Ownership Structure, Risk and Performance in the European Banking Industry", *Journal of Banking & Finance*, Vol. 31, pp. 2127-2149.
23. Ostrup, F. (2000). *The impact of inflation on bank earnings*. Cambridge University Press.
24. Wahid, A. N., Shahbaz, M., & Azim, P. (2011). Inflation and Financial Sector Correlation: The Case of Bangladesh. *International Journal of Economics and Financial Issues* Vol. 1, No. 4, pp.145-152.
25. Umar, M., Maijama'a, D., & Adamu, M. (2014) Conceptual Exposition of the Effect of Inflation on Bank Performance. *Journal of World Economic Research*. Vol. 3, No. 5, pp. 55-59.
26. Boyd, J. H., Levine, R., & Smith, B. D. (2000). *The Impact of Inflation on Financial Sector Performance*. Anon.
27. Tolulope, A. O., & Oyeyinka, O. L. (2014). *The Impact of Inflation on Financial Sector Performance: A Case Study of Sub-Saharan Africa*. indian journal of finance.
28. Boyd, J. H., & Champ, B. (2006). Inflation, banking, and economic growth. *Federal Reserve Bank of Cleveland*, 1-4.
29. Korkmaz, S. (2015). Impact of Bank Credits on Economic Growth and Inflation. *Journal of Applied Finance & Banking*, vol. 5, no. 1, 57-69.
30. Davydenko, A. (2011). Determinants of Bank Profitability in Ukraine. *Undergraduate economic Review*, 7: 1.
31. Sufian, F., & Habibullah, M. S. (2009). The impact of Asian financial crisis on bank performance: empirical evidence from Thailand and Malaysia. *Savings and Development* Vol. 33, No. 2, pp. 153-181.
32. Krakah, A. K., & Ameyaw, A. (2010). The Determinants of Bank's Profitability in Ghana: The Case of Merchant Bank Ghana Limited (MBG) and Ghana Commercial Bank (GCB). BTH.
33. Osuagwu, E. S. (2014). Determinants of Bank Profitability in Nigeria. *International Journal of Economics and Finance* 6 (12).

34. Tan, Y., & Floros, C. (2012) "Bank profitability and inflation: the case of China", *Journal of Economic Studies*, Vol. 39 Iss: 6, pp.675 – 696.
35. Hussain, M. E., & Hassan, M. K. (2005). *Basel Capital Requirements and Credit Risk Taking in Developing Countries*. Department of Economics and Finance Working Papers, 1991-2006, Paper 34.
36. Khrawish, H. A. (2011). Determinants of Commercial Banks Performance: Evidence from Jordan. *International Research Journal of Finance and Economics*, 81, 148-159.
37. Syafri, M. (2012, September). Factors affecting bank profitability in Indonesia. In *The 2012 International Conference on Business and Management* (Vol. 237).
38. Vong, P. I., & Chan, H. S. (2007). Determinants of Bank Profitability in Macao. *Macau Monetary Research Bulletin*, 12(6), 93-113.
39. Kasprzyk, D., & Duncan, G. (1989). *Panel Surveys*. New York, Chichester, Brisbane.
40. Borio, C., Gambacorta, L., & Hofmann, B. (2017). The influence of monetary policy on bank profitability. *International Finance*, 20(1), 48-63.
41. Khan, W. A., & Sattar, A. (2014). Impact of interest rate changes on the profitability of four major commercial banks in Pakistan. *International Journal of Accounting and Financial Reporting*, 4(1), 142.
42. Ene, I. V., Walker, L. A., Schiavone, M., Lee, K. K., Martin-Yken, H., Dague, E., ... & Brown, A. J. (2015). Cell wall remodeling enzymes modulate fungal cell wall elasticity and osmotic stress resistance. *MBio*, 6(4), e00986-15.
43. Andreussi, O., Dabo, I., & Marzari, N. (2012). Revised self-consistent continuum solvation in electronic-structure calculations. *The Journal of chemical physics*, 136(6), 064102.
44. Wamwiri, F. N., Alam, U., Thande, P. C., Aksoy, E., Ngunjiri, R. M., Aksoy, S., ... & Murilla, G. A. (2013). Wolbachia, Sodalis and trypanosome co-infections in natural populations of *Glossina austeni* and *Glossina pallidipes*. *Parasites & vectors*, 6(1), 232.
45. He, L. T., Fayman, A., & Casey, K. M. (2013). Bank Profitability: The Impact of Foreign Currency Fluctuations. *Journal of Applied Business and Economics* vol. 16(2).
46. Ngerebo, T. A. (2012). The impact of foreign exchange fluctuation on the intermediation of banks in Nigeria (1970-2004). *African Journal of Business Management*, 6(11), 3872.
47. Limo, D. (2014). The effect of foreign exchange risk management on the financial performance of commercial banks in Kenya. University of Nairobi.
48. Ahmed, L. (2015). The Effect of Foreign Exchange Exposure on the Financial Performance of Commercial Banks in Kenya. *International Journal of Scientific and Research Publications*, Volume 5, Issue 11, November 2015.
49. Mouton, J., & Marais, H. C. (1992). *Basic concepts in the methodology of the social sciences*. Pretoria: Human Sciences Research Council.