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ASSESSING THE EFFICIENCY OF COMMERCIAL BANKS IN BELIZE FOLLOWING THE GLOBAL RECESSION

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Abstract:
The role of the banking system and monetary mechanisms is paramount in driving the economic development of nations. Commercial banks, in particular, play a pivotal role in facilitating essential sectors of the economy, transforming the dreams and aspirations of millions into reality by providing crucial loans and advances. However, Caribbean nations faced not only natural disasters but also the man-made catastrophe of the "Global Recession" between 2007 and 2008. The repercussions of the 2008 global financial crisis were notably severe in the Caribbean, surpassing the impact felt in the rest of Latin America. Caribbean countries, including Belize, experienced a significant economic downturn in 2009. The severity of the crisis in these economies can be attributed to their substantial dependence on the United States as a trade partner, source of foreign direct investment, tourism, and remittances (Kouame & Reyes, 2011). This abstract provides an overview of the critical role of the banking sector in the context of Caribbean economic challenges.

Keywords: Banking System, Economic Development, Global Financial Crisis, Caribbean Nations, Economic Challenges

Introduction

The role and importance of banking system and the monetary mechanisms are critical in the economic development of a nation. The commercial banking sector has facilitated the crucial sectors of the economy and has translated the hopes and aspirations of millions of people into reality by providing loans and advances in the developing countries. In addition to natural disasters such as hurricanes,Caribbean countries were facing the manmade disaster of “Global Recession” between 2007 and 2008. The impact of the 2008 global financial crisis on the
Caribbean was deeper than in the rest of Latin Americ
a. Caribbean nations in general and Belize in particular exhibited a strong growth contraction during 2009 and the impact of the crisis in these economies is attributable to their high dependence on the United States as trade partner or source of foreign direct investment, tourism and remittance (Kouame & Reyes, 2011).
The assessment of financial performance of the commercial banks is a measure and indicator of the strength of financial system of an economy. It is an indirect measure of the overall functioningof the economy of a country.
The Uniform Financial Institutions Rating System (UFIRS) commonly known as the CAMEL rating system, was adopted by the Federal Financial Institutions Examination Council (FFIEC) on November 13, 1979. The FFIEC updated the UFIRS in December 1996 and the revision was effective January 1, 1997 which included a 6th component addressing sensitivity to market risks (CAMELS). It can be said that the UFIRS helps the regulators to assess and maintain stability and confidence in the nation's financial system. The commercial

banks in Belize account for 75% of the financial activities of the country. The shocks of global recession led to a rise in unemployment from 8.2% in 2008 to 13.1% in 2009 and adversely classified loans in the commercial banking system spiked from 6.83% in 2008 to 12.69% in 2009(Perez, 2011). Over all Belize has weathered through the global depression without major shocks or failure in the banking system. The objective of the current study was to assess the financial health of five major commercial banks in Belize by using CAMEL approach during the post global recession period of 2008 to 2015.

Literature Review

The importance of commercial banks is more prominent in developing countries than in developed countries because in developing countries financial markets are underdeveloped and banks are the only major source of finance (Athanasoglou*et al*., 2006). The U.S. Federal Reserve investigated the safety and soundness of financial stability in banks by using the CAMEL rating model and found the CAMEL approach as a reliable on-site evaluation tool for the health of commercial banks (Bernanke, 2007). Studies conducted to evaluate the impact of global recession on the Indian Banking Sector reported that the global recession did not impact the commercial banking sector in India (Goel & Bajpai 2013, Rao *et al*., 2014).

Studies that evaluated the impact of both bank specific and macroeconomic factors on the performance of commercial banks in African countries found that it is the banks' internal factors that controlled the financial performance rather than the external macroeconomic factors (Ally 2014, Amoah & Gyamerah, 2015). Augustine and Prophete (2016) in their study entitled "Determinants of Bank Profitability in Haiti" reported that the past profits and credit influenced the ROA positively whereas operating expenses had a negative relationship on ROA. Aspal and Dhawan (2014) conducted a study to assess the status and the financial performance of old private sector banks in India using CAMEL rating model. The overall composite ranking analysis showed that six banks out of thirteen selected banks have shown good and excellent financial performance. Ashan (2016) examined the performance of selected Islamic banks using CAMEL analysis and concluded that all the selected Islamic banks are in strong position on their composite rating system.Wirnkar and Tanko (2008) highlighted the importance of each component in CAMEL and evaluated the best ratios that bank regulators can adopt in assessing the efficiency of banks.

Data and Methodology

The data for the major commercial banks were collected from Central Bank of Belize and the macroeconomic data were collected from the Statistical Institute of Belize.The CAMEL Analysis focuses on the following parameters.To keep the banks identity anonymous banks were labeled as Bank A, Bank B, Bank C, Bank D and Bank E.

CAMEL Parameters	**Ratios**
Capital Adequacy	Capital to Risk Weighted Assets Capital to Deposit
Asset Quality	Non Performing Loans to Total Loans Loan Loss Reserve to Total loan
Management Efficiency	Total Loans to Total Deposit Non Interest Expenditure to Net Interest Income Plus Non Interst Income
Earnings and Profitability	Net Income to Total Asset (ROA) Net Income to Total Equity(ROE)

Liquidity	Total liquid Assets to Total Deposits Cash to Total deposit

Capital Adequacy:

Capital adequacy reflects the overall financial position of a bank. Adequate capital held by the bank provides protection against unexpected losses in the future. midou (2008) referred to capital adequacy as the sufficiency of the amount of equity to absorb any shocks that the bank may experience and it reveals the internal strength of the bank to withstand losses during crisis. The Capitalto Risk Weighted Assetsratio(CAR) ensures that banks can adopt a reasonable level of losses arising from operations and to ascertain bank's loss bearing capacity. Higher CAR means banks are financially strong enough to protect the stakeholders' interest. As per central bankguidelines banks have to maintain a CAR of 9%. CAR = (Tier-I Capital + Tier-II Capital) / Risk Weighted Assets. TheCapital to Deposit ratio is also used as a measure of Capital adequacy.

Asset Quality:

The financial strength of the bank is determined by the quality of assets possessed by the banks.Baral (2005)suggested that credit risk in the form of Non-Performing Loans (NPL) is one of the crucial factors that have an impact on the financial health of a bank. The extent of the credit risk depends on the quality of assets possessed by a bank. The ratio of Non-performing loans to Total loans andLoan loss reserves to Total loans were used to measure asset quality.

The higher the NPL to Total loan ratio, the poorer the asset quality and this affects the bank performance negatively.The ratio of total provisions forloan losses to total loans is considered as s a proxy of the quality of bank assets. The higher the ratio, the worst is the quality of bankassets because bank holds provisions as it expects to face losses following defaults on its creditportfolio (Arena, 2005).

Management Efficiency:

The survival and growth of a bank depends upon management efficiency which isalso an important component of the CAMEL model. The two ratios which were used to measure the management efficiency are Total Loan to Total Deposit and Non-Interest Expense to Total Income. The Total loan to deposit ratio is a useful instrument to determine bank liquidity, and by extension, it influences the profitability of the banks. The bank profit is based on the interest charged against the deposits; it means the profit is generated through the positive difference between interest of loans and interest on deposits (Tamkin, Borhan & Towpek, 2006). The higher the ratio, the higher the profit.Credit business carries high risk as wellas high return. A higher credit deposit ratio indicates the higher deployment of deposits forcredit business and higher will be the productivity of funds.Non-Interest Expense to Total Income expresscosts as a percentage of revenue. It is a quick and easy measure of a bank's ability to turn resources into revenue. It signifies the capability of the bank to cover up the operating expenses from the revenues generated by the bank. Lower the ratio, the better for the bank and vice versa. An increase in the efficiency ratio indicates either increasing costs or decreasing revenues.

Earnings and Profitability

The quality of earnings is an important parameter which highlights the quality ofincome in terms of income generated from lending operation by a bank.According to Dechow and Schrand (2004), high earnings quality should reflectthe firm's current operating performance and a good indicator of future operatingperformance.The two popular analytical tools used to determine the bank's earnings and profitability are Return on assets(ROA)and Return on Equity (ROE). The ratio of Net Income to Total asset measures Return on Assets. It is an indicator of how effectively a company is using its assets to generate

earnings.ROE is the ratio of net income to equity. This ratio measures how efficiently the equity from shareholder'sfunds is being used in the business. The higher the ratio, the better is the performance and the prospectus of the bank.

Liquidity:

Liquidity means the ability of the bank to fulfill its obligations, primarily ofdepositors. Bank can maintain adequate liquidity position either by increasing currentliabilities or by converting its assets in to cash quickly. It also signifies the fund availabilityto meet its credit demand and cash flow requirements. Cash has the highest liquidity and safety among all assets. The ratio of total liquid assets (TLA) to total deposits(TD) and cash to total deposit are used as a measure of liquidity in this study.The higher these percentages the more liquid the bank is. Insufficient liquidity is one of the major reasons of bank failures. However, holding liquid assets has an opportunity cost of higher returns. Molyneux and Thorton (1992) concluded that there is a negative correlation between liquidity and profitability levels**.**

Results and Discussion

Capital Adequacy:Figure 1 shows that all commercial banks in Belize have met the stipulated CAR of 9%. This explains the strength of banks in terms of sound capital adequacy. The Bank D has been maintaining highest CAR during the years 2009-2015 and it was 56.68% in 2015. The lowest capital adequacy was 9.51% for Bank A in 2009.

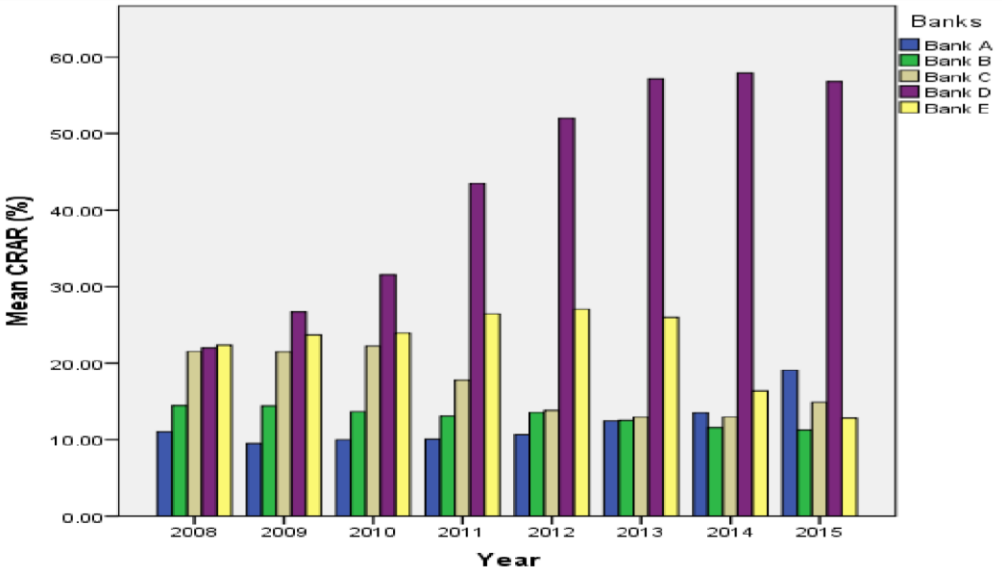

Figure 1: The ratio of Capital to Risk Weighted Asset

According to Figure 2, the Capital to Deposit ratio is more than 10% for all the banks except Bank A during the period of study. Bank D has been maintaining highest ratio compared to other banks from 2010 to 2015. This ratio is minimum for Bank E in recent years compared to other banks. The result shows that the four banks except Bank E has sufficient capital to protect depositors from unexpected losses due to interest rate risk, market risk and operational risk.

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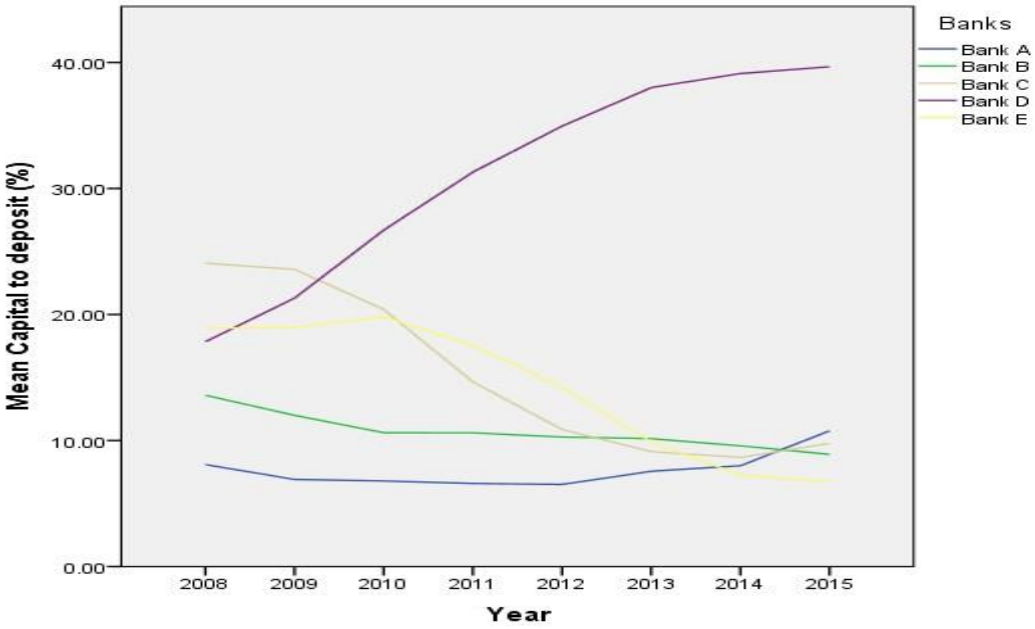

Figure 2: The ratio of Capital to Deposit

Composite Capital Adequacy

The different ratios measuring capital adequacy of five commercial banks are shown in table 1. It is clear from this table that all banks have higher CAR ratio than required level by Central Bank of Belize. It is evident that the Bank D secured the top position with the highest average CAR with 43.44% and highest average Capital to deposit of 31.18%.Bank Ahad a least average CAR of 12.04% and with a least average Capital to Deposit of 7.65%. On the basis of group averages of two parameters of capital adequacy namely CAR and Capital to Deposit Ratio Bank D was at the top position.

Table 1: Composite Capital Adequacy

Banks	CAR		Capital to Deposit		Group Rank	
	%	Rank	%	Rank	Mean	Rank
Bank A	12.04	5	7.65	5	5	5
Bank B	13.07	4	10.71	4	4	4
Bank C	17.21	3	15.14	2	2.5	2.5
Bank D	43.44	1	31.18	1	1	1
Bank E	22.33	2	14.17	3	2.5	2.5

Asset Quality:

Figure 3 shows the trend in the NPL for the commercial banks for the period from 2008 to 2015.The NPL to total loans was increasing gradually from 2008 to 2010 which is immediately after global recession and started to decrease from 2011 to 2015 for all the commercial banks in Belize. Although the ratio is showing an overall favourable scenariofor, Bank D, Bank B and Bank E, they need to monitor the NPL carefully.The Bank C and Bank Aboth have shown a significantlyhigher NPL to total loan ratio compared to the other commercial banks during the period of study and need to be monitored carefully. This ratio is lower for

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Bank D compared to other four banks

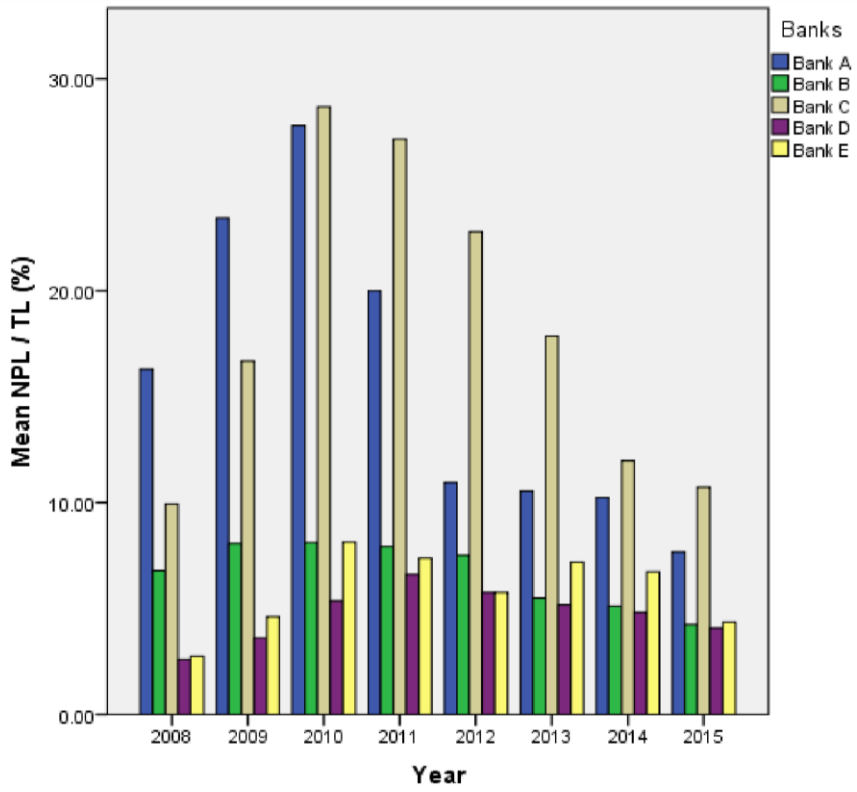

Figure 3: The ratio of Non-Performing Loans to Total Loans

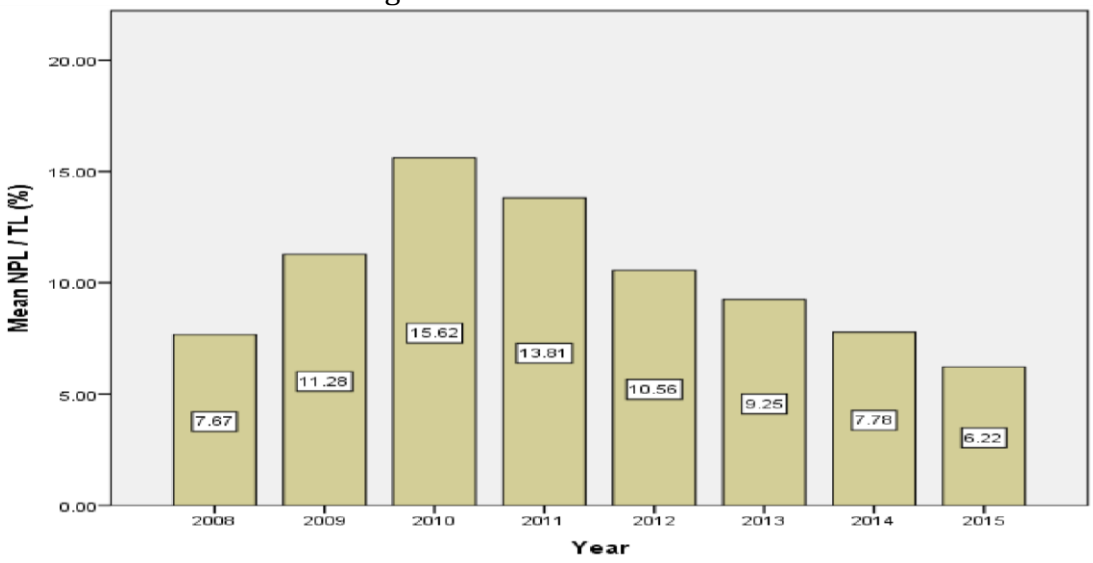

Figure 4: The cumulative ratio of Non-Performing Loans to Total Loans

Figure 4 shows the NPL to total loans for all the commercial banks combined. The figure highlights that the NPL gradually increased from 2008 and peaked in 2010 at 15.62% of the total loans. However, the NPL started to reduce after 2010. This is significant because Belize faced the consequence of the serious credit

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risk problems that crippled most of the developed economies. The global recession that preceded the sub-prime mortgage of 2007-2008 in the US and other major economies has influenced the Belize's macro-economic conditions in 2010.

According to figure 5, the loan loss reserve to total loan ratio was less than 6% for Bank D and Bank B during the period of study. If the banks maintain lower Loan loss reserves to total loans it is better.The ratio was increasing for Bank Cduring 2009 to 2015 and BankA during 2008 to 2012. Bank A has the highest loan loss reserve in 2012 (14.5%) and lowered it afterwards.

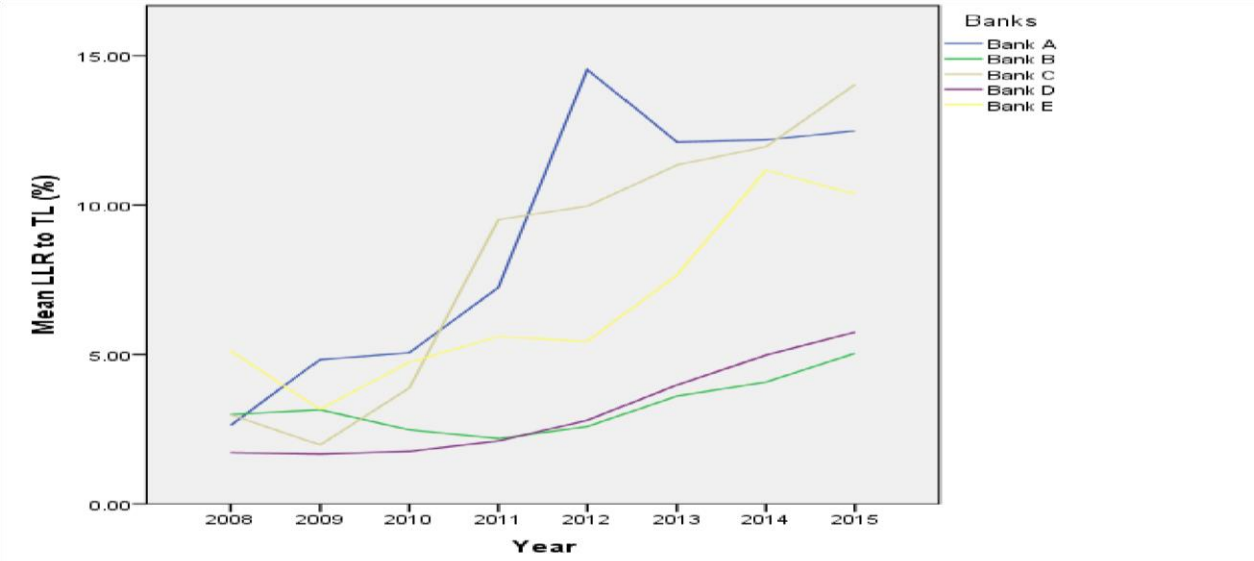

Figure 5: The ratio of Loan Loss Reserve to Total Loan

Omposite Asset Quality:

Table 2: Composite Asset Quality

Banks	NPL to TL		Loan Loss Reserves to TL		Group Rank	
	%	Rank	%	Rank	Mean	Rank
Bank A	15.86	4	8.88	5	4.5	4.5
Bank B	6.66	3	3.27	2	2.5	2.5
Bank C	18.22	5	8.2	4	4.5	4.5
Bank D	4.76	1	3.1	1	1	1
Bank E	5.87	2	6.66	3	2.5	2.5

The two parameters of assets quality of banks are shown in table 2. It isevident that the Bank D secured the top position with least average NPL to Total loans (4.76%) followed by BankE (5.87%). Bank C has the highestaverage NPL to Total Loans (18.22%) during the period of study. In case of Loan Loss Reserve to Total Loan, BankD has the lowest average (3.09%) followed by Bank B (3.26%) and Bank Chas the highest average (8.88%).The Bank A and Bank Chave the highest NPL to TL and LLR to TL and they should monitor these parameters closely and carefully.

Management **Efficiency**

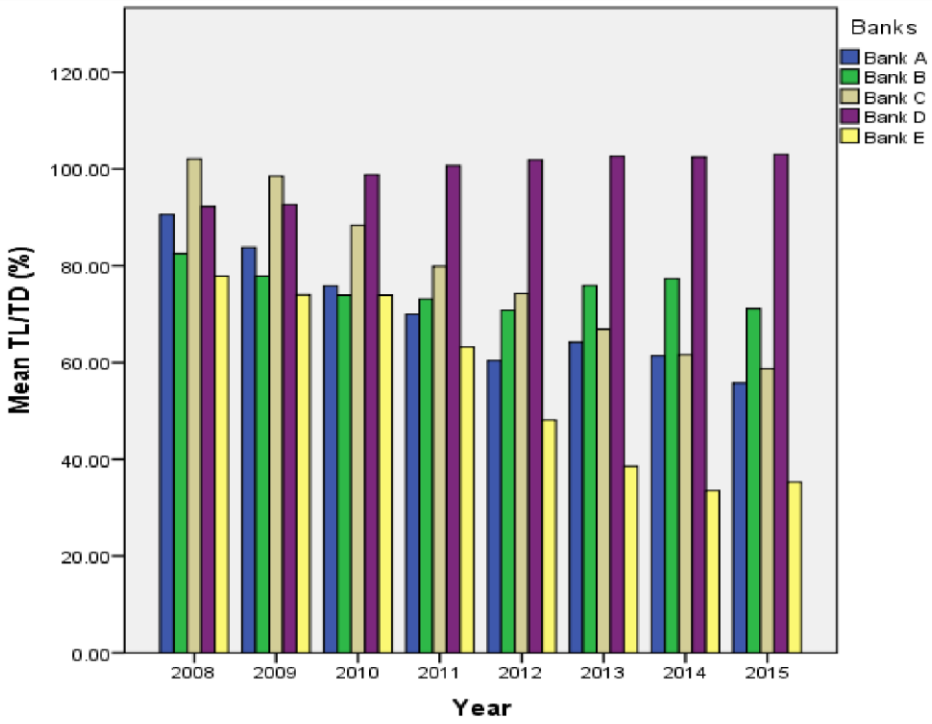

Figure 6: The ratio of Total Loan to Total Deposit

According to Figure 6,the ratio of total loans to total deposits was higher for Bank D from 2010 to 2015 compared to other banks. However, for Bank C the ratio has been gradually decreasing during the period of study.For Bank A and Bank B, the ratio ranges between 55.77% to 90.65%. The results indicate that all commercial banks except Bank E are efficient in circulating their deposits for income generation in the form of loans. A healthy competition between the banks brings an effective banking sector for the customers and drives the economic growth of the country as a whole.

Figure 7 shows that Bank A has been gradually decreasing the non-interest expense (NIE) to total income (TI) from 2008 (115.31%) to 2013 (57.75%) and Bank E has been increasing from 2009 (66.5%) to 2015 (127.39%). An increase in the efficiency ratio indicates either increasing costs or decreasing revenues.

The NIE to TI forBank B has been increasing from 2008 (68.69%) to 2010 (79.60%) and started to decrease gradually from 2010 to 2015 (61.62%) immediately after global recession. The Bank D has been managing its resources efficiently. For Bank C the ratio ranges from 53.73% to 77.33%. The results indicate that all commercial banks except Bank D need to monitor their expenses, since their non-interest expense is more than 60% of total income.

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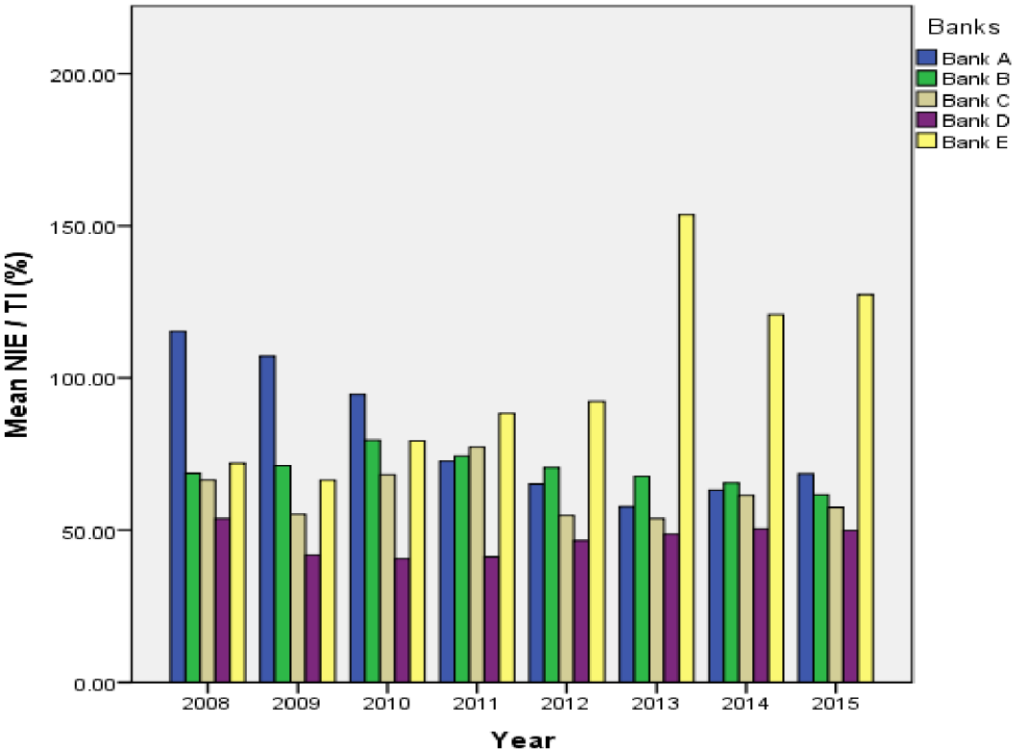

Figure 7: The ratio of Non-Interest Expense to Total Income

Table 3: Composite Management Efficiency

Banks	Total Loan to Total Deposit		NIE to Total Income		Group Rank	
	%	Rank	%	Rank	Mean	Rank
Bank A	70.24	4	80.56	4	4	4
Bank B	75.32	3	69.93	3	3	3
Bank C	78.77	2	61.86	2	2	2
Bank D	99.29	1	46.63	1	1	1
Bank E	55.56	5	100.06	5	5	5

The two ratios reflecting management efficiency position of banks areshown in table 3. It is found that the BankD secured the top position with highestaverage Loan to Deposit ratio (99.28%) and lowest average of Non- InterestExpenditure to Total Income Ratio of 46.7 %, followed by BankC (78.77%) and 61.86% respectively. BankE has the lowestaverage Total Loan to total Deposit Ratio (55.56%) and a highest NIE to TI (100.02%). On the basis of group averages of two parameters ofmanagement efficiency Bank Dwas at the top position.

Figure 8 shows the ROA for five commercial banks during the period 2008 to 2015. The ROA was in the positive territory for Bank B and Bank D during the period of study, however there was a decreasing trend for Bank D throughout the study period except in 2015.The ROA was in negative territory between 2008 - 2011 for Bank A, 2013 – 2015 for Bank E and 2010 – 2014 for the Bank C. Bank C had a -7.65% in ROA for the year 2011. Among the five banks,Bank Dhad the highest ROA during the period 2009 (4.45%) to 2014 (1.89%) 2014 and in 2015 Bank C

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had the highest (1.92%).

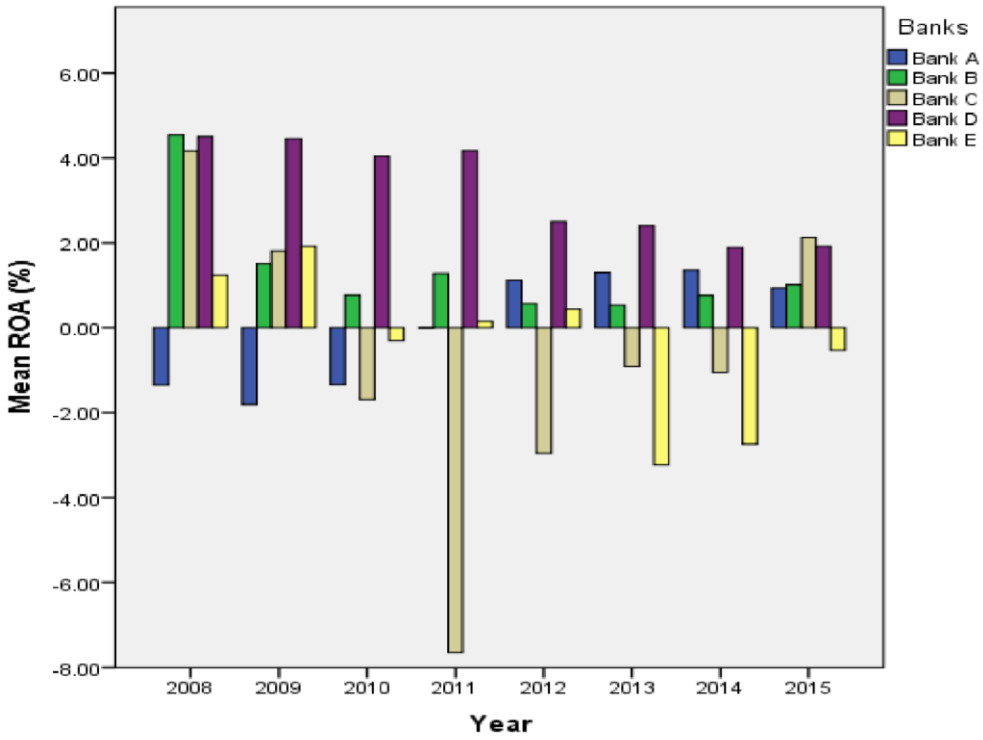

Figure 8: The ratio of Net income to Total Assets

Figure 9 shows the ROE for five commercial banks during the period 2008 to 2015. The ROE was in the positive territory for Bank B and Bank D during the period of study, however there was a decreasing trend for Bank D throughout the study period except in 2015.The ROE was in negative territory between 2008 - 2010 for Bank A, 2013 – 2015 for Bank E and 2010 – 2014 for the Bank C. Bank C had a -50.55% in ROE for the year 2011. Among the five banks, BankB had the highest ROE in 2008.

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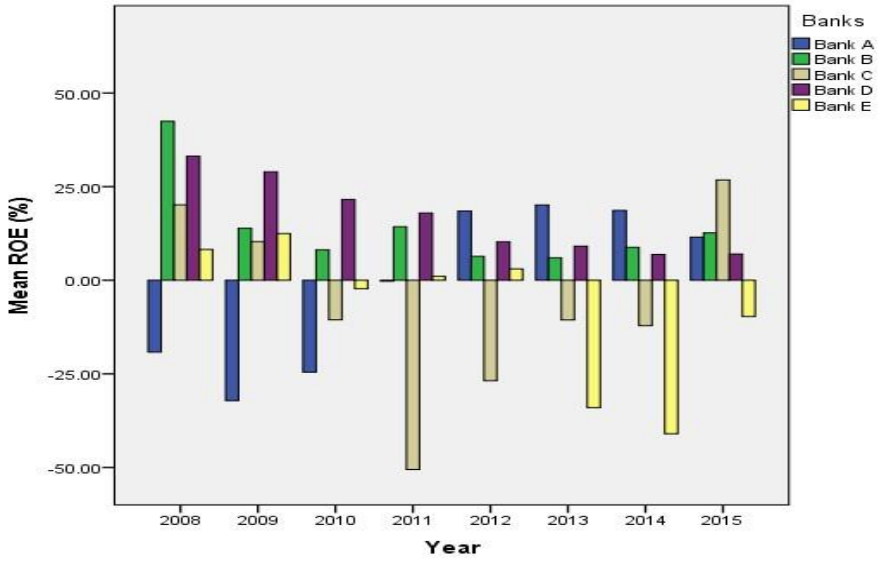

Figure 9: The ratio of Net income to Total Equity

The various ratios reflecting earning and profitability position of the banks are shown intable 4. It is found that BankD secured the top position with highest average of ROA and ROE of 3.23 % and 16.87 % respectively. The Bank B secures the second highest position with an average ROA and ROE of 1.37 % and 14.08% respectively. The Bank Chas the lowest average ROA (-0.77%) and the Bank E has the lowest ROE (-7.77%). On the basis of group averages of two parameters of earnings andprofitability Bank Dwas at the top position.

Table 4: Composite Earnings and Profitability Quality

Banks	ROA		ROE		Group Rank	
	%	Rank	%	Rank	Mean	Rank
Bank A	0.025	3	-0.93	3	3	3
Bank B	1.37	2	14.08	2	2	2
Bank C	-0.77	5	-6.68	4	4.5	4.5
Bank D	3.23	1	16.87	1	1	1
Bank E	-0.383	4	-7.77	5	4.5	4.5

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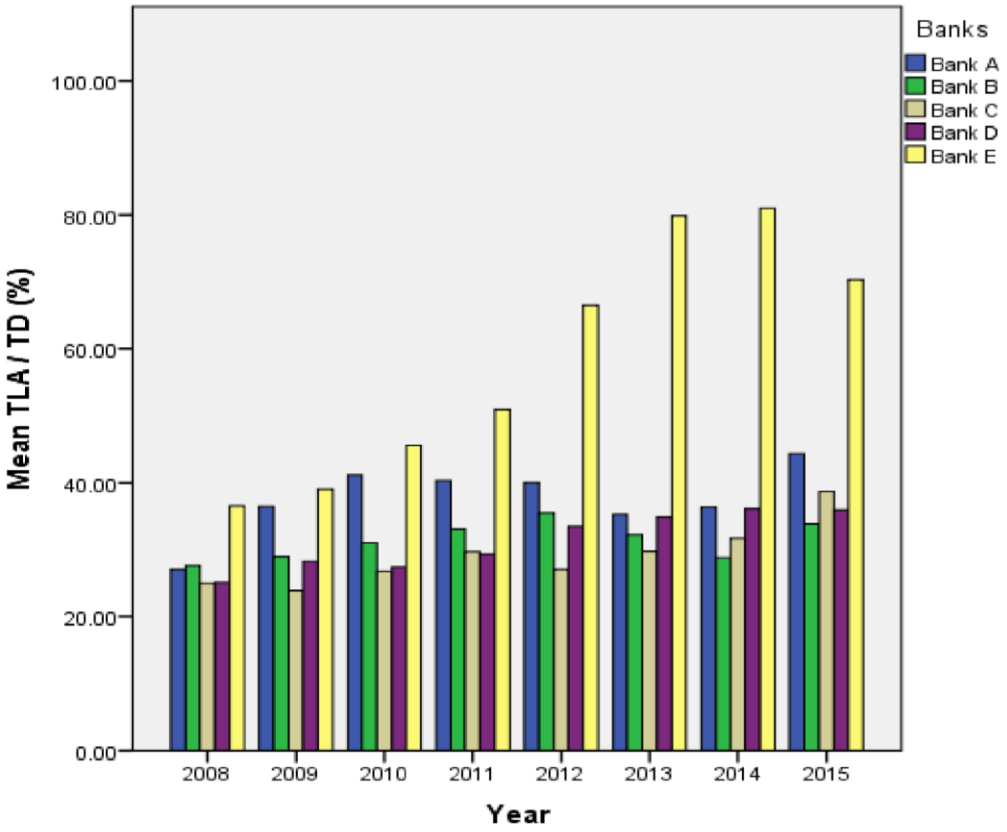

Figure 10: The ratio of Total Liquid Asset to Total Deposit

The total liquid asset to total deposit ratiohighlights if the banks have adequate liquid funds. Figure10shows that thetotal liquid asset to total deposit ratio for the five commercial banks ranges from 23.91 % for BankC in 2009 to80.96% forBankE in 2014.The ratio for Bank E has been increasing gradually from 2009 (36.52%) to 2014 (80.96%) and this means the bank had too much liquidity in recent years. The ratio has also been high for Bank Aduring the period of study.Figure 11 shows the TLA to TD for all the commercial banks combined. The figure highlights that the liquidity in the banking system has gradually increased from 2008 to 2015.

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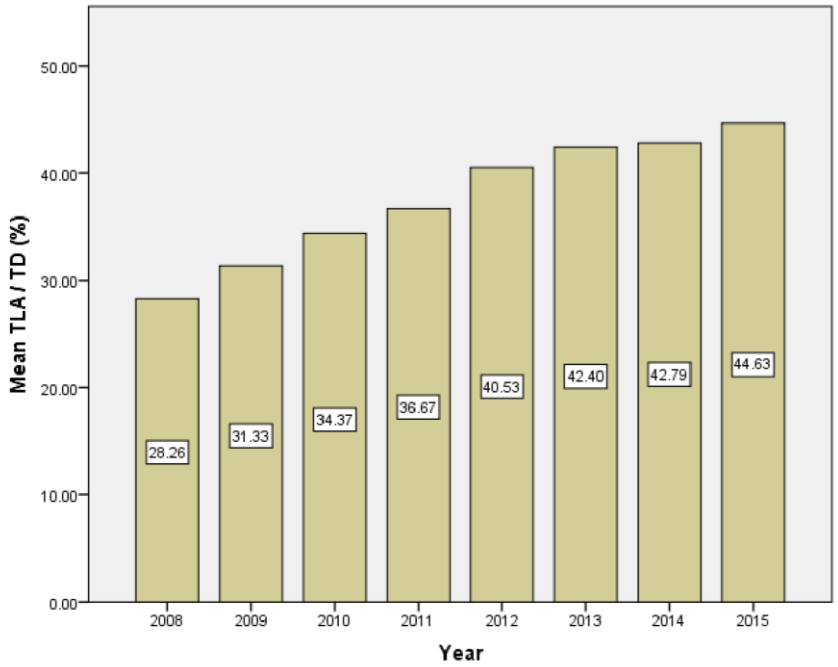

Figure 11.: Cumulative ratio of Total Liquid Asset to Total Deposit

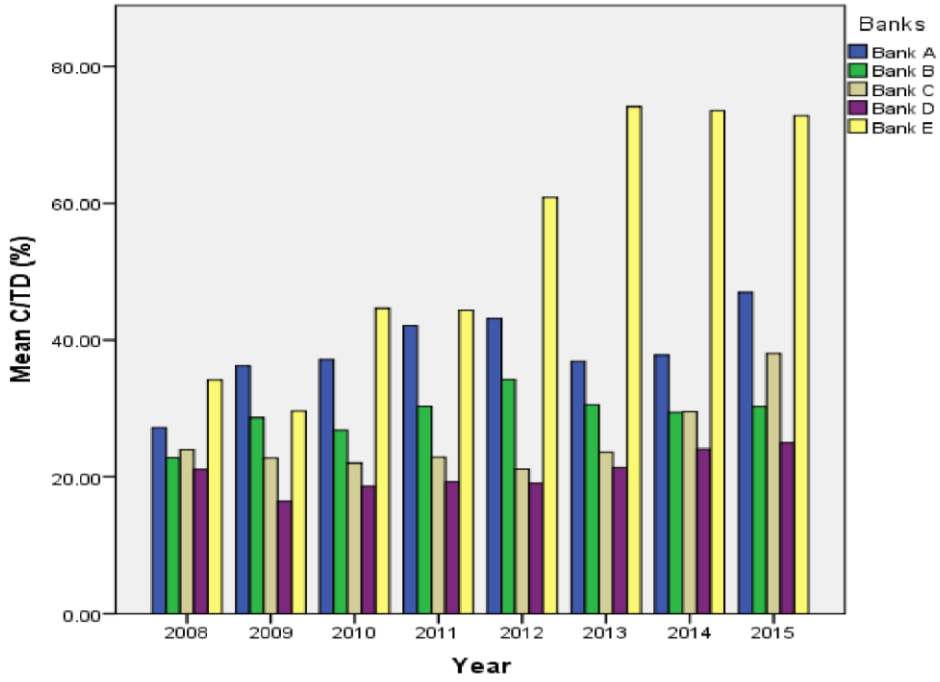

Figure 12: The ratio of Cash to Total Deposit

The Cash to Deposit Ratio also highlights if the banks have adequate liquid funds.It is evident from figure 12that the cash to total deposit ratio for the commercial banks was in the range of percent to 16.45 to 72.77

percent. The ratio for Bank E has been increasing gradually from 2009 (29.61%) to 2015(72.771%) and this bank had the highest ratio during the study period which means the bank had too much liquidity in recent years. The ratio has also been high for Bank A during the period of study.

Table 5: Composite Liquidity

Banks	TLA to Total deposit		Cash to Deposit		Group Rank	
	%	Rank	%	Rank	Mean	Rank
Bank A	37.63	4	38.44	4	4	4
Bank B	31.4	3	29.14	3	3	3
Bank C	29.06	1	25.5	2	1.5	1.5
Bank D	31.31	2	20.64	1	1.5	1.5
Bank E	58.71	5	54.25	5	5	5

It is evident from table 5 that the BankC was at the top position with the lowest average total liquid asset to total deposit ratio (29.06%) and Bank D was at the top position with the lowest average cash to deposit ratio (20.64%).The average TLA to total deposit for BankD was 31.31% andfor BankC the average cash to deposit ratio during the period of study was 25.5%. The Bank E has too much liquidity with average TLA to total deposit ratio of 58.71 % and with average cash to deposit ratio of 54.25%. Bank A had the second highest liquidity with anaverage TLA to total deposit ratio of 37.63% and average cash to deposit ratio of 38.44%.

Correlation Analysis of Camel Ratios and Economic Indicators

The results of the Pearson correlation analysis for the selected variables by using a 2-tailed test are shown in Table6.There was a significant (0.01 level) negative relationship between NPL to Total Loan and ROA and ROE. The results also showed that there was a strong negative correlation (0.01 level) between non-interest expense to total income and ROE and ROA. The Loan Loss reserve to Total Loan and ROA had a significant negative correlation. A negative correlation was also found between total loans to total deposits (TL/TD) and Cash to Total deposit as well as total liquid asset to total deposit. When total loan grows, usually there is a decrease in the Cash. ROA and ROE had significant negative correlation with cash to total deposit and Total liquid assets to total deposit (0.05 level). This showed that there is a negative correlation between liquidity and profitability.

Table 6: Correlation Analysis of CAMEL ratios and Economic Indicators

Variables	CAR	CAP/DE	NPL/TL	LLR/TL	TL/T D	NIE/TI	ROA	ROE	TLA/TD	CA/TD	GDP%	INFL
CAR	1											
CAP/DEP	0.946**	1										
NPL/TL	−0.370*	-0.309	1									
LLR/TL	-0.299	−0.451**	0.205	1								

TL/TD	0.539**	0.731**	0.031	−0.654**	1							
NIE/TI	−0.363*	−0.489**	0.186	0.113	0.578**	1						
ROA	0.342*	0.445**	−0.625**	−0.416**	0.462**	−0.566**	1					
ROE	0.175	0.282	−0.588**	-0.267	0.366*	−0.619**	0.927**	1				
TLA/TD	−0.011	−0.248	--0.208	0.368*	−0.768**	0.741**	−0.357*	−0.414**	1			
CA/TD	-0.257	−0.467**	-0.13	0.466**	−0.864**	0.750**	−0.38*	−0.385*	0.975**	1		
GDP%	0.195	0.152	-0.204	0.195	-0.229	-0.054	0.216	0.223	0.141	0.079	1	
INFL	-0.296	-0.127	0.032	-0.445	0.537	0.419	-0.24	-0.157	-0.621	-0.705	0.366	1

** Correlation is significant at the 0.01 level (2- tailed) * Correlation is significant at the 0.05 level (2-tailed**)**

Studies during the past decade showed empirical evidence of a negative relationship between the growth in GDP and NPL (Salas and Suarina, 2002; Ranjan & Dhal, 2005). The support for this relationship is that strong positive growth in real GDP usually translates into more income for the borrower and hence improves the debt servicing ability of the borrower. This translates in to lower Non-Performing Loans (NPL). That means when there is a slowdown in the economy the level of NPL may increase. In this study there was a negative relationship between NPL and GDP but the correlation is not significant. Fofack (2005) showed that there is a positive relationship between the inflation rate and non-performing loans in a number of Sub-Saharan African countries. However,there was no such positive correlation found in this study between the inflation and the non-performing loans.There was no correlation between profitability ratios and GDP and Inflation.

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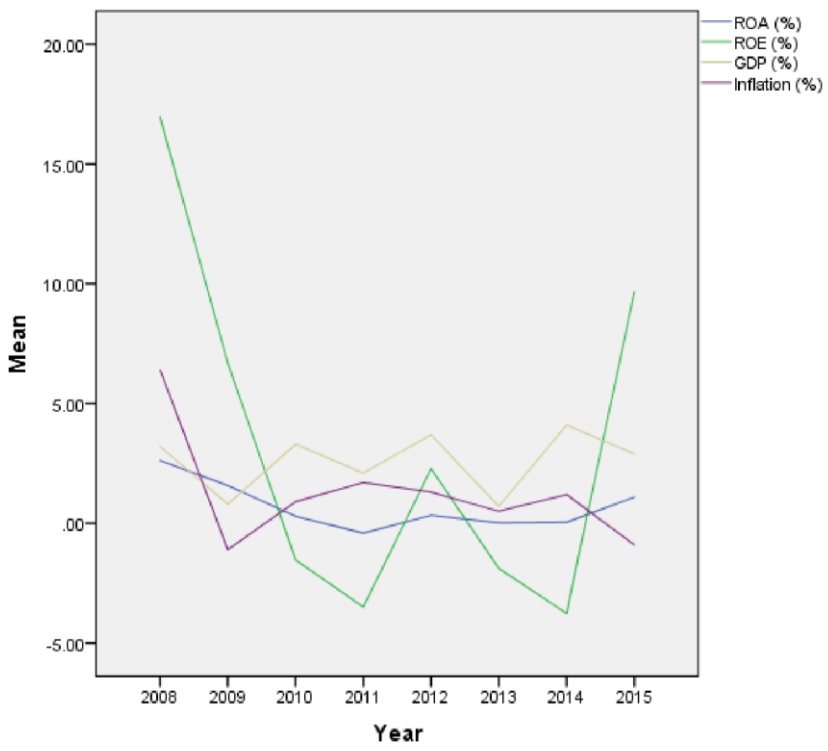

Figure 13: The relationship between Profitability and Economic Indicators

The impact ofGross Domestic Products (GDP) and Inflation on Profitability

Figure 13 shows the relationship between profitability ratios (ROA and ROE) and Macroeconomic Indicators (GDP growth and Inflation). The average ROE during the period of study is lowest in 2011 (- 3.5 %) and 2014 (3.76%). It has been negative during the periods 2010-11 and 2013-14. However, ROE has increased in 2015 to 9.65%. The average ROAwas lowest in 2011 (-0.4%) and has been low during the periods 2010, 2012 to 2014.The GDP growth rate and inflation rate declined from 2008 to 2009. This is due to the effect of global recession. The inflation has beennegative (deflation) during 2009 and 2015.The GDP growth has experienced ups and down during the period.

Conclusion

In this study, an attempt has been made to analyse the financial performance of five commercial banks using CAMEL approach during the period 2008 to 2015. The results of the study showed that the all the banks are maintaining capital adequacy above 9% as required by the central bank of Belize.Non-performing loans (NPL) to total loans was increasing gradually from 2008 to 2010 which is immediately after global recession and started to decrease from 2011 to 2015 for all the commercial banks in Belize. The analysis of earnings and profitability parameter showed thatBankD secured the top position with highest average of ROA and ROE of 3.23 %and 16.87 % respectively as well as had lowest liquidity. The Bank C had the lowest average ROA and the Bank E had the lowest average ROE.BankD hasbeen managing its assets effectively compared to other banks. Bank E and Bank A had the highest liquidity.

The correlation analysis showed that there was a significant negative relationship between NPL to Total Loan and ROA and ROE. ROA and ROE had significant negative correlation with total liquid assets to total deposit and cash to total deposit. Commercial banks can provide low cost loan to productive sector in order

to reduce the liquidity in the banking system and create more employments and economic activity. Banks can also offer more student loans for tertiary level education which will create more customer base as well as reduce the liquidity in the system.

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