Asset Liability Management in Barclays Bank Ghana: Reference to Interest Rate Risk

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Abstract: Banks generally mobilize resources in the form of deposits and lend them as loans and advances. The resources mobilized by the banks are generally short-term in nature and the deployments of funds are medium and long-term, hence there is always a mismatch between the maturity and repayment of funds in banks. The mismatch risks the banks due to the incurrent risks involved in the business mechanisms and leads to liquidity crunch and loss of margins at times. Assets and Liabilities Management (ALM) is a dynamic process of planning, organizing, coordinating and controlling the assets and liabilities; their mixes, volumes, maturities, yields and costs to achieve a specified Net Interest Income (NII). The NII is the difference between interest income and interest expenses and the basic source of banks profitability. The easing of controls on interest rates has led to higher interest rate volatility in Ghana. Hence, there is a need to measure and monitor the interest rate exposure of Ghanaian banks. This paper entitled "Assets and Liabilities Management (ALM) in Ghanaian Banking Industry, a case study of Barclays Bank Ghana Limited regarding Interest Rate Risk Management" is aimed at measuring the Interest Rate Risk in Barclays Bank by using Gap Analysis Technique. Using publicly available information, this paper attempts to assess the interest rate risk carried out by the Barclays bank from 2007 to 2009. The findings revealed that the bank is exposed to interest rate risk.

Keywords— *Asset-Liability Management, Deposits, Interest Rate Risk, Gap Analysis, Risks*

1. INTRODUCTION

Risk and risk-taking is an inherent part of any business activity. Banking business due to its nature and presence is exposed to various types of risks. A country like Ghana with a fast-growing economy is exposed to higher risks. In a competitive environment, risk-taking is an essential part of the financial decision for the survival and growth of the entity. Recognizing the need for asset-liability management to develop a strong and sound banking system, the Ghana Central Bank called Bank of Ghana (BOG) introduced ALM guidelines for banks and financial institutions. There are separate norms prescribed for Commercial Banks and Bank of Ghana and financial institutions for the best management of banks resources.

The objective is the effective management of banks resources and to optimize the returns by minimizing the risk. While the sound financial system is considered as the backbone of any country and its economy, safety and stability of the financial institutions are even most important for the growth of the industry, economy and economic well-being of the people. Though world overall Governments and their respective Central Banks are aware of these truths and put in place necessary risk management policies and procedures to protect their financial system and economy, certain unforeseeable risks inherent in the business of banks shaken the countries' economies in the past.

The recent failure of banks and banking system in parts of Africa, developing and the world at large is telling evidence of these facts. Banks are always aiming at maximizing profitability at the same time trying to ensure sufficient liquidity to repose confidence in the minds of the depositors on their ability in servicing the deposits by making timely payment of interest/returning them on due dates and meeting all other liability commitments as agreed upon. To achieve these objectives, it is essential that banks have to monitor, maintain and manage their assets and liabilities portfolios in a systematic manner taking into account the various risks involved in these areas. This concept has gained importance in Ghanaian conditions in the wake of the ongoing financial sector reforms, particularly reforms relating to interest rate deregulation. The technique of managing both assets and liabilities together has come into being as a strategic response of banks to inflationary pressure, volatility in interest rates and severe recessionary trends which marked the global economy in the centuries. This paper aims to measure the interest rate exposure of the Barclays Bank from 2007 to 2009, using Gap Analysis.

2. LITERATURE REVIEW

There is considerable literature addressing asset-liability management in banks and the interest rate risk. One of the key motivators of asset-liability management worldwide was the Basel Committee. The Basel Committee on Banking Supervision (2001) formulated broad supervisory standards and guidelines and recommended statements of best practice in banking supervision. The purpose of the committee was to encourage global convergence toward common approaches and standards. In particular, the Basel II norms (2004) were proposed as an international standard for the amount of capital that banks need to set aside to guard against the types of financial and operational risks they face. Basel II proposed setting up rigorous risk and capital management requirements designed to ensure that a bank holds capital reserves appropriate to the risk the bank exposes itself to through its lending and investment practices.

Dash and Pathak (2011) proposed a linear model for asset-liability assessment. They found that public sector banks have the best asset-liability management positions, maintaining profitability, satisfying the liquidity constraints, and reducing interest rate risk exposure. Vaidyanathan (1999) discussed issues in asset-liability management and elaborates on various categories of risk that require to be managed in the Indian context. In the past Indian banks were primarily concerned about adhering to statutory liquidity ratio norms; but in the changed situation, namely moving away from administered interest rate structure to market-determined rates, it became important for banks to equip themselves with some of these techniques, to immunize themselves against interest rate risk.

Bodla&Verma (2009) had analyzed the Credit Risk Management framework of Scheduled commercial banks (SCB) in India. Risk rating, credit administration, prudential limits and loan review mechanisms are very important instruments of credit risk management. Ahmed et al. (1997) made a study of the Interest Rate Risk management activities of commercial banks including their use of derivatives. The study had shown that the banks primarily focus on managing interest rate sensitivity of net income rather than the interest rate sensitivity of stock returns and the level of Interest rate risk taken by banks is directly related to liquidity, and inversely related to managerial quality and bank size. It also reveals that derivative users as a group have lower mean and median exposure than non-users, and derivative usage reduces exposure. But most of our Ghanaian banks not familiar in using Derivatives. Still, it is in the nascent stage in Ghana financial market. Landskroner & Paroush (2008) had studied the relationship between the bank's liquidity position and competition among the banks. They formulated a stylized model of bank management, where the asset and liabilities structures are key factors in determining the bank's exposure to liquidity risk. The main results of this model are that liquidity risk increases when competition in the credit market increases, which means that more demand in the credit market increases the lending rate which increases spread i.e. interest margin. While increasing competition in the deposit market will decrease the liquidity shortage. This means that the mobilization of resources in the form of the deposit will increase the liquidity position of the bank. They concluded that the banks faced increased liquidity risk due to the recent developments in the financial markets.

1. History of Ghana Interest Rate to date

Ghana's central bank held its benchmark policy rate at 26.0 Percent on March 21st, 2016, for the 2nd straight month, mentioning balanced risks to inflation and growth. In February, the inflation rate slowed for the first time in six months to 18.5 percent as the stability of the cedi during the month avoided further rises in the cost of imported items. Interest Rate in Ghana averaged 17.35 percent from 2002 until 2016, reaching an all-time high of 27.50 percent in March of 2003 and a record low of 12.50 percent in December of 2006. Interest Rate in Ghana is reported by the Bank of Ghana. The Bank of Ghana says interest rates in the country have generally trended up on the money market in 2014. In a press statement issued recently; the Bank noted that the rate on the 91-day instrument increased to 25.8 percent from 19.2 percent. Similarly, the rate on the 182-day instrument increased to 26.4 percent from 18.7 percent. According to the central bank, the rate on the one-year note rose to 22.5 percent from 17 percent, and the two-year rate increased to 23 percent from 16.8 percent. The three-year bond rate rose to 25.5 percent from 19.2 percent. It indicated that the weighted average interbank rate increased to 23.7 percent from 16.3 percent in December 2013. "Average lending rates of the banks rose to 29 percent from 25.6 percent in December 2013. The average rate on three-month term deposits increased to 13.9 percent from 12.5 percent. In Ghana, interest rates decisions are taken by the Monetary Policy Committee of the Bank of Ghana.

Table 1 Trends in Domestic Interest Rates in Ghana (in %)

Effective since	Base Rate %	Base Rate %
11/01/07 - 09/05/07	5.25	5.25
10/05/07 - 04/07/07	5.50	5.50
05/07/07 - 05/12/07	5.75	5.57
06/12/07 - 06/02/08	5.50	5.50
07/02/08 - 09/04/08	5.25	5.25
10/04/08 - 08/10/08	5.00	5.00
09/10/08 - 06/11/08	4.50	4.50
07/11/08 - 04/12/08	3.00	3.00
05/12/08 - 08/01/09	2.00	2.00
09/01/09 - 05/02/09	1.50	1.50
06/02/09 - 05/03/09	1.00	1.00

Source: Barclay Bank Bulletin 2009.
Barclays Bank Base Rate typically follows the Bank of England Bank Rate. The Bank of England Bank Rate can go up or down and is announced by the Bank of England's Monetary Policy Committee every month.

2. Need for the Study

The banking sector in the current scenario has undergone a lot of changes, deregulation has opened up a lot of business avenues. Risk and risk-taking are an inherent part of any business activity. It has been a universal observation that banks do not show much cautious while managing this risk, especially the interest rate risk and liquidity risk have crumbled without giving adequate notice to the management, regulator and the depositors. However still, the level of awareness regarding Asset liability management in the Ghanaian. Banks is almost negligible. Risk management is the core activity of Asset Liability Management and that makes Asset Liability Management of great importance to organizations in the financial sector. So the present study evaluates the changing Perspectives of the selected bank in identifying and facing the risks and also maintaining the asset quality to ensure profitability by using asset-liability management techniques.

Figure 1 Trends in Domestic Rates and Graph for some years in Ghana

Source: Central Bank of Ghana Report.

The major focus of prudential regulation in developing countries has traditionally been on credit risk. While banks their supervisors have grappled with non-performing loans for several decades, interest rate risk is a relatively new problem. Administrative restrictions on interest rates in Ghana have been steadily eased for long. This has led to increased interest rate volatility.

The above shows the trends in domestic interest rates in Ghana. The rates are increasing.

3. RESEARCH METHODOLOGY

This is an analytical research study. It selected Barclays Bank, one of the biggest private sector banks (first largest) in Ghana. The bank is listed in GSE and other exchanges like NYSE, LSE etc. Primary data required were collected through personal discussions with the staff to know the actual ALM practices followed in Barclays Bank and the problems faced in the course of exchanging information required for the management. The secondary data were collected from the annual reports of Barclays Bank, circulars of the Barclays Bank, reading material on ALM provided by the Bankers Staff College, websites and various journals. In this study, Gap Analysis Technique has been used for measuring the Interest Rate Risk.

4. RISKS IN BANK

4.1 Interest Rate Risk in Banks.

Asset Liability Management is a system of matching cash inflows and outflows, and thus of liquidity management. Balance sheet risk can be categorized into two major types of significant risks, which are liquidity risk and interest rate risk. The Asset Liability Management system rests on three pillars, i.e., a) Asset Liability Management Information system (MIS) b) Asset Liability Management organization (Structure and responsibilities) and c) Asset Liability Management Process (Risk parameters, identifying, measuring, managing risks and setting risk policies and tolerance levels). Interest rate risk is the risk to earnings or capital arising from the movement of interest rates. It arises from differences between the timing of rate changes and the timing of cash flows (re-pricing risk); from changing rate relationships among yield curves that affect bank activities (basis risk); from changing rate relationships across the spectrum of maturities (yield curve risk); and interest-rate-related options embedded in bank products (option risk). The value of a bank's assets, liabilities, and interest-rate-related, off-balance-sheet contracts is affected by a change in rates because the present value of future cash flows, and in some cases the cash flows themselves, is changed. For measuring interest rate risk, banks use a variety of methods such as gap analysis, the duration gap method, the basis point value (BPV) method, and simulation methods.

4.2 Interest Rate Risk Management in Barclays Bank

The bank has three dedicated groups, the Global Risk Management Group (GRMG), the Compliance Group and the Internal Audit Group which are responsible for assessment, management and mitigation of risk in the bank. Also, the Credit and Treasury Middle

Office Groups and the Global Operations Group monitor operational adherence to regulations, policies and internal approvals. These groups are accountable to the Risk and Audit Committees of the Board of Directors. GRMG is further organized into the Global Credit Risk Management Group and the Global Market & Operational Risk Management Group. Interest rate risk is measured through the use of re-pricing gap analysis and duration analysis. Liquidity risk is measured through gap analysis. Since the bank's balance sheet consists predominantly of cedis assets and liabilities, movements in domestic interest rates constitute the main source of interest rate risk. Exposure to fluctuations in interest rates is measured primarily by way of gap analysis, providing a static view of the maturity and re-pricing characteristics of balance sheet positions. An interest rate gap report is prepared by classifying all assets and liabilities into various period categories according to contracted maturities or anticipated re-pricing date. The difference in the number of assets and liabilities maturing or being re-priced in any period category would then indicate the extent of exposure to the risk of potential changes in the margins on new or re-priced assets and liabilities. Barclays Bank prepares interest rate risk reports on a fortnightly basis. These reports are submitted to the Bank of Ghana monthly. Interest rate risk is further monitored through interest rate risk limits approved by the Asset Liability Management Committee. The bank's core business is deposit-taking and lending and these activities expose it to interest rate risk. The bank's primary source of funding is deposited and, to a smaller extent, borrowings. Effective before 2000, the bank has moved to a single benchmark prime rate structure for all loans other than specific categories of loans advised by the Ghanaian Banks' Association, with lending rates comprising the benchmark prime rate, term premium and transaction-specific credit and other charges. The bank generally seeks to eliminate interest rate risk on undisbursed commitments by fixing interest rates on cedi loans at the time of loan disbursement.

4.3 Important Risks in Banking Business
Due to the increased competition and expansion of business activities across geographies, banks today are exposed to several risks - such as credit risk, market risk, liquidity risk, operational risk, foreign exchange risk, technology risk, regulatory risk, country risk, reputation risk and so on. However, most of the major risks confronted by banks across the globe are covered under few risk categories such as credit risk, market risk and operational risk.

4.3.1 Credit Risk
Credit risk arises from a bank's dealings with an individual customer, corporate companies, banks, financial institutions or a sovereign. Credit Risk is inherent to banking and it is as old as
Banking business itself. Credit risk in simple terms is the potential of the borrower fail to meet their obligations; as a result, the loan facility becomes default due to non-repayment.

4.3.2 Market risk
Market risk is primarily concerned with describing uncertainty about prices or returns due to
market price fluctuations. The value of on-/off-balance sheet positions gets affected adversely by
movements in equity and interest rate markets, currency exchange rates and commodity prices. The banks today require a strong market risk management policy for a comprehensive and dynamic framework for measuring, monitoring and managing liquidity, interest rate, foreign exchange and equity as well as commodity price risk. Market risk management needs to be closely integrated with the bank's business strategy.

4.3.3 Operational Risk
Operational Risk is defined as "the risk of loss resulting from inadequate or failed internal processes, people and systems or external events. This definition includes legal risk but excludes strategic and reputational risk," [Basel Committee (2004)]. As operational risk is inherent in all business processes, the evolving banking practices highlight the importance of focusing on the management of operational risk separately.

5. GAP ANALYSIS TECHNIQUE
Gap analysis is a technique of asset-liability management that can be used to assess interest rate risk or liquidity risk. It measures at a given date the gaps between rate-sensitive liabilities (RSL) and rate-sensitive assets (RSA) (including off-balance sheet positions) by grouping them into time buckets according to residual maturity or next repricing period, whichever is earlier. An asset or liability is treated as rate-sensitive if i) within the time bucket under consideration, there is cash flow; ii) the interest rate resets/ reprices contractually during the time buckets; iii) administered rates are changed and iv) it is contractual prepayable or withdrawal allowed before contracted maturities.
Thus, Gap = RSA − RSL; Gap Ratio = RSAs/RSLs. This gap is used as a measure of interest rate sensitivity. The positive or negative gap is multiplied by the assumed interest changes to derive the Earnings at Risk (EaR). A bank benefits from a positive Gap (RSA>RSL) if the interest rate rises. Similarly, a negative Gap (RSA<RSL) is advantageous during the period of the falling interest rate. The interest rate risk is minimized if the gap is near zero. A gap analysis was widely adopted by financial institutions during the 1980s. When used to manage interest rate risk, it was used in tandem with duration analysis. Both techniques have their strengths and weaknesses. Duration analysis summarizes, with a single number, exposure to parallel shifts in the term structure of

interest rates. Though gap analysis is more cumbersome and less widely applicable, it addresses exposure to other term structure movements, such as tilts or bends. It also assesses exposure to a greater variety of term structure movements.

6. RESULTS AND DISCUSSION
Table 2 Select Items from the P&L A/c and Balance Sheet for the years 2007-08, 2008-09&2009

Items	2007-2008	2008-2009	2009-2010
Interest Expended	25,249.00	55,338	55,865
Interest Earned	80,425.00	111182	143779
Provisions & contingencies	1300.00	3,115.00	6,5570.00
Deposits	1,027,178	1188152	1162015
Borrowings	81634.00	131426	110751
Advances	640,558.00	718598	513717
Investment	190,800.00	238123	505781
Gross Non-Performing Assets (NPA)	256, 900.00	535200	110,200

Source: Annual Report of Barclay Bank Ghana Limited.

Table 2 provides the base data from which all calculations are done.

The procedure adopted for breaking up of assets and liabilities and their rates of interest

• Rate Sensitive Assets (RSA) to Fixed Rate Assets (FRA) trend of the bank stands at 80:20. Earning assets have been classified accordingly. Rate Sensitive Liabilities (RSL) have been arrived at from the residual maturity statement contained in the annual reports of respective years by adding the figures under the buckets 1-14 days to 6months to 1 year.

• Uniform rate of interest has been assigned for RSA and FRA and this has been followed for RSL and Fixed Rate Liabilities (FRL).

• Interest rate for assets has been arrived at taking into account advances & investment portfolio and the interest earnings of the bank for the respective years. i.e.

Interest Rate = (Interest Earned) / (Total Advances – NPA + Total Investment).

• Interest rate for liabilities has been arrived at taking into account the deposits & borrowings portfolio and the interest expenditure of the bank for the respective years. i.e., Interest Rate = (Interest Expended) / (Total Deposits + Total Borrowings).

The procedure followed for calculating the items in Tables 5,6, and 7 is given below:

Initial Performance Measures: From Table 3, the initial position measures regarding the Net Interest Income (NII), Net Interest Margin (NIM), Gap and Net Income (NI) for

2007-08 to 2008-09 are arrived. The formulae used are

NII = (Rate of RSA * Volume of RSA)+ (Rate of FRA * Volume of FRA)- (Rate of RSL * Volume of RSL)- (Rate of FRL * Volume of FRL).

NIM = NII/Total Performing Assets

GAP = RSA – RSL

NI = NII – Provisions & Contingencies

Comparative – Static Experiment: Both negative and a positive shock of 200 basis points (2%) were introduced without any balance sheet adjustment, i.e., volumes and mix remain constant. The new performance for NII, NIM and NI is calculated for 2007-08 to 2008-09.

Portfolio Adjustment to Rate Changes: RSL increases to RSA as non-interest-bearing liabilities and fixed-rate liabilities decline. Thus, the new GAP = 0. The performance measures such as NII, NIM and NI arrive after portfolio rebalancing in Table 4. Market Force Counter Balance: Market forces drive RSA to increase as (Non-Earning Assets) NEA and FRA decline. The GAP after-market counterbalance arrives. The performance measures such as NII, NIM and NI are arrived after portfolio counterbalancing in Table 4. Table 5 reveals that the GAP in the initial position at 47617 million cedis, the NII at 2832 million cedis, NIM at 2% and NI at c1882 million cedis for the year 2007-08. When interest rate negative shock of 2% was applied, it reduced the NII to 1880 million cedis, NIM to 0.86% and NI to 929 million cedis. However, when interest rate positive shock of 2% was applied, it increased the NII to 3785 million cedis, NIM to 2.67% and NI to2834 million cedis. Then the portfolio adjustment is done. Even after the portfolio adjustment, the initial position could not be attained. Therefore, portfolio adjustment should be carried out in a better way (i.e.,) by aiming at high yielding advances. When counterbalancing market forces are applied, negative shock increased the NI marginally, the positive shock increased the NI more than the original position. Thus, the negative shock has brought down the NI and positive shock has increased the NI. The portfolio adjustment in this case could not increase the NI to its original position. However, the counterbalancing market forces have enabled the NI to restore to its near original position (negative shock) and to increase (positive shock); **Table 3** Breakup of Assets and Liabilities -Initial conditions for Balance Sheet items (in Ghana cedis**)**

Items	2007-2008			2008-2009			2009-2010		
	Volume cedis	Rate (%)	Mix (%)	Volume cedis	Rate (%)	Mix (%)	Volume cedis	Rate (%)	Mix (%)
RSA	113511.30	6.63	68	174166.60	6.33	69	229695.40	8.01	67
FRA	28377.81	6.63	17	43541.65	6.33	17	57423.85	8.01	17
NEA	25770.34	0	15	33680.72	0	14	57538.84	0	16
Total/Average	167659.40	4.42	100	251389.00	4.22	100	344658.10	5.34	100
RSL	65894.01	4.93	39	97811.59	4.71	39	126129.60	5.81	37
FRL	67469.27	4.93	40	105793.5	4.71	42	155636.60	5.81	45
NIBL	34296.13	0	21	47783.87	0	19	62891.89	0	18
Total/Average	167659.40	3.29	100	251389.00	3.14	100	344658.10	3.87	100

Source: Annual Reports of Barclay Bank, Ghana. Values computed. Note: NIBL-Non-Interest Bearing Liabilities

Table 4 Portfolio Adjustment due to a) Rate Changes, and b) Market Forces Counter Balancing

Year/Charges in	Portfolio Adjustments due to					
	Rate Change (in Ghana cedis)			Market Forces Counter Balancing (in Ghana Cedis)		
	RSL	FRL	NIEL	RSA	FRA	NEA
2007-2008	113511	24148	30000	127659	20000	20000
2008-2009	174167	37222	40000	191389	35000	25000
2009-2010	229695	54963	60000	249658	47500	47500

Results Computed.

Table 5 Summary of Experiments for the year 2007-08 (in Ghana Cedis)

Performance Measure	Initial position	Interest Rate Shock		Portfolio Adjustment	Counter Balancing Market Force	
		-2%	+ 2%	-2% or + 2%	-2%	+2%
GAP	47617.29	47617.29	47617.29	0	14,148	14,148
Net Interest Income	2832.438	1880.092	3784.784	2620.645	2720.234	3286.142
Net Interest Margin	2.00%	0.86%	2.67%	1.85%	0.018422	0.022255
Net Income	1881.638	929.2925	2833.984	1669.845	1769.434	2335.342

Results computed

Table 6 Summary of Experiments for the year 2008-09 (in Ghana Cedis)

Performance Measure	Initial position	Interest Rate Shock		Portfolio Adjustment	Counter Balancing Market Force	
		-2%	+ 2%	-2% or + 2%	-2%	+2%
GAP	76355.01	76355.01	76355.01	0	17,222	17,222
Net Interest Income	4191.132	2664.032	5718.233	3824.529	4029.573	4718.469
Net Interest Margin	1.93%	1.22%	2.63%	1.76%	0.017799	0.020842
Net Income	2040.532	513.4323	3567.633	1673.929	1878.973	2567.869

Results completed

Table 7 Summary of Experiments for the year 2009-10 (in Ghana Cedis)

Performance Measure	Initial position	Interest Rate Shock		Portfolio Adjustment	Counter Balancing Market Force	
		-2%	+ 2%	-2% or + 2%	-2%	+2%
GAP	103565.8	103565.8	103565.8	0	19962	19962
Net Interest Income	428.7793	4556.32	8698.952	6459.599	15615.62	7662.955
Net Interest Margin	.15%	1.59%	3.03%	2.25%	0.05255	0.025787
Net Income	-2335.41	1792.13	5934.762	3695.409	12851.43	4898.765

Results computed

Table 8 Residual Maturity for the year 2007-08 (in Ghana cedis)

Items	1-14days	15-28days	29days-3m	3m-6m	6m-1year
Loans &Advances	6051.83	806.91	6570.97	5032.05	8408.82
Investment	7628.34	2040.31	4875.1	4730.27	6043.19
Deposits	5426.22	3268.38	13297	15924.29	19540.75
Borrowing	400.8	1231.15	3126.45	3249.14	5698.68
GAP	7853.15	*-1652.31*	*-4977.38*	*-9411.11*	*-10787.4*

Source: Annual Report of Barclay Bank, Ghana 2007-08

Table 9 Residual Maturity for the year 2008-09(in Ghana cedis)

Items	1-14days	15-28days	29days-3m	3m-6m	6m-1year
Loans &Advances	7545.02	886.52	7523.13	8985.95	14506.6
Investment	10398.34	4499.36	8197.61	6451.05	9326.78
Deposits	14907.14	6919.33	25547.35	23169.34	38840.28
Borrowing	3123.7	1004.94	5380.43	4666.14	5316.02
GAP	*-87.48*	*-2538.39*	*-15207*	*-12398.5*	*-20322.9*

Source: Annual Report of Barclay Bank, Ghana 2008-09

Table 10 Residual Maturity for the year 2009-10(in Ghana cedis)

Items	1-14days	15-28days	29days-3m	3m-6m	6m-1year
Loans &Advances	9288.51	2456.2	9606.31	12877.04	20800.62
Investment	4529.29	9792.27	9702.25	8520.84	17380.39
Deposits	22374.32	10412.62	34198.99	32272.48	59497.24
Borrowing	945.33	569.41	4417.14	7042.34	8201.66
GAP	*-9501.85*	1266.44	*-19307.6*	*-17916.9*	*-29517.9*

Source: Annual Report of Barclay Bank, Ghana 2009

Table 6 reveals that the GAP in the initial position at76355 million cedis, the NII at 4191million cedis, NIM at 1.93%and NI at 2040 million cedis for the year 2007-07. When interest rate negative shock of 2% was applied; it reduced the NII to 2664 million cedis, NIM to 1.22% and NI to 513million cedis. However, when interest rate positive shock of 2% was applied, it increased the NII 5718 million cedis, NIM to2.63% and NI to 3568 million cedis. Then the portfolio adjustment is done. Even after the portfolio adjustment, the initial position could not be attained. Therefore, portfolio adjustment should be carried out in a better way (i.e.,) by aiming at high yielding advances. When counterbalancing market forces are applied, negative shock increased the NI marginally, the positive shock increased the NI more than the original position. Thus, the negative shock has brought down the NI and positive shock has increased the NI. The portfolio adjustment in this case could not increase the NI to its original position. However, the counterbalancing market forces have enabled the NI to restore to its near original position (negative shock) and to increase (positive shock).

Table 7 reveals that the GAP in the initial position at 103566 million cedis, the NII at 429 million cedis, NIM at 0.15%and NI at 2335 million cedis for the year 2007-08. When interest rate negative shock of 2% was applied, it increased the NII to 4556 million cedis, NIM to 1.59% and NI to1792 million. However, when interest rate positive shock of 2% was applied, it further increased the NII to 8699 million cedis, NIM to 2.25% and NI to 5935 million cedis.

Then the portfolio adjustment is done. After the portfolio adjustment, the initial position was corrected and it has improved. When counterbalancing market forces are applied, negative shock increased the NI marginally, the positive shock increased the NI more than the original

position. Thus, the negative and positive shocks have increased NI. The portfolio adjustment in this case has improved the NI. Further, the counterbalancing market forces have enabled the NI to increase, both in the case of negative and positive shocks.

From Table 8, which contains residual maturity statement covering a period from 1-14 days to
6months-1year for the year 2004-05, it is revealed that the time buckets of 15-29days, 29days-3months, 3months-6months and 6months-1year are vulnerable paving way to negative gaps of high volumes.

From Table 9, which contains residual maturity statement covering a period from 1-14 days to
6months-1year for the year 2007-08, it is clear that the time buckets of 1-14 days, 15-29days, 29days-3months, 3months-6months and 6months-1year are vulnerable paving way to negative gaps of high volumes.

From Table 10, which contains residual maturity statement covering a period from 1-14 days to
6months-1year for the year 2009-10, it is revealed that the time buckets of 1-14 days, 29days-3months, 3months-6months and 6months -1year are vulnerable paving way to negative gaps of high volumes. This trend may lead to call money borrowing to fill in the liquidity gap and may reduce the interest margin substantially in the increasing interest rate scenario. Thus, it is concluded that the bank is exposed to interest rate risk.

7. FINDINGS OF THE STUDY

1. In Barclays Bank, interest rate risk is measured through the use of re-pricing gap analysis and duration analysis. Liquidity risk is measured through gap analysis.
2. Barclays Bank also uses interest rate derivatives to manage asset and liability positions. The bank is an active participant in the interest rate swap market and is one of the largest counterparties in Ghana.
3. In 2007-08, the negative and positive shocks have increased the NI. The portfolio adjustment in this case has improved the NI. Further, the counterbalancing market forces have enabled the NI to increase both in the case of negative and positive shocks.
4. The computerized environment has helped the banks to achieve the objective of MIS in the area of collection of accurate and timely data required for risk management.
5. The general portfolio adjustment could not yield the expected results and calls for aiming at High-yielding advances.
6. The analysis of residual maturity statements of 2007-08, 2008-09 covering a period from 1-14 days to 6months-1 years reveals substantial negative gaps in one or more maturities.
7. The Bank is exposed to interest rate risk.

8. CONCLUSION

The two types of banks' balance sheet risks include interest rate risk and liquidity risks. Their regular monitoring and managing is the need of the hour. Banks should use the information about these risks as a key input in their strategic business planning process. While increasing the size of the balance sheet, the degree of asset-liability mismatch should be kept in control. Because excessive mismatch would result in volatility in earnings. Banks can also use sensitivity analysis for risk management purpose. This study used gap analysis for measuring the interest rate risk under different assumptions such as the introduction of negative and positive interest rate shock, adjusting and counterbalancing the portfolio. We found that the bank is exposed to interest rate risk.

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