AN EMPIRICAL EVALUATION OF FACTORS INFLUENCING BANK LENDING RATES IN KENYA

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A Research Project Submitted to the Department of Business Administration in Partial Fulfilment of the Requirements for the Award of the Degree of Masters in Business Administration of Egerton University

EGERTON UNIVERSITY

OCTOBER 2003

DECLARATION AND APPROVAL

This research paper is my original work and has not been submitted to any other University for the award of a degree

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Dedication

This work is dedicated to my mother Ms. Phyillis Wanja Wanderi who taught me the dignity of labour, regardless of ones calling.

Acknowledgement

I must unreservedly acknowledge my gratitude to my supervisors, Mr. T. R. Wambua, Mr. James R. N. Gachara, and Mr. S. O. Onyuma without whose guidance, patience and corrections this work would not have been completed.

I take this opportunity to express my sincere appreciation to Mr. Peter Rotich and Mr. J. M. Kitili both of Central Bank of Kenya for the crucial role they played in enabling me to access very important data and literature.

Last but not least, I wish to express my deep sense of gratitude to my immediate family Karen, Martin, Ng'ash, Andrew and G.K for their untiring support and patience while I was undertaking this course.

JOEL K WANDERI

Abbreviations and Acronyms

CBK	Central Bank of Kenya
Donde bill	Central Bank of Kenya (amendment) bill, (2002)
T-bill	Treasury bill
IPAR	Institute of policy Analysis and Research
ICPAK	Institute of Certified Public Accountants of Kenya
NSE	Nairobi Stock Exchange
SACCO	Savings and credit cooperative society
H-H	Herfindahl-Hirschman
Q-ratio	quick ratio
Lr	base lending rate
inf	inflation
tb	treasury bill rate
exr	foreign exchange rate Ksh./US$
idx	NSE-20 share index
eff	efficiency (profit after tax/total income)
csk	credit risk (Non-performing loans/capital and reserves)
dfr	default rate (Non-performing loans/total advances)
qri	quick ratio (cash & cash equivalents/Total liabilities)
dms	deposits market share
ams	loans & advances market share
cri	cash ratio
ln	natural logarithim

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ABSTRACT

Kenya has experienced slow and negative economic growth in the last few years, which has resulted in a general decline in the standard of living for the majority of Kenyans. It has happened in spite of the elimination of price and interest rate controls which were abolished in July 1991. It was hoped that with market forces determining the interest rate levels, they would remain affordable. Instead lending rates have gone beyond the reach of many a potential borrower, while deposit rates have remained low. Frustration with lack of solutions culminated in the enactment of a bill, which proposed to amend the Central Bank of Kenya Act (cap 491) to empower the CBK to restrict commercial banks to lending rate of not more than three percentage points above the ruling 91-days Treasury bill rate, and ensure depositors are paid at least 20% of the attendant Treasury Bill rate.

The purpose of this study was to determine the level of influence of various factors on bank lending rates in Kenya. These factors include: level of liquidity, market activity, foreign currency exchange rate, inflation, domestic borrowing by the state to finance budget deficit, oligopoly in the banking system, bad and doubtful debts and banking inefficiency. Data on Inflation, base lending rates, Treasury bill rates Exchange rates and the NSE index as well as items from Financial Statements of Fifteen banks for the years 1995 to 2001 inclusive was collected. Multiple regression analysis was used to analyze the data. The results show that cash ratio, which is the proportion of customer deposits required to be deposited with the CBK, Government borrowing, inflation, NSE-20 Index, Foreign Currency exchange rate and Market share are the main factors that influence bank lending rates. These results are useful to policy makers and regulators of the banking industry.

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CHAPTER I

INTRODUCTION

1.1 Background Information

The primary role of any Central Bank is macroeconomic policy, whose major component is price stability. So it will seek to influence short-term interest rates to prevent future inflation. High rates will encourage people to save rather than spend but it discourages businesses from capital spending which in turn raises unemployment. "Neutral" rates will be just high enough to fend off future inflation, but not so high as to choke off economic growth and raise joblessness. However, it is not easy to determine the "neutral" rate.

In the 1970s and 1980s Kenya's economic growth slowed down giving rise to high balance of payments and price instability. To stem the situation the CBK introduced interest rate controls where it determined maximum lending and deposit rates. These were often below market rates. The "low interest rate" policy was meant to encourage investment and protect small borrowers. However, this resulted in several unfortunate outcomes, including first, deposit rates remained lower than inflation. This discouraged savers from using the Banking system, chocking the supply of funds available for investment to those who need them. Secondly, lending rates also remained below inflation, making credit cheap to the privileged few who could access it. Such loans were often diverted to non-productive uses and hence were not helping the economy. Thirdly,

Small-scale borrowers were marginalized, as Banks could not adjust the rates upwards to cater for the risk associated with lending to this group.

After liberalization, lending rates rose sharply while deposit rates remained low, giving very high spreads. This is illustrated by the table below:

Table 1 Annual Average Interest Rates and Spreads

Year	Lending	Deposit	Spread
1991	17.87	13.73	4.14
1992	19.51	14.39	5.12
1993	31.64	22.36	9.28
1994	25.91	13.05	12.86
1995	28.99	12.77	16.22
1996	28.58	14.65	13.93
1997	29.85	16.02	13.83
1998	26.16	12.99	13.17
1999	25.19	9.74	15.45
2000	19.60	6.22	13.38
2001	19.49	5.70	13.79

Source: - Central Bank of Kenya. Various years

From the above, it is seen that market forces failed to bring down interest rates and reduce the spread. Many financial analysts and politicians believe that this is what hinders Kenya's economic growth. This sparked off campaigns that culminated in the Central Bank of Kenya Act (amendment) bill of year 2002, commonly referred to as the

"Donde" bill, which sought to reverse liberalization of interest rates. The bill received a lot of support from a majority of members of parliament and ordinary Kenyans. It was not however implemented due to opposition from the banking industry and the donor community.

The opposing school of thought widely believes that the high interest rates are associated with high risks that banks attach to lending occasioned by poor economic performance resulting in declining returns on investments. The legal framework which is said to be inefficient and corrupt hinders enforcement of contracts and debt collection. Additionally, Monetary policy framework reflected by high implicit taxes such as cash and liquidity ratio increases the cost of lending as the opportunity cost of such monies is passed-on to depositors and borrowers. Further, under-developed capital markets in the country means that bank debt has remained the main source of investment finance and hence, it bears a large proportion of risk. It is also felt that poor supervision of commercial Banks by the relevant authorities leads to collapse of many local banks leaving a few multinationals facing little competition. Others include: Large Government borrowing to finance budget deficit; Bad corporate and political governance; Dilapidated infrastructure; Inefficiency in the public service; High incidence of general insecurity occasioned by poverty; political instability across our borders and High Bank operating costs.

1.2 Statement of the problem

Current lending rates in Kenya are high, both in nominal and real terms. Nominal rates are the ones usually quoted, and are normally paid as such. The real interest rate is the nominal rate that has been adjusted for inflation. It is believed that high interest rates have stifled economic growth, since majority of companies are unable to afford credit for capital expenditure. Further, it is unclear whether the policy of liberalization of interest rates is tenable. Some schools of thought believe that implementing institutions especially Central Bank of Kenya and the Treasury have failed to ensure that rates are affordable. The base rate plus one and a half percentage point, is what blue-chip customers pay, while a majority of borrowers are usually charged a prime rate that represents an extra seven or eight percentage points. In December 1998 the CBK tried to persuade banks to publish their prime rates as they do their base lending rates but was unsuccessful.

Despite the liberalization of interest rates in the early 1990's, bank lending rates in Kenya have remained high compared to the benchmark 91-day Treasury bill rate and borrowers' expectations. It is therefore important to establish why they have remained high. Once the causes are known, then it will be easy to bring them down to manageable levels.

1.3 Justification/significance of the study

When bank-lending rates are high investors are forced to either scale down on capital expenditure or to abandon them altogether. This affects economic growth in a negative

CHAPTER 2

LITERATURE REVIEW

2.1 Relevant Works

Literature on interest rate determinants in Africa is not easily available. Economic affairs series, (EAS 1999) on determination of interest rates in the European Union argues convincingly that inflationary expectations as measured by the yield on bonds, international markets and exchange rates, and public sector borrowing are the key factors that influence long term rates. Central Banks in developed economies are the determinants of short-term interest rates. In the UK for example it is the monetary committee of the Bank of England. They do so by use of monetary policy instruments like changing minimum reserve requirements, open market operations by which it auctions Government Securities and also acting as a lender of last resort. For many African countries, Central Banks are unable to influence interest rates because they lack market based policy instruments designed to do so. The ones that exist are not fully developed.

Randal (1998) examined interest rate spreads in Eastern Caribbean to explain why they remained high compared with low inflation countries. The author concluded that operating costs of banks, provisions for loan losses and reserve costs (cash ratio) accounted for over 75% of observed interest rate spreads. Sanders (1981) found that small banks had a higher spreads than large banks. A study by Caprio (1996) found that a

weak judicial system increases credit risk, making it difficult to realize securities charged and hence banks have no motivation to charge lower rates.

Ngugi (1998) did an empirical analysis of interest rate spread in Kenya and also found that high non-performing loans, high treasury bill rate, high inter-bank rate, liquidity ratio and cash ratio were factors that contributed to high spread. This study did not however capture the impact of bank liquidity, foreign currency exchange rate, market concentration, investment demand and country risk among others on interest rates. Secondly factors that influence the spread are unlikely to be completely identical to those that affect the lending rate as depositors get other benefits besides the deposit rate. This study will try to focus on some of these factors that are measurable.

In a keynote address to an IPAR/ICPAK seminar on interest rates in Kenya, Mbaru (2001) a former Chairman of the Nairobi Stock Exchange felt that high interest rate regime accompanied by low deposit rates poses a serious threat to National sovereignty on one hand and social disparities on the other. Mbaru opined that only the rich have the money to invest in Treasury Bills while the poor are the main sources of bank deposits where they are paid a pittance. The author felt that by using very high yielding Treasury bills the Government was telling the investing public that it is more profitable to invest in Government Paper than in productive and commercial activity that creates employment. In a liberalized foreign exchange regime high interest rates also attracts funds from international investors and speculators which is withdrawn at the slightest whiff of uncertainty as happened in Mexico in 1995 and Kenya in 1997 following the Asian crisis. He also asserted that there was no effective competition in the banking sector and that the

Agricultural and Housing sectors were unable to access enough funds at affordable rates as banks were generally geared towards short-term lending.

Kimura (2001) suggested that there are five explanatory variables namely: real interest rates, rate of inflation, general business risk, banking (specific) risk, and country risk. This model is however untested empirically.

Ndungu (2001) discusses the structure of interest rates in the post-liberalization period and stated that a significant source of the current problem of high interest rates can be traced to the reform process itself: which was done before proper policy tools were in place. He further argues that the banking industry is not competitive and is in fact, a virtual oligopoly.

Awoudo (2001) used pricing data to show that bank rates are determined by four basic factors: cost of funds in the market place (Interest on deposits), corporate costs, cost of liquidity (cash ratio stipulated by the CBK and minimum cash to meet unexpected customer demands) and expected return (profit) posted by the banks.

Kinyua (2001), then Financial Secretary at the Ministry of Finance, while admitting that bank rates are indeed high blamed it on Public expenditure, excess demand for loans, inadequate competition in banking, inflationary expectation, high default rate, Inefficiency in the banks and the high level of taxation. He argued against intervention saying that it leads to distortions in allocation of financial resources and should only be used to avert an impending crisis as happened in Mexico in 1995.

There is no empirical evidence to show the overall and individual significance of all these factors as proposed by these eminent scholars and managers and this research was geared to show whether their positions are backed by statistical analysis.

2.2.0 Theoretical Framework

Interest rate is the price you pay for borrowing money or that you receive for depositing it in a bank or a financial institution. Islamic Banks do not charge interest on loans, but instead base their lending activities on taking a share of the profits arising from the investment being financed. This can be beneficial in that the sum borrowed is not put to non-productive uses.

2.2.1 Supply and Demand

Two major theories have been advanced to explain the overall level of interest rates in an economy (Goacher, 2002). These are the Classical theory (the loanable funds theory) and the Keynesian theory. The Classical theory holds that real interest rates are determined by the level of savings alongside the level of investment in capital equipment (which indicates demand for loans). By contrast the Keynesian theory emphasizes the supply of and demand for money, arguing that it is the interaction of these two variables that determines the rate of interest. The more money (or liquidity) people wish to hold (demand), other things being equal, the higher will be its price (rates of interest). The greater the supply of money, the lower the price.

2.2.2 Reconciling the two theories

The Keynesian approach is essentially concerned with causes of short – term changes in interest rates. It is argued that in the short – term, an increase in the money supply would tend to push interest rates downwards. However, in the longer term any increases in the supply of money would cause increased prices, which would in turn raise demand for money in order to meet costs of transactions at these higher prices. On the other hand the Classical Theory maintains that increase in money supply will only have an impact on price level in the longer term but concedes that market imperfections hinder the influence of money supply on interest rates in the short term. In the longer term as the effects of increased money supply feed through into the price levels the interest rate will return to its previous level since all the additional liquidity will have been absorbed in increased prices. Thus it can be shown that while Keynesian theory seeks primarily to explain short-term changes in interest rates it is not inconsistent with the explanation for the longer-term changes in interest rates proposed by the Classical theory. (GOACHER 2002)

2.2.3 Inflationary expectations, Real and nominal interest rates

If savers believe that future inflation will be at a certain level, they will demand nominal interest rates over the relevant period, which will provide positive real interest rates whether the anticipated inflation occurs or not. Hence inflationary expectations must be a key element in determining the level of long-term interest rates. A particular real interest rate can be achieved on a loan by either Indexation or Lending at variable rates of

interest.

Indexation is the linking of the capital value of the loan to an appropriate price index such as the Consumer Price Index. It ensures that real purchasing power of the capital at the end of the period would be the same as at start.

Lending at variable interest rates- There is no perfect price index, and in principle each individual within an economy is likely to have their own price index based on the unique combination of goods and services they purchase. Since market rates of interest tend to move with inflation rate, lending at variable interest rates gives protection to most borrowers and lenders and avoids the complexities associated with computation of a price index. (GOACHER D)

2.2.4 Compensation for Risk

Any loan involves some risk of default either of coupon payments or principal. Generally, long-term rates would be expected to be higher than short-term rates as the risk of default increases with maturity period. Where the risk is negligible like purchase of government securities money is raised at very low interest rates. Where investment is highly speculative and chances of default high the rate of interest will contain a high proportion of "risk premium". By making a number of loans to different sectors, Banks are able to minimize this risk but they still charge a risk premium on all customers to hedge against defaulting customers. In other words there is some risk that cannot be diversified away and this will vary from one economy to

another. Cagno (1990) quoting from Mitchell (1982) analyzed the risk of bank overall portfolio and proposed four different measures of credit risk;

a. The ratio of the standard deviation to the mean of portfolio returns
b. The ratio of any asset quantity to the quantity of a less risky asset
a. The variance of profits
b. The ratio of mean to variance of profits

In this work the risk will be captured by the ratio of bad debts to capital and reserves, in line with Mitchell's second measure of risk.

2.2.5 Oligopoly

According to Ackello-Ogutu et al (1990) oligopoly is the name given to industries where there are a few firms each of which controls a large share of the market. Each firm is affected by the pricing and output policies of the others. Hence they are interdependent. Because of this there is a tendency to avoid effective price competition. Collusion is the co-operation between firms in setting prices, dividing markets or reducing competition. This formal collusion is illegal in most countries but tacit collusion is going on all the time. A common example in Kenya is price leadership, especially in the oil industry where a dominant firm raises prices and other firms soon follow in order not to be seen to "rock the boat"

Measuring Oligopoly

The Herfindahl-Hirschman index is normally used as a measure of the level of concentration in an industry: It is here denoted by H

$$H = \sum x_i^2$$

Where:

x_i = market share of firm i.

n = number of firms.

An increase in the value of the index reflects an increase in the concentration of the industry. The index depends on two characteristics of the structure of an industry: the number of firms, and the distribution of market shares among them. In a monopoly situation the index is equal to one. If every firm has the same market share, the index is equal to "1/n". As the market shares vary the index increases.

2.2.6 Measurement of Banking Efficiency

If banks are inefficient they will pass on their costs to depositors by paying low deposit rates and to borrowers by charging high lending rates to improve their profitability. But measuring efficiency is not easy. Ziorklui (2002) recognized that efficiency may be proxied by increased staff productivity. Others recommend that banking efficiency can be measured through traditional methods such as bank margins, transactional costs and profits as reported by accounting data. In this study efficiency was measured by the ratio of total expenses to total income.

All the above theories have their merits and demerits. It is assumed that each of them plays a significant part in determining0 the lending rate. They imply that the following are the most likely factors that lead to changes in lending rates: Money supply or the rate of growth of money supply (monetary policy), actual or expected rates of inflation, the level of economic activity (demand for liquidity), overseas interest rates due to international nature of financial markets, desired level of savings, fiscal policy – if government is running a budget deficit, (supported through domestic borrowing), and uncertainty due to the perceived risk associated with lending in financial markets. The concern of this research was to quantify the impact of these and other factors.

2.3 Scope and Limitations

The work dwells on possible causes of high cost of lending rate in Kenya. Various factors were to tested for their association with interest rates. These factors were limited to the ones that are quantifiable or those that can easily be approximated. Country risk for instance may be a contributing factor, but is not easy to quantify. Of late one notices a trend whereby all banks levy monthly charges on accounts whose balances fall below a certain minimum, leading to negative real interest rates on deposits. This shuts out most small savers. It would be interesting to see how this factor has influenced the level of savings, as it is evident that most small savers have shifted to Savings and Credit co-operative societies (SACCOS). Most of these SACCOS have opened banking halls to serve their increasing number of customers. Also, farmers have been agitating for creation of their own farmer's bank. One would also like to know the level of Banks

return on equity employed compared to other industries, as it is possible that banks employ more of depositors funds than shareholders equity. These could not be studied due to time and cost limitations.

CHAPTER 3

METHODOLOGY

3.1 Population and Sampling Technique

The population of the study was all the 46 banks operating in Kenya. These can be broadly categorized into large and small banks. Close to 80% of all deposits in Kenya are held by 8 banks only. Since the purpose was to test the hypotheses of causal relationships between variables, there was need for procedures that reduce bias and increase reliability. Hence a sample of 15 banks was taken. This constituted about 35% of the population. Eight of the banks were the ones that hold 80% of deposits and the other eight were the small ones. These were selected randomly so that variations caused by extraneous factors would be due to chance.

3.2 Data Requirements

Data on the following parameters was collected for the period 1995 to Year 2001: Average annual base lending rates for individual Banks, Inflation rate, Treasury bill rate, the Exchange rate in KShs/US$, and the average annual NSE-20 share index as a measure of the level of economic activity. Then cash ratio, which is the proportion of customer deposits deposited with the CBK where it earns no interest. Other ratios were computed from data available in the banks' annual reports. These include: Bank efficiency which is proxied by the ratio of total expenses to total income, Credit risk

given by ratio of Non performing loans to capital and Reserves, Default rate given by Non performing loans divided by Total advances, quick ratio for estimating liquidity as the ratio of cash and cash equivalents to total liabilities, Market share in terms of customer deposits as well as market share in terms of loans and advances.

3.3 Data Collection

The data was collected from Central Bank of Kenya especially from their monthly economic reviews as well as Central bureau of statistics. Other data was obtained from the Income statements and balance sheets of the individual banks.

3.4 Data Analysis Techniques

The study adopted the approach similar to the one used by Ngugi (1998) as shown below

$$lr = \mathbf{f}(\text{ inf, tb, exr, idx, eff, csk, dfr, qri, dms, ams, cri, })$$

Specifying the model,

$$lr = A(inf)^{b1}\,(tb)^{b2}\,(exr)^{b3}(idx)^{b4}\,(eff)^{b5}\,(csk)^{b6}$$

$$(dfr)^{b7}(qri)^{b8}(dms)^{b9}(ams)^{b10}(cri)^{b11}$$

A linear relationship could have been assumed but according to Mansfield (1991), for many variables, an exponential curve provides a better fitting than a linear or even a quadratic curve. Mathematically an exponential curve would be represented as follows, by taking the natural logarithms on both sides:

$$\ln(lr) = A + B_1\ln(inf) + B_2\ln(tb) + B_3\ln(exr) + B_4\ln(idx) + B_5\ln(eff) + B_6\ln(csk) +$$

$B_7\ln(dfr) + B_8\ln(qri) + B_9\ln(dms) + B_{10}\ln(ams) + B_{11}\ln(cri) + \mathbf{e}$

where ln =natural logarithm

lr = lending rate

A = constant

inf = inflation

tb = treasury bill rate

exr = exchange rate KSH per 1 US$

idx = NSE-20 share index

eff = efficiency measured by operating expences over total income

csk = credit risk measured by ratio of non performing loans to capital employed

dfr = loan default rate= ratio of non performing loans to total advances

qri = quick ratio=cash and cash equivalents over

dms =deposits market share = deposits held by a bank as a percentage of all deposits

ams = advances market share = loans and advances given out by a bank as a percentage of total loans and advances

cri = cash ratio = proportional of customer deposits held by CBK in a non-interest paying account

e = the error term

B1 to B11 are the parameters to be estimated

The model was used to test empirically the strength of the relationship between the variables. The collective effect of the independent variables on lending rate was given by the regression coefficient R, whereas the individual effect was given by the partial

correlation coefficients. Data was analyzed using SPSS statistical software version 8.0

CHAPTER 4

RESULTS AND DISCUSSIONS

The aim of the study was to empirically analyze the factors influencing the lending rate in Kenya. Specifically, it was intended to estimate a model that could explain how these factors are mathematically related to lending rates as well as capture the collective and relative significance of these variables.

4.1 Results

When the dependent variable (lr) is regressed on all the eleven independent variables in a single step, the results reveal that R squared was 65% which shows that the model performed well in showing lending rate is a function of the other independent variables. The adjusted R squared which, according to Mansfield (1991) is the unbiased estimate of the population multiple coefficient of determination was 59.2%. Therefore the proportion of the total variation in the lending rate that was explained by the regression equation is about 60%.

Table 2: Multiple Regression results of all variables

Variable	coefficient	t-statistic	p-value
Constant	-18.56	-2.569	.013
Inflation	0.144	2.827	.006
T-bill	-1.03	-2.465	.016
Exchange rate	2.92	1.699	.094
Nse20 stock index	0.90	3.682	.000
Efficiency	0.0074	0.809	.422
Credit risk	-0.0027	-0.074	.941
Default rate	0.0031	0.083	.934
Quick ratio	-0.0012	-0.062	.951
Market share-depo	-0.0115	-0.342	.733
Market share Adva.	-0.0088	-0.206	.837
Cash ratio	1.87	1.620	.110

R square	0.653
Adjusted R square	0.592
Std error of the estimate	0.1188
Durbin-Watson statistic	2.248

Source: Regression Analysis using SPSS

$$(lr) = -18.56 + 0.144(inf) - 1.03(tb) + 2.92(exr) + 0.90(idx) + 0.0074(eff) - 0.0027(csk) + 0.0031(dft) - 0.0012(qri) - 0.0015(dms) - 0.0088(ams) + 1.87(cri)$$

When the above result were tested for statistical significance, it was evident that some of the p-values are very high; indicating that the null hypothesis that each of these coefficients is equal to zero at 5% significance level fails to be rejected. Hence, credit risk, default rate, quick ratio, market share (deposits) and market share (advances) are unlikely predictors of bank lending rate. However to confirm this outcome two other methods of variable selection using SPSS were employed.

Backward method

This is a variable selection procedure in which all variables are entered into the equation and then sequentially removed. The variable with the smallest partial correlation with the dependent variable is considered first for removal and if it meets criterion for elimination, it is eliminated. The variable remaining in the equation with the smallest partial correlation with the dependent variable is considered next. The procedure stops when there are no variables in the equation that satisfy elimination criteria. This SPSS method was employed and the criterion for removal was: Probability of F-to-remove>= 0.100.

The predictors not eliminated are shown in the table below:

Table3: Multiple regression results using Backward method

Variable	Coefficient	t-statistic	p-value
Constant	-18.62	-2.662	.010
INFLATION	0.146	3.027	.003
TBILL	-1.03	-2.566	.013
FOREX	2.92	1.762	.083
INDEX	0.9	3.822	.000
MKTSHAR2	-0.021	-2.144	.036
CASH RATIO	1.85	1.676	.098

R squared	0.648
Adjusted R squared	0.617
Std error of estimate	0.1151
Durbin-Watson statistic	2.282

Source: Regression results using SPSS

This method improves the R squared and eliminates insignificant variables.

Forward Method

This is a stepwise variable selection procedure in which variables are sequentially entered into the model. The first variable considered for entry into the equation is one with the largest positive or negative correlation with the dependent variable. Once the first variable is entered the independent variable not in the equation that has the largest partial correlation is considered next. The procedure stops when no more variables meet entry

criterion. This method produced the following result.

Table 4: Multiple regression results using the forward method

Variable	coefficient	t-statistic	p-value
Constant	-5.93	-7.56	.000
INFLATION	0.077	3.51	.001
TBILL	-0.351	-6.136	.000
INDEX	0.499	5.79	.000
MKTSHAR2	-0.022	-2.14	.036

R Square	0.632
Adjusted R square	0.611
Std error of estimate	0.1161
F-statistic	30.015

Source: Regression results using SPSS

Compared to the backward method, exchange rate and the cash ratio are left out in the forward method, although all other parameters are similar. When the variables pre-selected by the two methods described above are entered together and the backward method employed, the output is as follows

Table 5: Multiple regression results of pre-selected predictors

Variable	coefficient	t-statistic	p-value	confidence %
Constant	-18.476	-2.657	.010	99
INFLATION	0.145	3.02	.004	99.6
TBILL	-1.027	-2.565	.013	98.7
FOREX	2.911	1.761	.083	91.7
INDEX	0.896	3.809	.000	99.999
MKTSHAR2	-0.022	-2.176	.033	96.7
CASHRATIO	1.856	1.680	.098	90.2

R square	0.649
Adjusted R square	0.618
Std error of estimate	0.1150
F-statistic	20.958

Source: Regression results using SPSS

It is seen that the analysis merely substitutes MKTSHAR1 with MKTSHAR2 in the original backward method output, suggesting that these two variables are highly correlated and therefore one can adequately represent the other. All other parameters remain basically the same. We can therefore summarize the regression equation by applying only those determinants that are significant.

lr = -18.476 + 0.145(inf) – 1.03(tb) + 2.91(exr) + 0.896(idx) – 0.022(dms) + 1.856(cri)

4.2 Testing the Significance

To be able to have confidence in the regression equation obtained it is important to test the null hypothesis that the true regression coefficients are all zero. This is done by calculating the ratio of the mean sum of squares explained by the regression (0.277) to the mean sum of squares not explained by regression (0.01323). The result is given as 20.958. This value has an F distribution with the following degrees of freedom

k for the numerator

n-k-1 for the denominator

where:

n is number of observations.

k is number of independent variables

Decision rule: Reject the null hypothesis that the true regression coefficients are all zero if the calculated F exceeds F_a where $_a$ is the significance level

For $_a$ =5%, k=11 and (n-k-1) = 63

F_a = 1.92, which is exceeded by the calculated F of 20.958. Hence we reject the null hypothesis that all coefficients are zero.

Next is the need to test the null hypotheses that each of the coefficients is equal to zero:

Decision Rule: Reject the null hypothesis that b_1 is equal to zero if $t_{b1} > t_{a/2}$ or $t_{b1} < -t_{a/2}$, at 95 % (say) confidence level.

The SPSS software generates a p-value to indicate the level of significance. The p-value is the probability of getting a value of the test statistic as extreme or more extreme than that actually observed, given that the null hypothesis is true. It is the lowest significance level (lowest value of $_a$) at which the null hypothesis can be rejected. So we reject the null

hypothesis if we want to use a significance level equal to the p-value or more, otherwise we should not reject it. Consequently the cut-off confidence levels for predictors are given alongside the p-values.

It is evident from the values of the F ratio and the t-statistics at the given significant levels that the null hypotheses that all the coefficients are equal to zero or that any of the coefficients is equal to zero are rejected. Hence these are the independent variables that influence bank-lending rates.

Multi-collinearity and Serial Correlation

The problem of multi-collinearity is not evident since no two of the beta coefficients are close to positive one or negative one, indicating that there are no two or more of the independent variables that are very highly correlated. The Durbin-Watson Test has been performed to establish the existence of serial correlation in the data, which would violate one of the basic assumptions of regression (error terms must be independent). The Durbin-Watson test statistic d, for serial correlation is given by:

$$d = \frac{\Sigma(e_i - e_{i-1})^2}{\Sigma(e_i)^2}$$

where

e_i is the current error term = Y_i-a-b_iX_i-….-b_nX_n

e_{i-1} is the previous error

Durbin-Watson tables show whether the calculated d is so low or so high that the null hypothesis that there is no serial correlation should be rejected. Positive serial correlation would mean that the error term is directly related to the previous one while negative serial correlation means that the error term is inversely proportional to the previous error term. For a two tailed-test of both positive and negative serial correlation, the null hypothesis that there is no serial correlation is rejected if $d < d_L$ or if $d > 4\text{-}d_L$, and accepted if $d_u < d < 4\text{-}d_u$.

The calculated d is 2.31.

n = 74 = the number of observations (approx. 75)

k = 6 = independent variables (approx. 5)

for $_a = 0.025$ $d_L = 1.45$ $d_u = 1.67$ where d_L is lower limit and d_u is upper limit, $1.67 < 2.31 < (4\text{-}1.67)$, we accept the null hypothesis that there is no serial correlation in the observations. It is equally accepted at $_a = 0.05$

4.3 The Discussions

Since some of the variables usually suspected to be key factors in determining the level of lending rates were seen to have very little impact, we accept the following hypotheses:

a. Bank inefficiency does not affect lending rates
b. Bad and doubtful debts do not influence bank lending rates
c. Loan exposure risk does not affect lending rates
d. Bank liquidity has no influence on lending rates

Bank efficiency

The efficiency of a bank is determined by expressing operating expenses as a percentage of total income. Currently, the international benchmark for efficiency is 60 per cent, meaning that banks having a ratio higher than 60 per cent are regarded as being inefficient. The results in Appendix II show that except for a few banks, most of the Kenyan banks are below this mark, meaning that Kenyan banks operate efficiently.

Credit risk and Default rate

Non-performing loans do not appear to influence lending rates. This is probably because if a bank raises its rates because it was struggling in this area it would price itself out of the market, which would be counter-productive.

Treasury bill

The sign of the Treasury bill coefficient was contrary to what was expected, probably because the banks are fearful that the fall in treasury bill rates would not be sustained, given the past heavy demand for domestic short-term Government borrowing. The fall in lending rates usually lags behind the fall in treasury-bill rates, and wherever the T-bill rate falls, banks usually adjust their base rates by a smaller margin. Banks are also very quick to adjust their rates upwards when the treasury bill rates begin to rise.

Market share

Increase in the market share for deposits as well as in loans and advances influences the lending rate to fall as would be expected. Therefore the level of competition influences lending rates. This implies that since market share is concentrated in only a few banks, they are the ones that control lending rates.

Absence of competition

As is evident from the results, banks seem to adjust the rates downward as they capture a bigger market share, implying that competition for borrowers is not very stiff. Under perfect competition the H-H index would have been equal to (1/46), where 46 is the total number of banks in Kenya. This is about 0.02 whereas the data from the fifteen banks in appendix III show a H-H index of between 0.15 and 0.19. So the level of concentration was about ten times what it ought to be under perfect competition as measured by H-H index. The H-H index was not used in the regression given that it is not as volatile as the other variables. This is because of huge barriers to entry into banking industry and the high failure rate amongst the small players.

NSE-20 share index

NSE-20 share index had the expected sign suggesting that increase in market activity would stimulate increase in demand for loans and hence cause the rates to rise.

Cash ratio

Cash ratio or the required reserves have a great impact on the lending rates. The results show that for a 1% increase in cash ratio the lending rate increases by at about 1.856 %. Quite obviously something should be done to lower this ratio.

Inflation

Increase in inflation as indicated by the result will lead to increase in lending rates as lenders are expected to adjust their rates so as not to loose the value of their investment. For one unit increase in inflation there is a corresponding increase of 0.145 points in lending rates.

Exchange rate

A fall in the value of a currency can be expected to have inflationary consequences, and likewise a rise in value may be expected to have deflationary effects. In two out of three models given above the result agreed with expectations as lending rate increased with fall in value of the Kenyan shilling.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

This research has shown that macroeconomic factors such as cash ratio, inflation, market share, foreign currency exchange rate, level of economic activity and Government borrowing are the most significant factors that influence the level of lending rates in Kenya. Bank efficiency was also significant but at a much lower level of 36%. Non-performing loans and are seen not to directly influence lending rates. However these are significant in that they eventually lead to the collapse of banks, causing banking business to remain in only a few hands. The banking sector in Kenya is therefore an oligopoly, which is itself not surprising considering that banks owned by indigenous Kenyans have collapsed probably due to mismanagement and under-capitalization. Government owned banks are also struggling under the weight of non–performing loans given to politically correct individuals. This leaves only a few foreign owned banks, which continue to post super normal profits. The data shows some well-managed banks posting an after-tax profit of over 20 % of total income.

The trading environment also affects lending rates. This was reflected by the rate of inflation and the NSE-20 share index. Banks ensure that they factor in inflationary expectation so that they get a real return on loaned funds. That apart all economies

including the Kenyan one are subject to the uncertainties of the world market, as reflected in the KSH/US$ exchange rate. There is a lot of "hot" money in the word markets, usually invested in the bonds market. This money moves in and out at the slightest whiff of uncertainty as happened in 1997 following the Asian crisis. An inflow of investment into the bond market will result in bond prices to rise and hence a fall in interest rates, and vice versa.

5.2 Recommendations

The result of this study clearly points to the factors that affect bank-lending rates. The economic managers and banks should therefore pursue certain policies aimed at holding them down at affordable levels. These include to; reducing cash ratio, improve performance of Government Banks, manage Government borrowing by externalizing the domestic debt or making it long term, strengthen bank supervision to pre-empt local banks failure and control inflation.

As recommendations were being written the Governor of Central Bank was forced to resign because it was felt that he took too long to put Euro Bank under statutory management, causing depositors to loose. Farther if banks were properly supervised, perhaps many of the locally owned banks would have survived, thereby increasing competition in the market and hence lowering the lending rates.

Cash Ratio is indirect taxation as the deposits with the CBK do not earn any interest. Banks are forced to look for ways of compensating for the loss by increasing their lending

rates. While it is appreciated that depositors need to be protected this is not the best way to do it and is probably an excuse for poor supervision. Adequate capital should provide a safety net to depositors against losses that a bank might incur. Although even this does not provide guarantee against the failure of badly managed banks, the CBK has been encouraging small banks to merge, which would raise their capital base, but unfortunately would further reduce effective competition in the sector.

In the past, Government owned banks were a destination of choice to political wheeler-dealers. The management was appointed on the basis of political correctness rather than professional training, job experience and personal integrity. The government needs to tackle the problem of mismanagement and heavy non-performing loans so that these banks are able to survive.

Finally, heavy domestic borrowing by Government coupled with an ever-increasing budget deficit has to be dealt with. At the moment the budget deficit stands at Ksh67 billion. The government needs to learn to live within its means. Ways and means should be found to externalize the debt and/or make it long-term. Already a debt restructuring process being pursued by the CBK is bearing fruit, having brought down the Treasury bill rate to the current level of about 5.8 per cent. This has provoked favourable reaction from the banks, with Stanbic Bank leading the way by reducing its base rate to 10 per cent and appearing to venture into retail banking. But with such a huge deficit there are fears that the Treasury bill rate will start climbing again. If the right actions are taken there would be no need to introduce interest rate regulation as this may create distortions in the market.

5.3 Limitations of the Study

Prior to 1995 banks were not required to make certain disclosures in regard to non-performing loans and provisions. So no data of this nature was available beyond this period. The second limitation of the study was the non-standardized way of making annual returns. Some banks mix up the group results with bank results, making it impossible to establish for certain the accuracy of the information. However it was felt that so long as subsidiaries do not constitute more than 5% no adverse distortions would occur.

5.4 Suggestions For Further Research

A thorough study to find out precisely why locally owned banks fail should be undertaken as this has contributed greatly to lack of effective competition in the market. Further research should also be done to understand the behaviour of the Treasury bill rate, especially how it came to be a benchmark. This work showed that its sign was centrally to expectations, which was rather surprising.

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APPENDIX 1

Multiple Regression output of all variables

Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.808a	.653	.592	.1188

a. Predictors: (Constant), CASHRATI, EFFICIEN, QUIKRATI, CREDRISK, MKTSHAR2, INFLATIO, TBILL, INDEX, MKTSHAR1, DFLTRATE, FOREX

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	CASHRATI, EFFICIEN, QUIKRATI, CREDRISK, MKTSHAR2, INFLATIO, TBILL, INDEX, MKTSHAR1, DFL TR1 TE, FOREX		Enter

a. All requested variables entered. b. Dependent Variable: BASERATE

b. Dependent Variable: BASERATE

ANOVA[b]

	Sum of Squares	df	Mean Square	F	SiQ.
Regression	1.673	11	.152	10.777	.oooa
Residual	.889	63	1.412E-02		
Total	2.563	74			

a. Predictors: (Constant), CASHRATI, EFFICIEN, QUIKRATI, CREDRISK, MKTSHAR2, INFLATIO, TB ILL, INDEX, MKTSHAR1, DFLTRATE, FOREX

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-18.563	7.225		-2.569	.013
	INFLATIO	.144	.051	.678	2.827	.006
	TBILL	-1.030	.418	-1.736	-2.465	.016
	FOREX	2.922	1.720	2.116	1.699	.094
	INDEX	.904	.245	1.289	3.682	.000
	EFFICIEN	7.430E-03	.009	.067	.809	.422
	CREDRISK	-2.715E-03	.037	-.031	-.074	.941
	DFLTRATE	3.141E-03	.038	.036	.083	.934
	QUIKRATI	-1.167E-03	.019	-.006	-.062	.951
	MKTSHAR1	-1.540E-02	.045	-.115	-.342	.733
	MKTSHAR2	-8.794E-03	.043	-.063	-.206	.837
	CASHRATI	1.868	1.153	2.180	1.620	.110

a. Dependent Variable: BASERATE

APPENDIX 2

Multiple Regression Results Using Backward Method

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method	I
1	CASHRATI, EFFICIEN, QUIKRATI, CREDRISK, MKTSHAR2, INFLATIO, TBILL, INDEX, MKTSHAR1, DFLTRTE, FOREX		Enter	
2		QUIKRATI	Backward (criterion: Probability of F-to-remove>=.100).	
3		CREDRISK	Backward (criterion: Probability of F-to-remove>=.100).	
4		DFL TRA TE	Backward (criterion: Probability of F-to-remove>=.100).	
5		MKTSHAR2	Backward (criterion: Probability of F-to-remove>=.100).	
6		EFFICIEN	Backward (criterion: Probability of F-to-remove >= .100).	

a. All requested variables entered. b. Dependent Variable: BASERATE

Page 1

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.808[a]	.653	.592	.1188
2	.808[b]	.653	.599	.1179
3	.808[c]	.653	.605	.1170
4	.808[d]	.653	.611	.1161
5	.808[e]	.653	.616	.1153
6	.805[f]	.648	.617	.1151

a. Predictors: (Constant), CASHRATI, EFFICIEN, QUIKRATI, CREDRISK, MKTSHAR2, INFLATIO, TBILL, INDEX, MKTSHAR1, DFLTRATE, FOREX

b. Predictors: (Constant), CASHRATI, EFFICIEN, CREDRISK, MKTSHAR2, INFLATIO, TBILL, INDEX, MKTSHAR1, DFLTRATE, FOREX

c. Predictors: (Constant), CASHRATI, EFFICIEN, MKTSHAR2, INFLATIO, TBILL, INDEX, MKTSHAR1, DFLTRATE, FOREX

d. Predictors: (Constant), CASHRATI, EFFICIEN, MKTSHAR2, INFLATIO, TBILL, INDEX, MKTSHAR1, FOREX

e. Predictors: (Constant), CASHRATI, EFFICIEN, INFLATIO, TBILL, INDEX, MKTSHAR1, FOREX

f. Predictors: (Constant), CASHRATI, INFLATIO, TBILL, INDEX, MKTSHAR1, FOREX

ANOVA[g]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.673	11	.152	10.777	.000[a]
	Residual	.889	63	1.412E-02		
	Total	2.563	74			
2	Regression	1.673	10	.167	12.042	.000[b]
	Residual	.889	64	1.390E-02		
	Total	2.563	74			
3	Regression	1.673	9	.186	13.588	.000[c]
	Residual	.889	65	1.368E-02		
	Total	2.563	74			
4	Regression	1.673	8	.209	15.521	.000[d]
	Residual	.889	66	1.348E-02		
	Total	2.563	74			
5	Regression	1.672	7	.239	17.983	.000[e]
	Residual	.890	67	1.329E-02		
	Total	2.563	74			
6	Regression	1.661	6	.277	20.896	.000[f]
	Residual	.901	68	1.325E-02		
	Total	2.563	74			

a. Predictors: (Constant), CASHRATI, EFFICIEN, QUIKRATI, CREDRISK, MKTSHAR2, INFLATIO, TBILL, INDEX, MKTSHAR1, DFLTRATE, FOREX

b. Predictors: (Constant), CASHRATI, EFFICIEN, CREDRISK, MKTSHAR2, INFLATIO, TBILL, INDEX, MKTSHAR1, DFLTRATE, FOREX

c. Predictors: (Constant), CASHRATI, EFFICIEN, MKTSHAR2, INFLATIO, TBILL, INDEX, MKTSHAR1, DFLTRATE, FOREX

d. Predictors: (Constant), CASHRATI, EFFICIEN, MKTSHAR2, INFLATIO, TBILL, INDEX

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-18.563	7.225		-2.569	.013
	INFLATIO	.144	.051	.678	2.827	.006
	TBILL	-1.030	.418	-1.736	-2.465	.016
	FOREX	2.922	1.720	2.116	1.699	.094
	INDEX	.904	.245	1.289	3.682	.000
	EFFICIEN	7.430E-03	.009	.067	.809	.422
	CREDRISK	-2.715E-03	.037	-.031	-.074	.941
	DFLTRATE	3.141E-03	.038	.036	.083	.934
	QUIKRATI	-1.167E-03	.019	-.006	-.062	.951
	MKTSHAR1	-1.540E-02	.045	-.115	-.342	.733
	MKTSHAR2	-8.794E-03	.043	-.063	-.206	.837
	CASHRATI	1.868	1.153	2.180	1.620	.110
2	(Constant)	-18.606	7.135		-2.608	.011
	INFLATIO	.144	.050	.679	2.877	.005
	TBILL	-1.033	.412	-1.740	-2.508	.015
	FOREX	2.932	1.699	2.123	1.725	.089
	INDEX	.905	.243	1.290	3.727	.000
	EFFICIEN	7.300E-03	.009	.065	.823	.414
	CREDRISK	-2.246E-03	.036	-.026	-.063	.950
	DFLTRATE	2.507E-03	.036	.028	.069	.945
	MKTSHAR1	-1.439E-02	.042	-.108	-.345	.731
	MKTSHAR2	-9.640E-03	.040	-.069	-.240	.811
	CASHRATI	1.873	1.141	2.186	1.642	.106
3	(Constant)	-18.592	7.077		-2.627	.011
	INFLATIO	.144	.049	.678	2.910	.005
	TBILL	-1.032	.408	-1.738	-2.528	.014
	FOREX	2.925	1.683	2.118	1.738	.087
	INDEX	.905	.241	1.290	3.757	.000
	EFFICIEN	7.277E-03	.009	.065	.827	.411
	DFLTRATE	2.683E-04	.007	.003	.038	.970
	MKTSHAR1	-1.566E-02	.036	-.117	-.432	.667
	MKTSHAR2	-8.720E-03	.037	-.063	-.235	.815
	CASHRATI	1.867	1.128	2.179	1.656	.103
4	(Constant)	-18.597	7.022		-2.649	.010
	INFLATIO	.143	.049	.677	2.948	.004
	TBILL	-1.031	.404	-1.736	-2.549	.013
	FOREX	2.923	1.669	2.116	1.751	.085
	INDEX	.906	.238	1.292	3.809	.000
	EFFICIEN	7.294E-03	.009	.065	.837	.406
	MKTSHAR1	-1.560E-02	.036	-.117	-.434	.666
	MKTSHAR2	-8.731E-03	.037	-.063	-.237	.813
	CASHRATI	1.863	1.115	2.174	1.671	.099

APPENDIX 3

Regression Output using the forward method

Variables Entered/Removeda

Model	Variables Entered	Variables Removed	Method
1	INFLATIO		Forward (Criterion: Probability-of-F-to-enter <= .050)
2	TBILL		Forward (Criterion: Probability-of-F-to-enter <= .050)
3	INDEX		Forward (Criterion: Probability-of-F-to-enter <= .050)
4	MKTSHAR2		Forward (Criterion: Probability-of-F-to-enter <= .050)

a. Dependent Variable: BASERATE

Model SummarY

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.608a	.370	.361	.1487	
2	.667b	.445	.430	.1405	
3	.779c	.608	.591	.1190	
4	.795d	.632	.611	.1161	2.208

a. Predictors: (Constant), INFLA TIO

b. Predictors: (Constant), INFLATIO, TBILL

c. Predictors: (Constant), INFLA TIO, TBILL, INDEX

d. Predictors: (Constant), INFLA TIO, TBILL, INDEX, MKTSHAR2 e. Dependent Variable: BASERATE

ANOVA[e]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.948	1	.948	42.850	.000[a]
	Residual	1.615	73	2.212E-02		
	Total	2.563	74			
2	Regression	1.141	2	.571	28.910	.000[b]
	Residual	1.421	72	1.974E-02		
	Total	2.563	74			
3	Regression	1.557	3	.519	36.646	.000[c]
	Residual	1.006	71	1.416E-02		
	Total	2.563	74			
4	Regression	1.619	4	.405	30.015	.000[d]
	Residual	.944	70	1.348E-02		
	Total	2.563	74			

a. Predictors: (Constant), INFLATIO

b. Predictors: (Constant), INFLATIO, TBILL

c. Predictors: (Constant), INFLATIO, TBILL, INDEX

d. Predictors: (Constant), INFLATIO, TBILL, INDEX, MKTSHAR2

e. Dependent Variable: BASERATE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1.132	.066		-17.204	.000
	INFLATIO	.129	.020	.608	6.546	.000
2	(Constant)	-1.377	.100		-13.767	.000
	INFLATIO	.158	.021	.747	7.597	.000
	TBILL	-.183	.058	-.308	-3.131	.003
3	(Constant)	-5.641	.792		-7.126	.000
	INFLATIO	8.457E-02	.022	.399	3.794	.000
	TBILL	-.353	.059	-.595	-6.028	.000
	INDEX	.474	.087	.675	5.418	.000
4	(Constant)	-5.931	.784		-7.564	.000
	INFLATIO	7.732E-02	.022	.365	3.513	.001
	TBILL	-.351	.057	-.591	-6.136	.000
	INDEX	.499	.086	.712	5.794	.000
	MKTSHAR2	-2.194E-02	.010	-.158	-2.140	.036

a. Dependent Variable: BASERATE

Excluded Variables[e]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance
1	TBILL	-.308[a]	-3.131	.003	-.346	.797
	FOREX	-.223[a]	-2.060	.043	-.236	.705
	INDEX	.272[a]	2.115	.038	.242	.500
	EFFICIEN	.004[a]	.042	.967	.005	.997
	CREDRISK	-.007[a]	-.075	.940	-.009	.994
	DFLTRATE	.014[a]	.146	.884	.017	.987
	QUIKRATI	-.010[a]	-.106	.916	-.012	1.000
	MKTSHAR1	-.119[a]	-1.291	.201	-.150	.999
	MKTSHAR2	-.128[a]	-1.384	.171	-.161	.998
	CASHRATI	-.004[a]	-.042	.967	-.005	.813
2	FOREX	-.369[b]	-3.605	.001	-.393	.630
	INDEX	.675[b]	5.418	.000	.541	.356
	EFFICIEN	-.010[b]	-.109	.913	-.013	.995
	CREDRISK	-.029[b]	-.332	.741	-.039	.987
	DFLTRATE	-.022[b]	-.249	.804	-.030	.970
	QUIKRATI	.044[b]	.485	.629	.058	.964
	MKTSHAR1	-.095[b]	-1.077	.285	-.127	.991
	MKTSHAR2	-.099[b]	-1.122	.266	-.132	.986
	CASHRATI	.421[b]	3.260	.002	.361	.407
3	FOREX	.128[c]	.793	.430	.094	.214
	EFFICIEN	.016[c]	.207	.837	.025	.991
	CREDRISK	-.022[c]	-.290	.773	-.035	.987
	DFLTRATE	-.005[c]	-.066	.947	-.008	.969
	QUIKRATI	.036[c]	.467	.642	.056	.964
	MKTSHAR1	-.154[c]	-2.095	.040	-.243	.971
	MKTSHAR2	-.158[c]	-2.140	.036	-.248	.967
	CASHRATI	-.101[c]	-.583	.562	-.069	.184
4	FOREX	.114[d]	.723	.472	.087	.213
	EFFICIEN	.057[d]	.751	.455	.090	.933
	CREDRISK	.013[d]	.168	.867	.020	.941
	DFLTRATE	.014[d]	.190	.850	.023	.954
	QUIKRATI	.004[d]	.056	.956	.007	.926
	MKTSHAR1	-.042[d]	-.161	.872	-.019	7.890E-02
	CASHRATI	-.085[d]	-.500	.619	-.060	.184

a. Predictors in the Model: (Constant), INFLATIO

b. Predictors in the Model: (Constant), INFLATIO, TBILL

c. Predictors in the Model: (Constant), INFLATIO, TBILL, INDEX

d. Predictors in the Model: (Constant), INFLATIO, TBILL, INDEX, MKTSHAR2

e. Dependent Variable: BASERATE

Casewise Diagnostics[a]

Case Number	Std. Residual	BASERATE
11	-4.562	-2.02
21	-3.265	-1.83

a. Dependent Variable: BASERATE

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-1.8124	-1.2632	-1.5476	.1479	75
Residual	-.5297	.2274	-2.37E-15	.1129	75
Std. Predicted Value	-1.790	1.923	.000	1.000	75
Std. Residual	-4.562	1.958	.000	.973	75

a. Dependent Variable: BASERATE

APPENDIX 4

Regression Results Using Pre-Selected Predictors

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	MKTSHAR2, INFLA TIO, CASHRATI, TBILL, INDEX, MKTSH,-R1, FOREX		Enter
2		MKTSHAR1	Backward (criterion: Probability Of F-to-remov e >= .100).

a. All requested variables entered. b. Dependent Variable: BASERATE

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of The Estimate	Durbin- Watson
1	.806a	.649	.613	.1158	
2	.806b	.649	.618	.1150	2.310

a. Predictors: (Constant), MKTSHAR2, INFLATIO, CASHRATI, TBILL, INDEX, MKTSHAR1, FOREX b. Predictors: (Constant), MKTSHAR2, INFLATIO, CASHRATI, TBILL, INDEX, FOREX c. Dependent Variable: BASERA TE

ANOVA[C]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.664	7	.238	17.717	.000[a]
	Residual	.899	67	1.342E-02		
	Total	2.563	74			
2	Regression	1.663	6	.277	20.958	.000[b]
	Residual	.899	68	1.323E-02		
	Total	2.563	74			

a. Predictors: (Constant), MKTSHAR2, INFLATIO, CASHRATI, TBILL, INDEX, MKTSHAR1, FOREX

b. *Predictors: (Constant), MKTSHAR2, INFLA no, CASHRA TI, TBILL, INDEX, FOREX*

c. Dependent Variable: BASERATE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-18.506	7.005		-2.642	.010
	INFLATIO	.145	.048	.686	3.000	.004
	TBILL	-1.028	.403	-1.732	-2.549	.013
	FOREX	2.914	1.665	2.110	1.750	.085
	INDEX	.898	.237	1.281	3.787	.000
	MKTSHAR1	-7.195E-03	.034	-.054	-.209	.835
	CASHRATI	1.856	1.112	2.166	1.668	.100
	MKTSHAR2	-1.491E-02	.036	-.107	-.415	.680
2	(Constant)	-18.476	6.954		-2.657	.010
	INFLATIO	.145	.048	.686	3.020	.004
	TBILL	-1.027	.401	-1.730	-2.565	.013
	FOREX	2.911	1.653	2.107	1.761	.083
	INDEX	.896	.235	1.278	3.809	.000
	CASHRATI	1.856	1.105	2.165	1.680	.098
	MKTSHAR2	-2.212E-02	.010	-.159	-2.176	.033

a. Dependent Variable: BASERATE

Excluded Variables[b]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
2	MKTSHAR1	-.054[a]	-.209	.835	-.026	7.861E-02

a. Predictors in the Model: (Constant), MKTSHAR2, INFLATIO, CASHRATI, TBILL, INDEX, FOREX

b. Dependent Variable: BASERATE

Casewise Diagnostics[a]

Case Number	Std. Residual	BASERATE
11	-4.286	-2.02
21	-3.711	-1.83

a. Dependent Variable: BASERATE

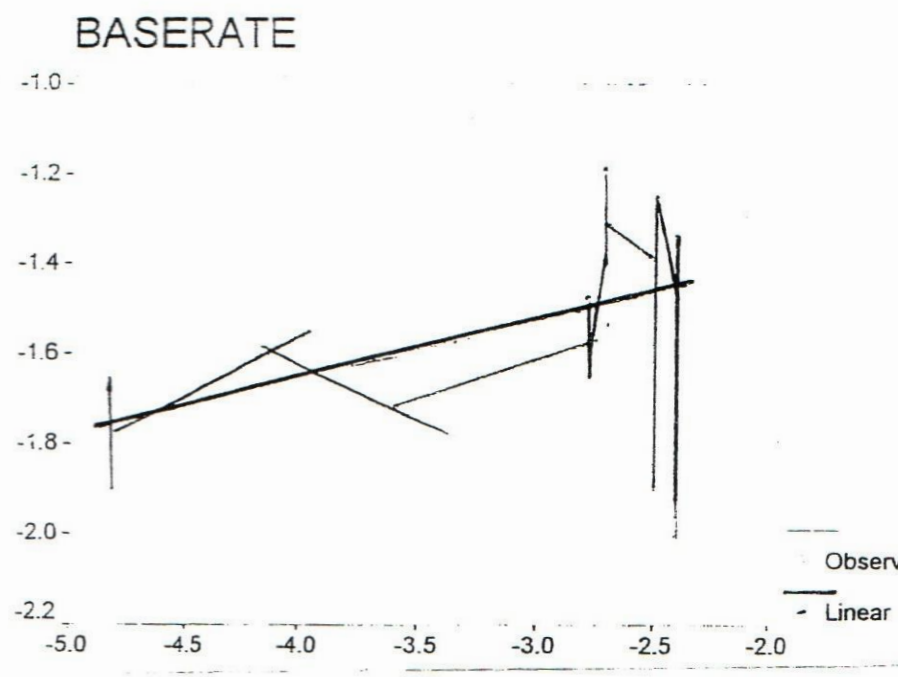
Residuals Statistics[a]

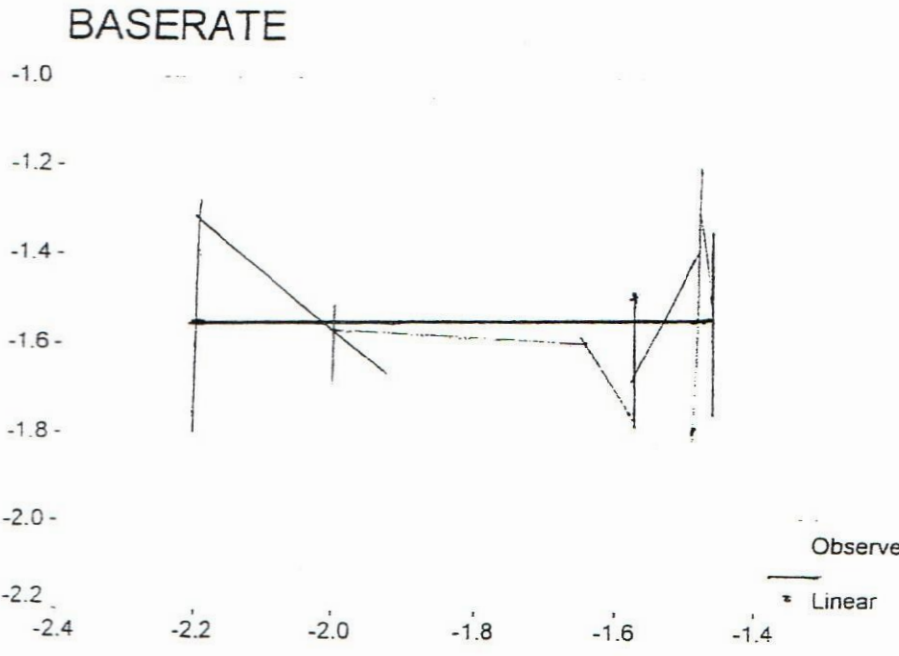
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-1.8096	-1.2742	-1.5476	.1499	75
Residual	-.4930	.1935	2.517E-16	.1102	75
Std. Predicted Value	-1.748	1.824	.000	1.000	75
Std. Residual	-4.286	1.683	.000	.959	75

a. Dependent Variable: BASERATE

APPENDIX 5

Curve Estimation Using Logarithmic Data By SPSS

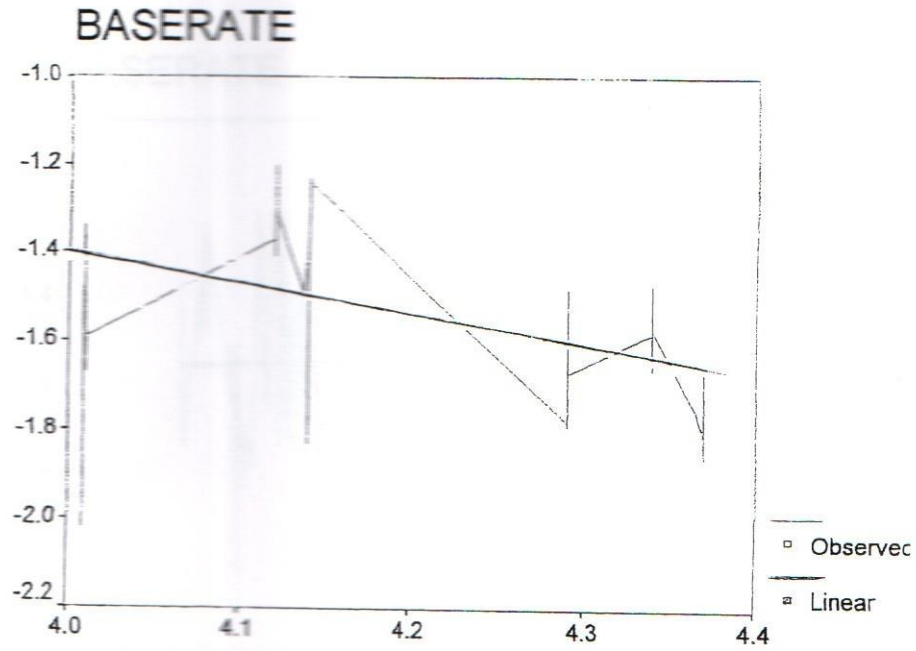




MODEL: MOD_14.

Independent: FOREX

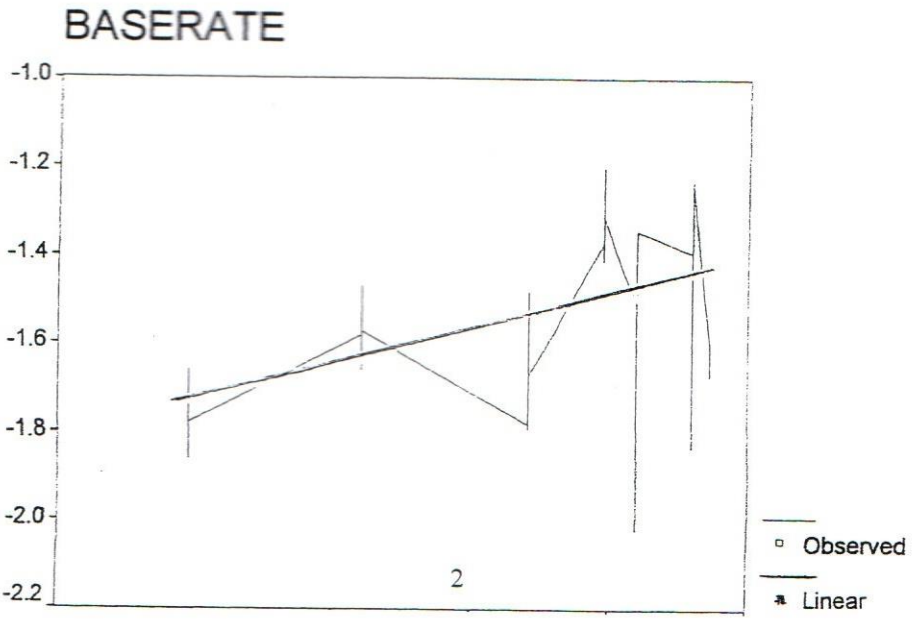
Dependent	Mth	Rsq	d.f.	F	Sigf	b0	b1
BASERATE	LIN	.238	73	22.77	.000	1.2920	-.6735



MODEL: MOD_15.

Independent: NSE20

Dependent	Mth	Rsq	d.f.	F	Sigf	b0	b1
BASERATE	LIN	.320	73	34.38	.000	-4.6540	.3968

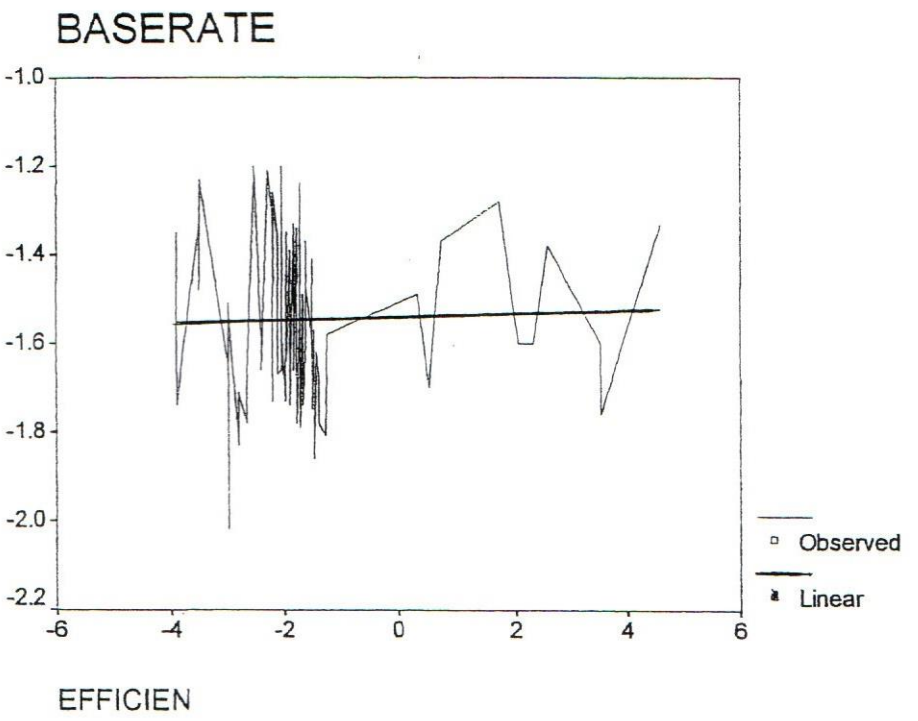


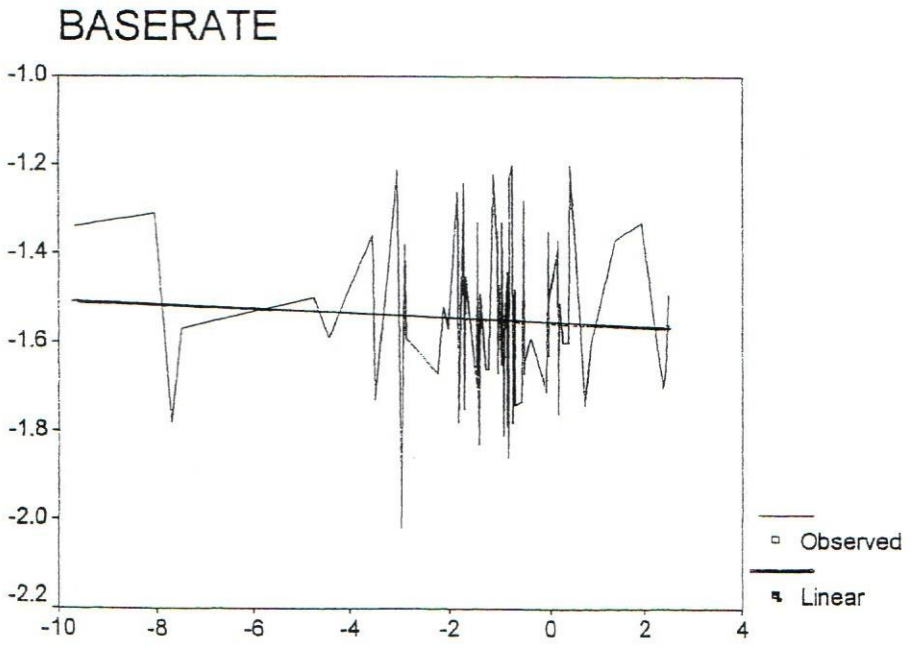
NSE2

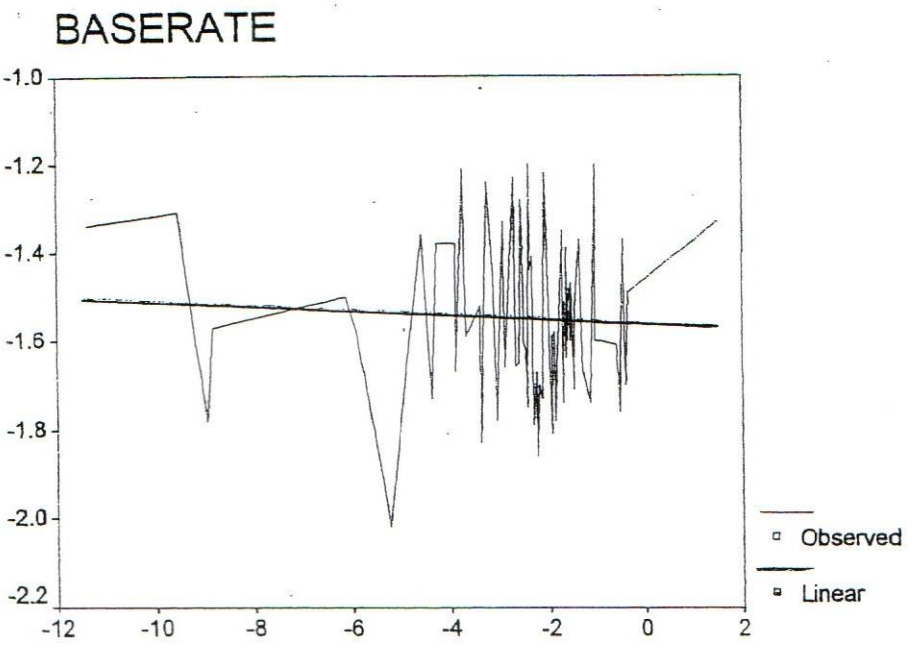
MODEL: MOD_16.

Independent: EFFICIEN

Dependent	Mth	Rsq	d.f.	F	Sigf	b0	b1
BASERATE	LIN	.001	73	.09	.766	-1.5415	.0039



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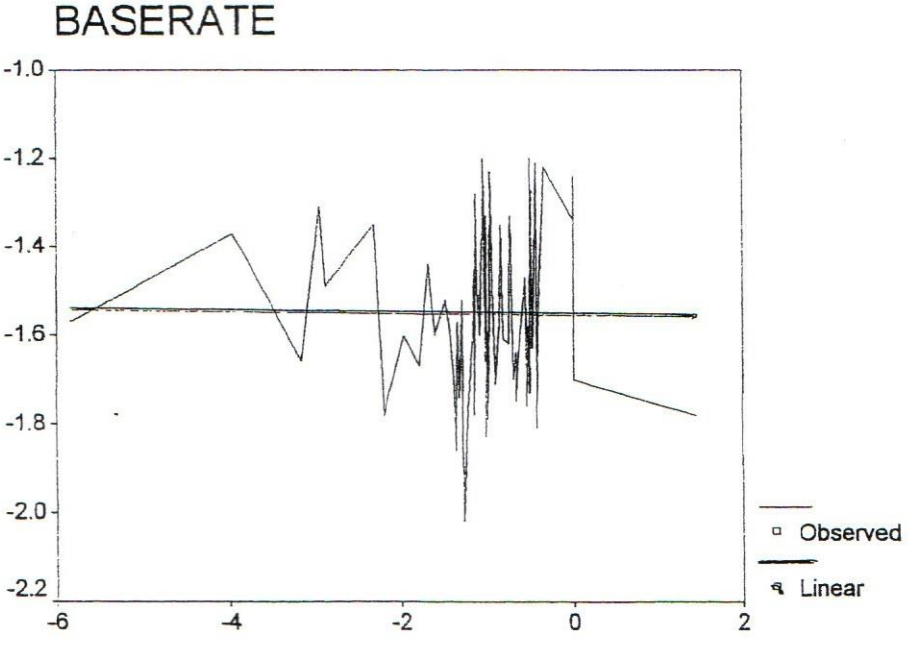
-1.4
-1.6
-1.8
-2.0
-2.2
-12
-10
-8
-6
-4
-2
0
2
Observed
Linear
DFLTRATE


BASERATE
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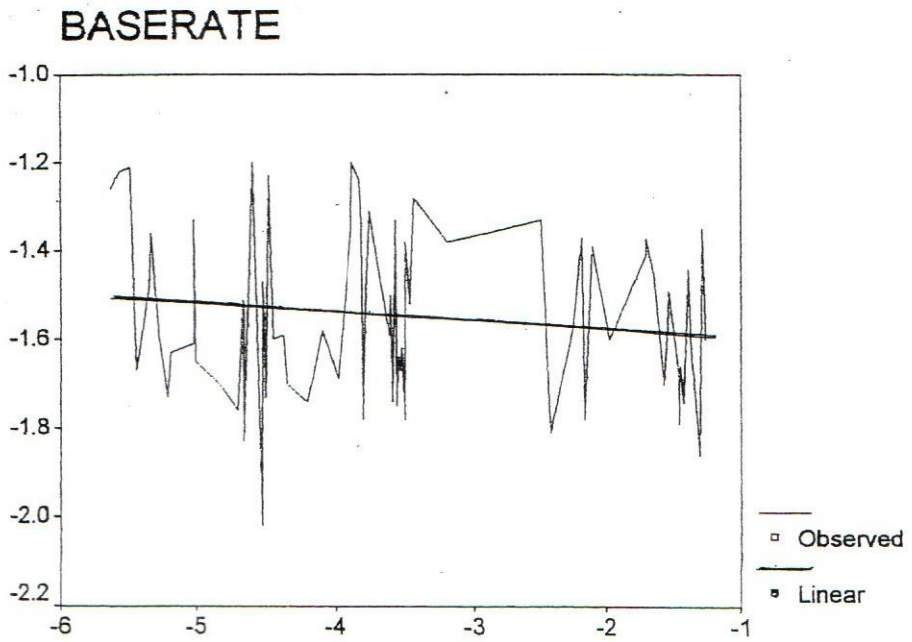
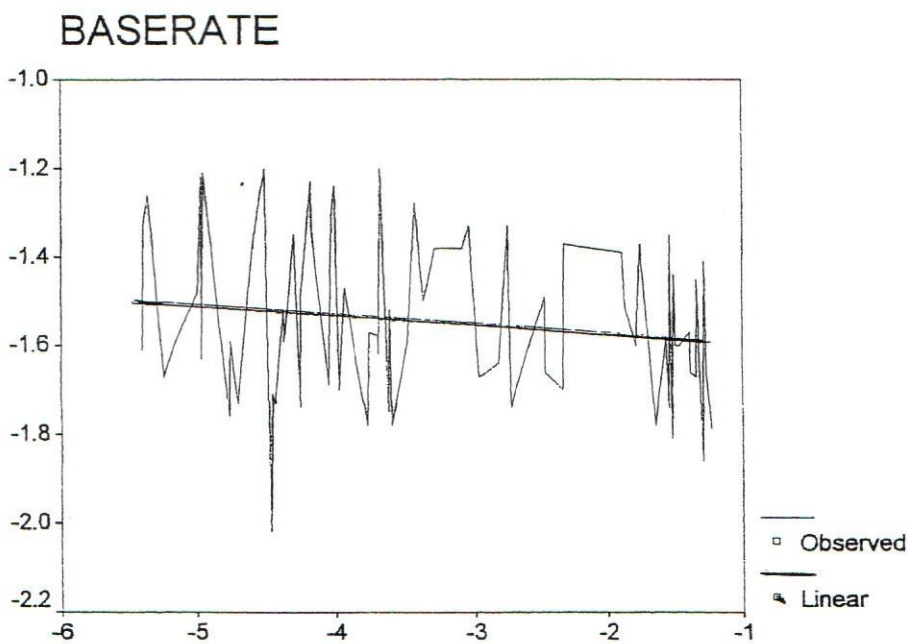
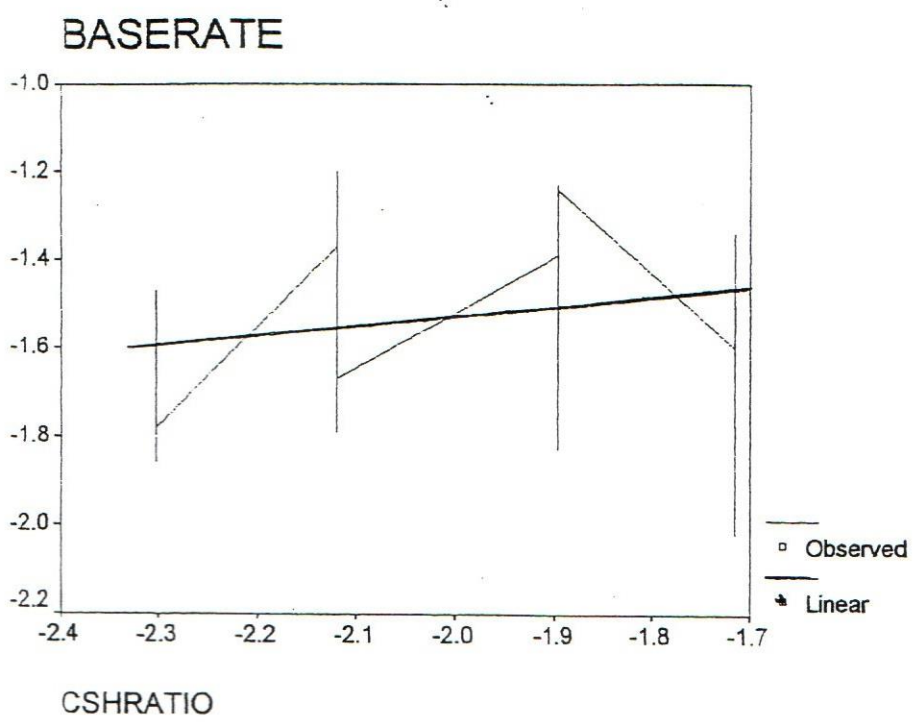
-1.2
-1.4
-1.6
-1.8
-2.0
-2.2
-6
-4
-2
0
2
Observed
Linear
Q_RATIO



MRKTSHA1



MKTSHAR2


BASERATE
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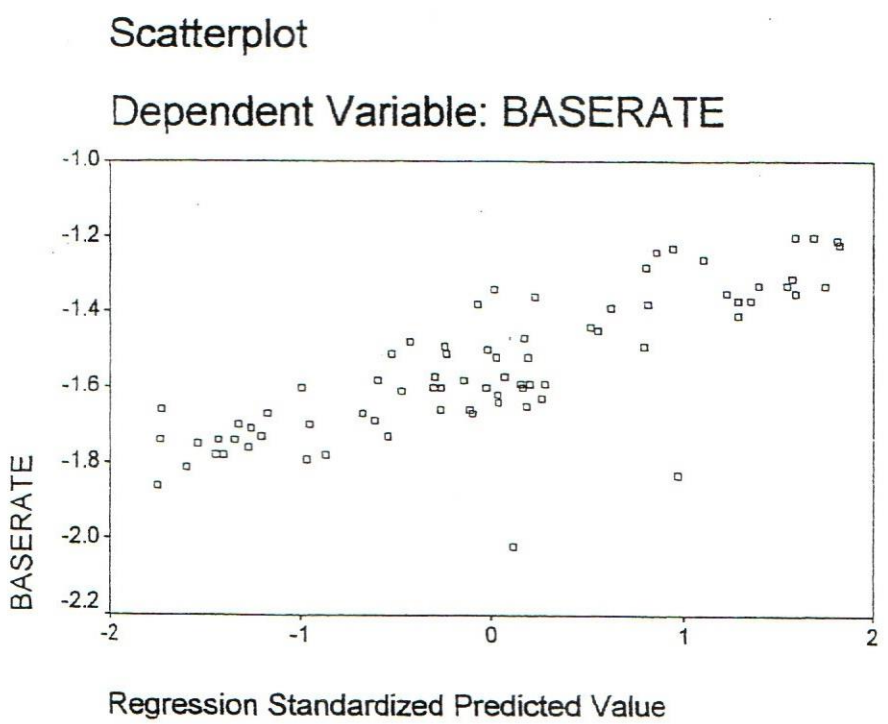
-1.2
-1.4
-1.6
-1.8
-2.0
-2.2
-2.4
-2.3
-2.2
-2.1
-2.0
-1.9
-1.8
-1.7
Observed
Linear
CSHRATIO


Scatterplot
Dependent Variable: BASERATE
-1.0
-1.2
-1.4
-1.6
-1.8
-2.0
-2.2
BASERATE
-2
-1
0
1
2
Regression Standardized Predicted Value

APPENDIX 6
Processed Data

Year	bank	Base rates	Infl	T-bill	Forex	Share Index	Eff 1	Eff 2	Crisk	Drate	Qratio	Mksh1	Mksh2	H-H1	H-H2	Crati o
1995	STD CHART	0.20	0.02	0.19	55.34	3446.90	0.39	0.20	132.55	0.20	0.31	0.14	0.17	0.17	0.18	0.18
1995	BARCLA YS	0.19	0.02	0.19	55.34	3446.90	0.43	0.25	10.64	0.02	0.17	0.23	0.26	0.17	0.18	0.18
1995	RCB	0.19	0.02	0.19	55.34	3446.90	0.26	0.13	27.22	0.05	0.35	0.26	0.25	0.17	0.18	0.18
1995	NBK	0.19	0.02	0.19	55.34	3446.90	0.27	0.10	0.00	0.00	0.11	0.15	0.10	0.17	0.18	0.18
1995	co-oP	0.20	0.02	0.19	55.34	3446.90	0.51	0.06	14.94	0.05	0.00	0.05	0.05	0.17	0.18	0.18
1995	CFC	0.20	0.02	0.19	55.34	3446.90	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	0.00	0.02	0.17	0.18	0.18
1995	NIC	0.24	0.02	0.19	55.34	3446.90	0.08	0.22	0.00	0.00	0.08	0.05	0.04	0.17	0.18	0.18
1995	BIASHARA	0.24	0.02	0.19	55.34	3446.90	0.18	0.11	0.00	0.00	0.56	0.00	0.01	0.17	0.18	0.18
1995	CEL	0.17	0.02	0.19	55.34	3445.90	0.11	0.06	0.00	0.00	0.67	0.01	0.01	0.17	0.18	0.18
1995	DIAMOND T	0.23	0.02	0.19	55.34	3446.90	#VALUE!	#VALUE!	0.00	0.00	0.35	0.05	0.05	0.17	0.18	0.18
1995	ABC	0.24	0.02	0.19	55.34	3446.90	0.04	0.16	0.00	0.00	0.49	0.01	0.02	0.17	0.18	0.18
1995	CONSOLIDATED	0.19	0.02	0.19	55.34	3446.90	0.38	0.02	0.00	0.00	0.32	0.01	0.01	0.17	0.18	0.18
1995	IMPERIAL	0.11	0.02	0.19	55.34	3446.90	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	0.00	0.00	0.17	0.18	0.18
1995	CBA	0.20	0.02	0.19	55.34	3446.90	0.36	0.22	1. 17	0.00	0.36	0.03	0.03	0.17	0.18	0.18
1995	1 at AMERICAN	0.24	0.02	0.19	55.34	3446.90	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	0.00	0.00	0.17	0.18	0.18
1996	STD CHART	0.22	0.09	0.23	55.02	3116.80	0.38	0.18	121. 82	0.20	0.32	0.13	0.15	0.15	0.16	0.18
1996	BARCLAYS	0.21	0.09	0.23	55.02	3116.80	0.43	0.23	13.03	0.03	0.26	0.21	0.25	0.15	0.16	0.18
1996	KCB	0.21	0.09	0.23	55.02	3116.80	0.26	0.09	34.09	0.08	0.33	0.23	0.23	0.15	0.16	0.18
1996	NBK	0.21	0.09	0.23	55.02	3116.80	0.29	0.09	0.00	0.00	0.05	0.15	0.11	0.15	0.16	0.18
1996	CO-OP	0.22	0.09	0.23	55.02	3116.80	0.47	0.04	18.92	0.06	0.00	0.06	0.05	0.15	0.16	0.18
1996	CFC	0.22	0.09	0.23	55.02	3116.80	0.22	0.16	0.00	0.00	0.24	0.03	0.02	0.15	0.16	0.18
1996	NIC	0.26	0.09	0.23	55.02	3115.80	0.06	0.17	0.00	0.00	0.07	0.06	0.04	0.15	0.16	0.18
1996	BIASHARA	0.26	0.09	0.23	55.02	3116.80	0.19	0.12	2.86	0.01	0.63	0.00	0.01	0.15	0.16	0.18
1996	CBL	0.19	0.09	0.23	55.02	3116.80	0.13	0.05	37.09	0.07	0.50	0.01	0.01	0.15	0.16	0.18
1996	DIAMOND T	0.25	0.09	0.23	55.02	3116.80	0.14	-0.08	15.96	0.02	0.36	0.04	0.05	0.15	0.16	0.18
1996	ABC	0.26	0.09	0.23	55.02	3116.80	0.03	0.08	68.26	0.08	0.41	0.02	0.02	0.15	0.16	0.18
1996	CONSOLIDATED	0.21	0.09	0.23	55.02	3116.80	0.47	0.15	0.00	0.00	0.48	0.01	0.01	0.15	0.16	0.18
1996	IMPERIAL	0.13	0.09	0.23	55.02	3116.80	0.14	0.05	5.14	0.01	0.28	0.01	0.01	0.15	0.16	0.18
1996	CBA	0.22	0.09	0.23	55.02	3116.80	0.27	0.18	0.86	0.00	0.38	0.03	0.03	0.15	0.16	0.18
1996	1st AMERICAN	0.26	0.09	0.23	55.02	3116.80	0.17	0.17	0.01	0.00	-0.03	0.02	0.02	0.15	0.16	0.18
1997	STD CHART	0.25	0.08	0.23	62.63	3364.90	0.38	0.15	113.15	0.19	0,34	0.12	0.15	0.15	0.16	0.15

YEAR	BANK	BASE L/RATES	INFLATION	T-BILL %	FOREX SHS/$	SHARE INDEX	EFF1	EFF2	CRISK	DRATE	Q-RATIO(%)	Mksh 1	Mksh 2	H-H 1	H-H 2	Cratio
1997	BARCLAYS	0.24	0.08	0.23	62.63	3364.90	0.42	0.22	18.43	0.04	0.31	0.19	0.26	0.15	0.16	0.15
1997	KCB	0.24	0.08	0.23	62.63	3364.90	0.28	0.15	41.90	0.09	0.19	0.25	0.22	0.15	0.16	0.15
1997	HBR	0.24	o.oB	0.23	62.63	3364.90	0.25	0.06	0.00	0.00	0.05	0.17	0.12	0.15	0.16	0.15
1997	CO-OP	0.24	o.OB	0.23	62.63	3364.90	0.45	0.07	17.90	0.04	0.00	0.07	0.06	0.15	0.16	0.15
1997	CFC	0.25	0.08	0.23	62.63	3364.90	0.22	0.19	24.44	0.08	0.39	0.02	0.01	0.15	0.16	0.15
1997	NIC	0.29	0.08	0.23	62.63	3364.90	0.07	0.19	0.00	0.00	0.16	0.05	0.03	O. 15	0.16	0.15
1997	BIASHARA	0.28	0.08	0.23	62.63	3364.90	0.25	0.11	15.77	0.07	0.63	0.00	0.00	0.15	0.16	0.15
1997	CBL	0.22	(1. 03	0.23	62.S3	3364.90	0.17	0.07	0.00	0.00	0.67	0.00	0.01	0.15	0.16	0.15
1997	DIAMOND T	0.28	0.08	0.23	62.63	3364.90	0.17	-0.18	57.48	0.07	0.32	0.03	0.03	0.15	0.16	0.15
1997	ABC	0.29	0.08	0.23	62.63	3364.90	0.23	0.03	43.58	0.06	0.38	0.01	0.02	0.15	0.16	0.15
1997	CONSOLIDATED	0.24	0.08	0.23	62.63	3364.90	0.49	0.05	0.00	0.00	0.59	0.01	0.00	0.15	0.16	0.15
1997	IMPERIAL	0.16	0.08	0.23	62.63	3364.90	0.12	0.06	23.90	0.03	0.36	0.01	0.01	0.15	0.16	0.15
1997	CBA	0.25	0.08	0.23	62.63	3364.90	0.27	0.17	5.55	0.01	0.35	0.03	0.04	0.15	0.16	0.15
1997	1st AMERICAN	0.29	0.08	0.23	52.63	3364.90	0.17	0.18	17.80	0.04	0.00	0.02	0.02	0.15	0.16	0.15
1998	STD CHART	0.25	0.07	0.11	61.83	2972.35	0.38	0.20	115.50	0.24	0.47	0.11	0.17	0.17	0.17	0.12
1998	BARCLAYS	0.25	0.07	0.11	61. 83	2972.35	0.42	0.22	34.03	0.09	0.35	0.18	0.28	0.17	0.17	0.12
1998	KCB	0.26	0.07	0.11	61. 83	2972.35	0.32	0.02	94.69	0.17	0.10	0.28	0.22	0.17	0.17	0.12
1998	NEK	0.25	0.07	0.11	61.83	2972.35	0.30	-0.48	392.39	0.63	0.02	0,18	0.10	0.17	0.17	0.12
1998	CO-OP	0.26	0.07	0.11	61. 83	2972.35	0.39	-0.01	37.12	0.05	0.00	0.08	0.06	0.17	0.17	0.12
1998	CFC	0.26	0.07	0.11	61. 83	2972.35	0.31	0.14	34.19	0.13	0.43	0.02	0.01	0.17	0.17	0.12
1998	NIC	0.29	0.07	0.11	61. 83	2972.35	0.15	0.16	0.00	0.00	0.21	0.04	0.03	0.17	0.17	0.12
1998	BIASHARA	0.30	0.07	0.11	61.83	2972.35	0.29	0.10	4.70	0.02	0.64	0.00	0.01	0.17	0.17	0.12
1998	CBL	0.30	0.07	0.11	61.83	2972.35	0.18	0.08	31.56	0.12	0.71	0,00	0.01	0.17	0.17	0.12
1998	DIAMOND T	0.30	0.07	0.11	61. 83	2972.35	0.23	0.13	151.41	0.34	0.60	0.02	0.03	0.17	0.17	0.12
1998	ABC	0.29	0.07	0.11	61. 83	2972.35	0.26	0.03	0.00	0.00	0.36	0.01	0.01	0.17	0.17	0.12
1998	CONSOLIDATED	0.27	0.07	0.11	61. 83	2972.35	0.61	0.03	690.44	4.55	0.48	0.01	0.00	0.17	0.17	0.12
1998	IMPERIAL	0.30	0.07	0.11	61. 83	2972.35	0.16	0.08	46.51	0.09	0.35	0.01	0.01	0.17	0.17	0.12
1998	CBA	0.27	0.07	0.11	61.83	2972.35	0.28	0.16	23.00	0.07	0.36	0.03	0.05	0.17	0.17	0.12
1998	1st AMERICAN	0.27	0.07	0.11	61. 83	2972.35	0.18	0.11	0.03	0.00	0.05	0.02	0.02	0.17	0.17	0.12
1999	STD CHART	0.17	0.04	0.21	72.93	2637.10	0.41	0.25	46.77	0.15	4.37	0.12	0.19	0.19	0.19	0.12
1999	BARCLAYS	0.17	0.04	0.21	72.93	2637.10	0.56	0.18	42.20	0.10	0.37	0.23	0.29	0.19	0.19	0.12
1999	KCS	0.20	0.04	0.21	72.93	2637.10	0.45	-0.11	236.77	0.35	0.14	0.28	0.23	0.19	0.19	0.12
1999	NBK	0.18	0.04	0.21	72.93	2637.10	0.54	-0.59	1085.15	0.66	0.00	0.21	0.10	0.19	0.19	0.12
1999	CO-OP	0.19	0.04	0.21	72.93	2637.10	#VALUE	#VALUE!	#VALUE!	#VALUE	#VALUE!	0.00	0.00	0.19	0.19	0.12
1999	CFC	0.18	0.04	0.21	72.93	2637.10	0.68	0.15	23.24	0.10	0.51	0.02	0.02	0.19	0.19	0.12
1999	NIC	0.15	0.04	0.21	72.93	2637.10	0.23	0.21	16.62	0.06	#VALUE!	0.03	0.03	0.19	0.19	0.12

YEAR	BANK	AVG BASE L RATES	INFLATION	T BILL %	FOREX SHS.$	SHARES INDEX	EFF1 OP. TOTAL IN	EFF2 PAT. INCOME	CRISK NPL/CAPIT	DRATE NPL/ADVA	Q-RATIO CSH&EQUI (%)	MARKET SHARE1	MARKET SHARE2	HI-INDEX	HI-INDEX	CASHRATIO
1999	BIASHARA	0.21	0.04	0.21	72.93	2637.10	0.43	0.13	#VALUE!	0.01	0.74	0.00	0.01	0.19	0.19	0.12
1999	CBL	0.23	0.04	0.21	72.93	2637.10	0.27	0.03	48.84	0.20	0.34	0.00	0.01	0.19	0.19	0.12
1999	DIAMOND T	0.21	0.04	0.21	72.93	2637.10	0.38	0.11	39.90	0.15	0.42	0.02	0.02	0.19	0.19	0.12
1999	ABC	0.22	0.04	0.21	72.93	2637.10	0.34	0.05	95.52	0.18	0.33	0.01	0.01	0.19	0.19	0.12
1999	CONSOLIDATED	0.20	0.04	0.21	72.93	2637.10	7.88	0.05	71.08	0.55	0.44	0.01	0.00	0.19	0.19	0.12
1999	IMPERIAL	0.18	0.04	0.21	72.93	2637.10	0.21	0.11	55.53	0.11	0.36	0.01	0.01	0.19	0.19	0.12
1999	CBA	0.19	0.04	0.21	72.93	2637.10	0.39	0.17	34.53	0.10	0.51	0.03	0.05	0.19	0.19	0.12
1999	1st AMERICAN	0.21	0.04	0.21	72.93	2637.10	0.28	0.14	0.05	0.00	#VALUE!	0.02	0.03	0.19	0.19	0.12
		0.00	0.00	0.00			#VALUE!	#VALUE!	#VALUE!	0.29	#VALUE!			0.19	0.19	
2000	STD CHART	0.21	0.06	0.14	76.54	2070.32	0.38	0.29	42.48	0.15	0.58	0.10	0.21	0.19	0.19	0.10
2000	BARCLAYS	0.19	0.06	0.14	76.54	2070.32	0.51	0.16	28.82	0.07	0.30	0.26	0.28	0.19	0.19	0.10
2000	KCB	0.20	0.06	0.14	76.54	2070.32	0.42	-0.03	146.95	0.21	0.20	0.25	0.22	0.19	0.19	0.10
2000	NBK	0.23	0.06	0.14	76.54	2070.32	0.59	-0.72	1209.63	0.70	0.06	0.22	0.08	0.19	0.19	0.10
2000	CO-OP	0.20	0.06	0.14	76.54	2070.32	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	0.00	0.00	0.19	0.19	0.10
2000	CFC	0.22	0.06	0.14	76.54	2070.32	0.63	0.13	11.82	0.03	0.23	0.03	0.03	0.19	0.19	0.10
2000	NIC	0.20	0.06	0.14	76.54	2070.32	0.29	0.24	18.23	0.08	0.47	0.03	0.03	0.19	0.19	0.10
2000	BIASHARA	0.20	0.06	0.14	76.54	2070.32	0.45	0.13	5.68	0.02	0.66	0.01	0.01	0.19	0.19	0.10
2000	CBL	0.20	0.06	0.14	76.54	2070.32	0.27	0.09	95.19	0.32	0.61	0.01	0.01	0.19	0.19	0.10
2000	DIAMOND T	0.23	0.06	0.14	76.54	2070.32	0.43	0.20	35.46	0.21	0.56	0.01	0.02	0.19	0.19	0.10
2000	ABC	0.22	0.06	0.14	76.54	2070.32	0.34	0.05	113.98	0.23	0.28	0.01	0.01	0.19	0.19	0.10
2000	CONSOLIDATED	0.20	0.06	0.14	76.54	2070.32	0.97	-0.13	95.13	0.38	0.44	0.01	0.01	0.19	0.19	0.10
2000	IMPERIAL	0.20	0.06	0.14	76.54	2070.32	0.24	0.13	67.07	0.14	0.24	0.01	0.01	0.19	0.19	0.10
2000	CBA	0.19	0.06	0.14	76.54	2070.32	0.42	0.14	59.11	0.19	0.50	0.03	0.06	0.19	0.19	0.10
2000	1st AMERICAN	0.21	0.06	0.14	76.54	2070.32	0.29	0.09	0.06	0.00	0.00	0.02	0.02	0.19	0.19	0.10
2001	STD CHART	0.16	0.01	0.11	78.67	1624.80	0.39	0.28	38.74	0.14	0.65	0.09	0.22	0.20	0.18	0.10
2001	BARCLAYS	0.16	0.01	0.11	78.67	1624.80	0.47	0.23	43.14	0.10	0.26	0.27	0.27	0.20	0.18	0.10
2001	KCB	0.18	0.01	0.11	78.67	1624.80	0.50	0.02	206.76	0.31	0.25	0.24	0.21	0.20	0.18	0.10
2001	NBK	0.19	0.01	0.11	78.67	1624.80	0.46	0.09	1151.51	0.68	0.04	0.23	0.08	0.20	0.18	0.10
2001	CO-OP	0.17	0.01	0.11	78.67	1624.80	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	0.00	0.00	0.20	0.18	0.10
2001	CFC	0.17	0.01	0.11	78.67	1624.80	0.57	0.07	16.17	0.05	0.31	0.03	0.03	0.20	0.18	0.10
2001	NIC	0.17	0.01	0.11	78.67	1624.80	0.36	0.22	17.88	0.08	0.51	0.03	0.03	0.20	0.18	0.10
2001	BIASHARA	0.18	0.01	0.11	78.67	1624.80	0.46	0.15	2.99	0.01	0.59	0.01	0.01	0.20	0.18	0.10
2001	CBL	0.19	0.01	0.11	78.67	1624.80	0.26	0.12	58.59	0.27	0.52	0.00	0.01	0.20	0.18	0.10
2001	DIAMOND T	0.18	0.01	0.11	78.67	1624.80	0.53	0.07	22.74	0.11	0.49	0.01	0.02	0.20	0.18	0.10
2001	ABC	0.18	0.01	0.11	78.67	1624.80	0.35	0.06	91.09	0.22	0.40	0.01	0.01	0.20	0.18	0.10
2001	CONSOLIDATED	0.17	0.01	0.11	78.67	1624.80	0.79	-0.03	118.02	0.59	0.58	0.01	0.01	0.20	0.18	0.10
2001	IMPERIAL	0.18	0.01	0.11	78.67	1624.80	0.28	0.15	50.12	0.11	0.27	0.01	0.01	0.20	0.18	0.10
2001	CBA	0.18	0.01	0.11	78.67	1624.80	0.42	0.19	49.20	0.18	0.57	0.03	0.06	0.20	0.18	0.10
2001	1st AMERICAN	0.17	0.01	0.11	78.67	1624.80	0.31	0.17	-0.05	0.00	0.11	0.02	0.02	0.20	0.18	0.10

Appendix 7 - Logarithmic Data

SE	INFLAT	T-BILL	FOREX SHS/$	SHARES INDEX	EFFI C I	CREDIT RISK	DEFAULT RATE	Q-RATIO	MARKET SHARE	MARKET SHARE	H-INDEX	H- INDEX	CASH RATIO
		%						%					
	-4.14	-1.G5	4.01	8.145	-1.61	0.28	-1.63	-1.17	-1.97	-1.79	-1.72	-1.77	-1.71
	-4.14	-1. 65	4.01	8.145	-1.39	-2.24	-3.89	-1. 79	-1.46	-1.34	-1."11	-1.77	-1.71
	-4.14	-1.65	4.01	8.145	-2.04	-1. 30	-2.91	-1. 04	-1.36	-1.38	-1.71	-1.77	-1.71
	-4.14	-1.65	4.01	8.145	-1.51	-4.45	-5.88	-1.01	-3.61	-3.47	-1.71	-1.77	-1.71
	-2.4	-1.47	4.008	8.04	-1.71	0.20	-1.63	-1.13	-2.03	-1. 87	-183	-1.90	-1.71
	-2.4	-1.47	4.008	8.04	-1.47	-2.04	-3.61	-1. 35	-1. 55	-1.39	-183	-1.90	-1.71
	-2.4	-1.47	4.008	8.04	-2.41	-1. 08	-Z.55	-1. 10	-1.49	-1.46	-183	-1.90	-1.71
	-2.4	-1.47	4.008	8.04	-2.12	-3.55	-4.59	-0.46	-5.33	-4.59	-183	-1. 90	-1.71
	-2.4	-1.47	4.008	8.04	-2.99	-0.99	-2.64	-0.69	-5.01	-4.74	-1.83	-1. 90	-1.71
	-2.4	-1.47	4.008	8.04	2.53	-1.84	-3.90	-1.03	-3.20	-3.09	-183	-1. 90	-1.71
	-2.4	-1.47	4.008	8.04	-2.99	-2.97	-5.25	-1.28	-4.53	-4.47	-1.83	-1. 90	-1.71
	-2.4	-1. 469	4.008	8.04	-1.71	-4.76	-6.13	-0.98	-3.60	-3.36	-183	-1. 90	-1.71
	-2.4	-1.47	4.008	8.04	-1.77	-9.70	-11.38	0.00	-3.80	-4.18	-183	-1.90	-1.71
	-2.5	-1.49	4.14	8.12	-1. 90	0.12	-1. 66	-1. 08	-2.10	-1. 89	-1.83	-1. 90	-1.90
	-2.5	-1.49	4.14	8.12	-1.51	-1. 69	-3.16	-1. 16	-1.65	-1.34	-183	-1. 90	-1. 90
	-2.5	-1.49	4.14	8.12	-1. 90	-0.87	-2.43	-1.68	-1. 39	-1.51	-183	-1.90	-1. 90
	-2.5	-1.49	4.137	8.12	-1. 66	-1.41	-2.55	-0.95	-3.78	-4.25	-1.83	-1. 90	-1. 90
	-2.5	-1.49	4.14	8.12	-2.20	-1. 85	-2.73	-0.46	-5.64	-5.36	-183	-1. 90	-1. 90
	-2.5	-1.49	4.14	8.12	1. 71	-0.55	-2.60	-1. 14	-3.43	-3.42	-183	-1.90	-1. 90
	-2.5	-1.49	4.14	8.12	-3.50	-0.83	-2.73	-0.98	-4.48	-4.18	-1.83	-1.90	-1. 90
	-2.5	-1.49	4.14	8.12	-2.81	-1.43	-3.40	-1. 02	-4.66	-4.48	-1.83	-1. 90	-1. 90
	-2.5	-1.49	4.14	8.12	-1.77	-2.89	-4.29	-1.06	-3.49	-3.28	-183	-1. 90	-1.90
	-2.5	-1. 49	4.14	8.12	-1.71	-1. 73	-3.29	0.00	-3.82	-4.01	-183	-1. 90	-1. 90
	-2.72	-2.2	4.12	7.99	-1.61	0.14	-1. 41	-0.75	-2.18	-1.76	-1.77	-1. 77	-2.12
	-2.72	-2.2	4.12	7.99	-1.51	-1.08	-2.37	-1. 05	-1. 71	-1.28	-1.77	-1.77	-2.12
	-2.72	-2.2	4.12	7.99	-3.91	-0.05	-1.75	-2.32	-1. 29	-1.54	-1.77	-1.77	-2.12
	-2.72	-2.2	4.12	7.99	0.73	1. 37	-0.47	-3.97	-1.71	-2.33	-1.77	-1.77	-2.12
	-2.72	-2.2	4.12	7.99	4.60	-0.99	-2.95	0.00	-2.50	-2.76	-1.77	-1.77	-2.12
	-2.72	-2.2	4.12	7.99	-1. 97	-1.07	-2.08	-0.85	-3.88	-4.30	-1.77	-1.77	-2.12
	-2.72	-2.2	4.12	7.99	-2.30	-3.06	-3.75	-0.45	-5.49	-4.96	-1.77	-1.77	-2.12
	-2.72	-2.2	4.12	7.99	-2.53	-1.15	-2.13	-0.34	-5.57	-4.97	-1.77	-1.77	-2.12
	-2.72	-2.2	4.12	7.99	-2.04	0.41	-1.07	-0.51	-3.88	-3.67	-1.77	-1.77	-2.12
	-2.72	-2.2	4. 12	7.99	-3.51	1. 93	1. 51	-0.74	-5.02	-5.40	-1.77	-1.77	-2.12
	-2.72	-2.2	4. 12	7.99	-2.53	-0.77	-2.44	-1. 06	-4.59	-4.51	-1.77	-1.77	-2.12

Y BASE RATES	X1 INFLATION	X2 T-BILL %	X3 FOREX SHS $	X4 SHARES INDEX	X5 EFFICIENC	X6 CREDIT RISK	X7 DEFAULT RATE	X8 Q-RATIO (%)	X9 MARKET SHARE	X10 MARKET SHARE	X11 H-INDEX	X12 H-INDEX	X13 CASHRATIO
-1.69	-3.35	-1.58	4.29	7.88	-1.89	-1.46	-2.29	-0.87	-3.98	-4.05	-1.66	-1.66	-2.12
-1.48	-3.35	-1.58	4.29	7.88	-3.51	-0.72	-1.60	-1.08	-5.35	-4.99	-1.66	-1.66	-2.12
-1.58	-3.35	-1.58	4.29	7.88	-2.21	-0.92	-1.91	-0.87	-4.09	-3.69	-1.66	-1.66	-2.12
-1.51	-3.35	-1.58	4.29	7.88	-2.99	-0.05	-1.70	-1.12	-4.66	-4.35	-1.66	-1.66	-2.12
-1.61	-3.35	-1.58	4.29	7.88	-2.99	-0.34	-0.60	-0.82	-5.02	-5.40	-1.66	-1.66	-2.12
-1.73	-3.35	-1.58	4.29	7.88	-2.21	-0.59	-2.17	-1.02	-4.50	-4.44	-1.66	-1.66	-2.12
-1.67	-3.35	-1.58	4.29	7.88	-1.77	-1.06	-2.29	-0.68	-3.52	-2.97	-1.66	-1.66	-2.12
-1.58	-2.78	-2	4.34	7.64	-1.24	-0.86	-1.91	-0.54	-2.26	-1.57	-1.66	-1.66	-2.30
-1.66	-2.78	-2	4.34	7.64	-1.83	-1.24	-2.70	-1.20	-1.36	-1.26	-1.66	-1.66	-2.30
-1.6	-2.78	-2	4.34	7.64	3.50	0.38	-1.58	-1.61	-1.37	-1.50	-1.66	-1.66	-2.30
-1.49	-2.78	-2	4.34	7.64	0.33	2.49	-0.35	-2.88	-1.54	-2.48	-1.66	-1.66	-2.30
-1.52	-2.78	-2	4.34	7.64	-2.04	-2.14	-3.41	-1.48	-3.46	-3.60	-1.66	-1.66	-2.30
-1.62	-2.78	-2	4.34	7.64	-1.43	-1.70	-2.51	-0.76	-3.51	-3.69	-1.66	-1.66	-2.30
-1.59	-2.78	-2	4.34	7.64	-2.04	-2.87	-3.69	-0.42	-5.28	-4.76	-1.66	-1.66	-2.30
-1.63	-2.78	-2	4.34	7.64	-2.41	-0.05	-1.15	-0.50	-5.19	-4.97	-1.66	-1.66	-2.30
-1.47	-2.78	-2	4.34	7.64	-1.61	-1.04	-1.57	-0.57	-4.52	-3.94	-1.66	-1.66	-2.30
-1.52	-2.78	-2	4.34	7.64	-2.99	0.13	-1.49	-1.29	-4.66	-4.38	-1.66	-1.66	-2.30
-1.6	-2.78	-2	4.34	7.64	2.04	-0.05	-0.96	-0.83	-4.45	-5.17	-1.66	-1.66	-2.30
-1.59	-2.78	-2	4.34	7.64	-2.04	-0.40	-1.95	-1.43	-4.38	-4.37	-1.66	-1.66	-2.30
-1.64	-2.78	-2	4.34	7.64	-1.97	-0.53	-1.66	-0.68	-3.54	-2.83	-1.66	-1.66	-2.30
-1.57	-2.78	-2	4.34	7.64	-2.41	-7.50	-8.83	-5.83	-3.78	-3.75	-1.66	-1.66	-2.30
-1.81	-4.83	-2.21	4.37	7.39	-1.27	-0.95	-1.96	-0.43	-2.42	-1.52	-1.71	-1.61	-2.30
-1.88	-4.83	-2.21	4.37	7.39	-1.47	-0.84	-2.28	-1.36	-1.30	-1.29	-1.71	-1.61	-2.30
-1.74	-4.83	-2.21	4.37	7.39	-3.91	0.73	-1.18	-1.38	-1.42	-1.55	-1.71	-1.61	-2.30
-1.66	-4.83	-2.21	4.37	7.39	-2.41	2.44	-0.39	-3.16	-1.45	-2.47	-1.71	-1.61	-2.30
-1.78	-4.83	-2.21	4.37	7.39	-2.66	-1.82	-3.08	-1.16	-3.49	-3.59	-1.71	-1.61	-2.30
-1.75	-4.83	-2.21	4.365	7.39	-1.51	-1.72	-2.47	-0.67	-3.55	-3.61	-1.71	-1.61	-2.30
-1.73	-4.83	-2.21	4.37	7.39	-1.99	-3.51	-4.38	-0.52	-5.21	-4.70	-1.71	-1.61	-2.30
-1.67	-4.83	-2.21	4.37	7.39	-2.12	-0.53	-1.33	-0.66	-5.45	-5.25	-1.71	-1.61	-2.30
-1.7	-4.83	-2.21	4.37	7.39	-2.66	-1.48	-2.24	-0.71	-4.35	-3.97	-1.71	-1.61	-2.30
-1.71	-4.83	-2.21	4.37	7.39	-2.81	-0.09	-1.51	-0.92	-4.81	-4.46	-1.71	-1.61	-2.30
-1.76	-4.83	-2.21	4.37	7.39	3.50	0.17	-0.53	-0.55	-4.70	-4.77	-1.71	-1.61	-2.30
-1.74	-4.83	-2.21	4.37	7.39	-1.90	-0.69	-2.25	-1.33	-4.20	-4.25	-1.71	-1.61	-2.30
-1.74	-4.83	-2.21	4.37	7.39	-1.66	-0.71	-1.72	-0.56	-3.59	-2.74	-1.71	-1.61	-2.30
-1.78	-4.83	-2.21	4.37	7.39	-1.77	-7.71	-8.96	-2.20	-3.79	-3.76	-1.71	-1.61	-2.30