



MIDLANDS STATE UNIVERSITY



FACULTY OF COMMERCE

DEPARTMENT OF ECONOMICS

The Impact of Micro and Macro-economic Factors on the Profitability of Banks: A
Case of Zimbabwean Banking Sector (2012-2016)

BY

TINASHE SAMANYANGA

R146170P

Supervisor: MR. C. DZINGIRAI

THIS DISSERTATION IS SUBMITTED TO THE DEPARTMENT OF
ECONOMICS IN PARTIAL FULFILMENT OF THE REQUIREMENTS OF
THE BACHELOR OF COMMERCE ECONOMICS HONOURS DEGREE

MAY 2018

GWERU ZIMBABWE

SUPERVISOR’S APPROVAL FORMS

The undersigned certifies that they have supervised the student, Samanyanga Tinashe (R146170P) dissertation entitled: “The Impact of Micro and Macro-Economic Factors on The Profitability of Banks: A Case of Zimbabwean banking sector (2012-2016)”.Submitted in partial fulfilment of the requirements of Bachelor of Commerce Economics Honours Degree at the Midlands State University.

SUPERVISOR’S SIGNATURE

CHAPTER 1

CHAPTER 2

CHAPTER 3

CHAPTER 4

CHAPTER 5

DATE

APPROVAL FORM

The undersigned certify that they have supervised, read and recommend to the Midlands State University for acceptance of a research project entitled: “The Impact of Micro and Macro Economic Factors on The Profitability of Banks: A Case of Zimbabwean banking sector (2012-2016)”. Submitted by Samanyanga Tinashe, in partial fulfilment of the requirements for the Bachelor of Commerce Honours Degree in Economics.

.....

...../...../.....

(Signature of Student)

Date

.....

...../...../.....

(Signature of Supervisor)

Date

.....

...../...../.....

(Signature of Chairperson)

Date

.....

...../...../.....

(Signature of the Examiner(s))

Date

DECLARATION

I, SAMANYANGA TINASHE, do hereby declare that this is a true and unpublished research which presents my own work, and has never been previously submitted for a degree at this or any other university.

.....

Student Signature

.....

Date

DEDICATION

I dedicate this project to my caring and loving family, Mr. N Samanyanga, Mrs. J Samanyanga, my younger sisters Tildah and Tinevimbo not forgetting my younger brother Tinenyasha. My deepest honor and respect for your continuous encouragement and unending support throughout the degree.

ACKNOWLEDGEMENTS

Firstly, I would like to thank the Almighty God for guiding me through the entire duration of the programme and for making me realise my dream of being an economist. My sincere gratitude is expressed to the Samanyanga family for their precious support through the course of the academic research. Furthermore, I would like to show my appreciation to my supervisor Mr C Dzingirai for the continuous support and offering highly expert knowledge, his support proved to be a vital ingredient to the research. Equal thanks also goes to the MSU Economics Department who nurtured my chosen profession. Appreciation also shown to my classmates, my friends, Craig Ndawana, Carrington Kandeya, Lucia Makota, Milden Mawaro, Walter Sithole, Phillipa Mapfumo, Tariro Mupedzisi, Tendai Kadonzvo and Paddington with whom I laboured with. Your support is greatly appreciated and you will be remembered endlessly.

LIST OF ACRONYMS

ADF.....	Augmented Dickey Fuller
BAZ.....	Bankers Association of Zimbabwe
GDP.....	Gross Domestic Product
NPLs.....	Non-performing loans
OLS.....	Ordinary List Squares
RBZ.....	Reserve Bank of Zimbabwe
ZIMSTATS.....	Zimbabwe National Statistics Agency

ABSTRACT

The research sought to establish the impact of micro and macro-economic factors on the profitability of banks in the banking sector of Zimbabwe. The low levels of profitability has been an area of concern. The study covered the period from 2012 to 2016 using monthly time series data employing the Ordinary Least Squares method to ascertain the factors that contribute to profitability as measured by Return on Assets. In the previous period, the profitability of banks have been on an upward trend despite the cash shortages. The major research findings and conclusions is that inflation has a negative impact and Gross domestic Product has a positive impact on the profitability of banks and on Micro economic factors Capital adequacy, Deposits and Liquidity they are all significant at 5% in explaining the profitability of banks. However, Total Equity to total Assets was found not to be significant at 5% and Interest rate was found to be inversely related to the Profitability of banks. The research concluded by urging the government to craft policies that can increase economic growth and continue to use the multicurrency so as to keep inflation low.

Table of Contents

SUPERVISOR’S APPROVAL FORMS2

APPROVAL FORM3

DECLARATION4

DEDICATION5

ACKNOWLEDGEMENTS6

LIST OF ACRONYMS7

ABSTRACT8

LIST OF TABLES13

LIST OF APPENDICES14

LIST OF FIGURES15

CHAPTER 11

INTRODUCTION1

1.0 Introduction1

1.1 Background of the Study1

1.2 Statement of the Problem4

1.3 Research Objectives4

1.4 Research Hypothesis5

1.5 Significance of Study5

1.6 Limitations of the Study.5

1.7 Organisation of the rest of the Study.6

CHAPTER 27

LITERATURE REVIEW7

2.0 Introduction7

2.1 Theoretical Literature Review7

2.1.1 The Loanable Funds Theory7

2.1.2 The Mont-Klein Model8

2.2.3 The Deflation Theory	9
2.2.4 The J-curve Theory	10
2.2 Empirical Literature Review	11
2.3 Conclusion	13
CHAPTER 3	15
METHODOLOGY	15
3.0 Introduction	15
3.1 Model Specification	15
3.2 Justification of variables	16
3.2.1 Deposits (DEP)	16
3.2.1 Liquidity (LQD)	16
3.2.3 Capital Adequacy (CA)	17
3.2.4 Total Equity to Assets (TEA)	17
3.2.5 Inflation Rate (INF)	18
3.2.6 Gross Domestic Product (GDP)	18
3.2.7 Interest Rates (IR)	18
3.3 Data Sources and Characteristics	19
3.4 Diagnostics Tests	19
3.4.1 Stationarity Test	19
3.4.2 Cointegration Tests	19
3.4.3 Normality Test	20
3.4.4 Multicollinearity Test	20
3.4.5 Autocorrelation Test	20
3.4.6 Heteroscedacity Tests	20
3.4.7 Model Specification	21
3.5 Conclusion	21
CHAPTER 4	22

RESULTS PRESENTATION AND INTERPRETATIONS22

4.0 introduction22

4.1 Descriptive Statistics.22

4.2 Results of the Diagnostics Tests22

4.2.1 Unit Root Test22

4.2.3 Cointegration Tests Results23

4.1.4 Results for Multicollinearity Test24

4.1.4 Autocorrelation Test Results.24

4.1.5 Normality Test Results25

4.1.6 Heteroscedasticity Test Results25

4.1.6 Ramsey Reset test25

4.2 Presentation of Results26

4.4 Interpretation of Results27

4.4.1 Liquidity (LQD)27

4.4.2 Deposits (DEP)27

4.4.3 Capital Adequacy (CA)28

4.4.4 Total Equity to Assets (TEA)28

4.4.5 Interest Rates (IR)28

4.4.6 Inflation (INF)29

4.4.7 Gross Domestic Product (GDP)29

4.5 Conclusion30

CHAPTER 530

SUMMARY, CONCLUSIONS AND POLICY RECOMMENDATIONS30

5.0 Introduction.30

5.1 Summary of the Study.30

5.2 Conclusions30

5.3 Policy Implications and Recommendations.31

5.4 Suggestions for Future Studies.32

REFERENCES33

APPENDICES37

LIST OF TABLES

Table 4.1 Summary of Descriptive Statistics.....	21
Table 4.2 Unit Root Tests Results.....	21
Table 4.3 Summary of the Cointegration Test Results.....	22
Table 4.4 Summary of the Multicollinearity Test Results.....	23
Table 4.5 Autocorrelation Test Results.....	23
Table 4.6 Summary of Normality Test Results.....	23
Table 4.7 Summary of Bruesch-Pagan Godfrey Test Results	23
Table 4.8 Summary of Ramsey Reset test for Model Specification.....	24
Table 4.9 Results Summary.....	25

LIST OF APPENDICES

Appendix 1 Dataset.....	35
Appendix 2 Descriptive Statistics.....	36
Appendix 3 Diagnostics Tests.....	36

LIST OF FIGURES

Fig 1.1 Gross Domestic Product for Zimbabwe.....	2
Fig 1.2 Profitability of Banks for the year (2011-2016)	3
Fig 1.3 Inflation Rate Trends (2012-2016)	4

CHAPTER 1

INTRODUCTION

1.0 Introduction

The profitability of Banks can be influenced by various factors, which can be categorized as internal (Micro) and external (macro) factors. The internal factors in this case are the bank specifics that is liquidity, capital adequacy, total equity to assets and deposits and the external factors are characterised by the macro-economic factors that is Gross Domestic Product (GDP), inflation rate and interest rates. Therefore, for the efficient operations and smooth management of financial institutions, both internal and external factors need to be critically examined and analysed to create a well performing and competitive financial institutions. The Reserve Bank of Zimbabwe (RBZ) in 2016, reviewed that the profitability of banks has been affected by the Macroeconomics factors in the previous periods specifically during the hyper Inflation period, which has caused the profitability of banks to decrease from the year 2007 to 2013.

1.1 Background of the Study

Financial performance is referred to as the degree of how a certain achievement of a certain entity has been fulfilled. According to some previous studies by different researchers micro and macro-economic factors influence the performance of banks. Liquidity, deposits and capitalisation are some of the influences that have an effect on the financial performance of banks. Zimbabwean economy is on the road to recovery after a serious economic crisis and plain philanthropic crisis, which affected intensively on the financial sector segment of the economy. There was a significant amplification of the inflation rate in Zimbabwe that is between the period 2000 and 2008. In reference to the Zimbabwe National Statistics Agency (2008), the inflation rate was at 231 million percent. This was prompted or elucidated by the intentional policy by the government of printing large amounts of money as a way of increasing government expenditure.

The African Development Bank (2011), during the period 2000 and 2008 contended that the economy of Zimbabwe encountered a serious decline in the Gross National Product which was at -17.7% in the year 2001. According to the Ministry of Finance (2009) there was an underperformance on the level of export around the 2005 period which was US\$1.376 Billion, whilst on the other side imports level were 2 Billion in the similar period. In 2008 the

employment rate was at 95% making Zimbabwe the country with the highest level of unemployment in the whole world. Only a percentage of 6 in 2008 was formally employed. This converts to a total number of 480 000 formally employed people against a total population of 12 million.

As a way of boosting the economy of Zimbabwe in 2009, the government embraced the use of multiple currency that was just after the formation of the comprehensive government. The Zimbabwe economy is being supported by the US dollar, the Pula of Botswana and South African Rand. There was a bit of light after the formation of the inclusive government because the annual inflation improved from -7.7% around 2009 to 9.6% around 2010. The inflation at average was around 3% to 4.5% annually that is for the most part of 2012. This was due to an increase in supply, suppression of costs particularly costs of the wage bill and above depressed demand as a result of restrained liquidity state. In 2009 the real GDP was at 5.46% and in 2010 it was 9.6. The Gross Domestic Product that is at market prices was 10.6% in 2011 and the rate of growth was composed to fall in 2012 to the period 2016 showing stagnation and eventually returning to depression economies. The diagram below illustrates the levels of Zimbabwe's GDP (2012-2016)

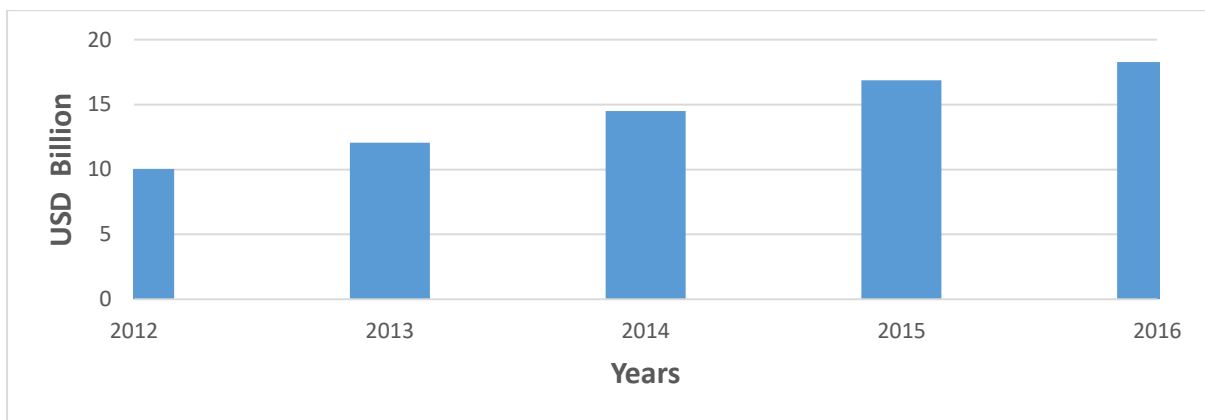


Figure 1.1: Gross Domestic Product for Zimbabwe (2012-2016)

Source: World Bank (2016)

According to figure 1.1 above the annual GDP of Zimbabwe for period 2012 to 2016, the Gross Domestic Product was constantly growing for the preceding period which illustrate significant improvement in the economic performance.

The banking fraternity in the Zimbabwean economy is comprised of one savings bank, one merchant bank, three banking societies and fourteen commercial banks (RBZ, 2015). In

respect of the banking sector, the sector has been facing hindrances in the multiple currency economy. Some of the problems encompasses shortage of adequate capital, insufficient local liquidity and also weak asset quality among many others. These encounters have resulted in low Zimbabwean banks profitability.

Return On Assets is one of the principal ratios used in Zimbabwe to measure bank profitability. According to Khariwish (2011) it is considered as the ratios of earnings to its entire earnings. Return On Assets tries to measure the extent of the capabilities of the management of banks to make income by making use of company assets that are at their disposal. Vardin (2014) also illustrates how efficient the management is of a company in making earnings from the institution’s resources. When the Return On Assets is high it indicates that a firm is efficient in the use of its available resources (Wen, 2012). The total profit of the Zimbabwean banking sector accelerated from \$US4.90 million from June 2013 to US\$1384 Million on 30 June 2014. Out of the total 19 banking institutions in Zimbabwe only 12 managed to make profit in the first part of 2014 (RBZ, 2014). Losses that were made were mainly due to high levels of non-performing loans, shortage of critical mass thus in terms of finance to shield high working costs and also the institutional plan by some of the banks to clear-out bad deprived loan books through provisioning.

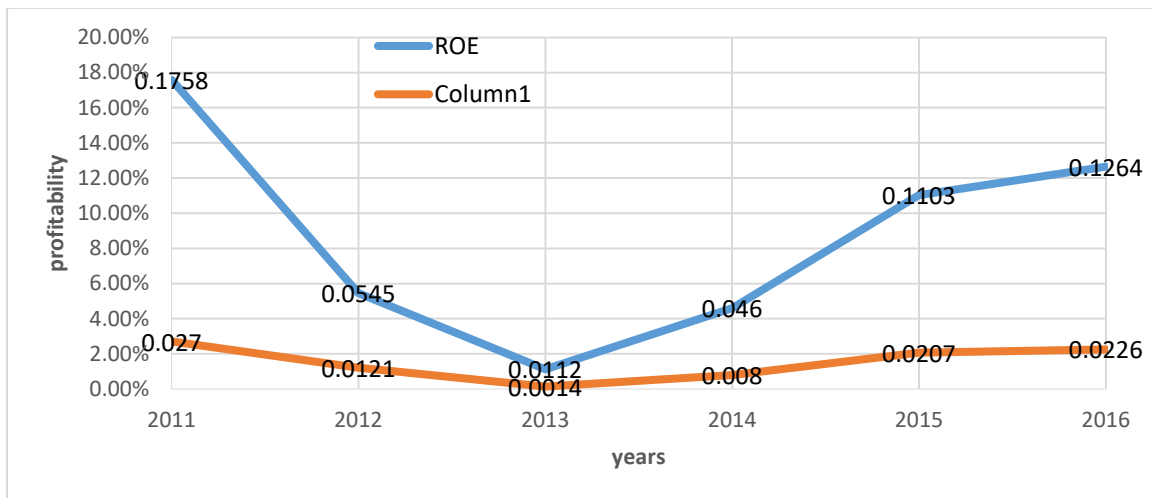


Figure 1.2 Profitability of banks for the year (2011- 2016)

Source: RBZ (2016) Annual Report

As shown in Figure 1.2 above, the profitability of banks has been decreasing for the previous periods. As depicted above there has been a gradual decrease of profitability up to 2013. This decrease has been a cause for concern.

Zimbabwe National Statistics Agency (ZimStat)(2017) the inflation rate as measured by the Consumer Price Index has decreased by an average of negative 0.93 percent points between the year 2015 and 2016. However, this has affected the overall economic performance. The diagram below shows the inflation rate from 2012 to 2013

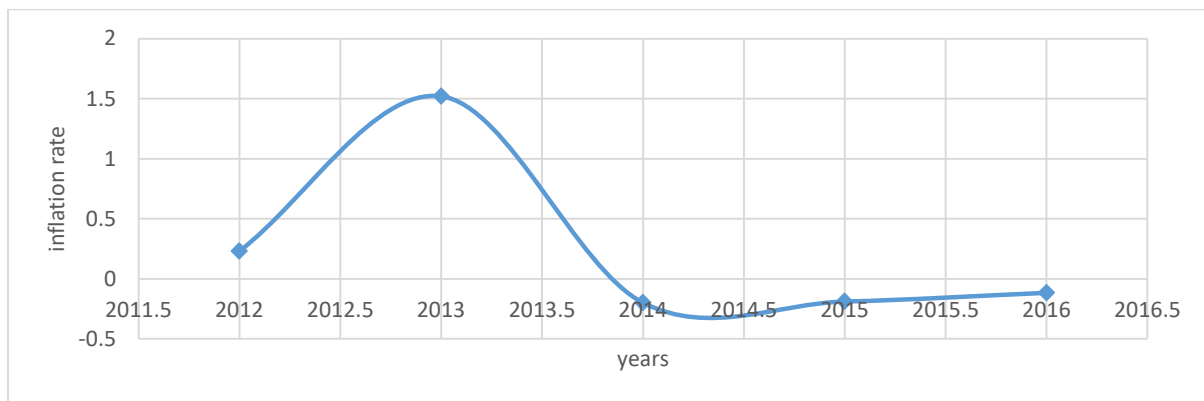


Figure 1.3 Inflation Rate Trends (2012-2016)

Source: RBZ Monthly Economic Review (2012-2016)

The figure above is illustrating that the rate of inflation has been around -0.5 to 1.5 from the period 2012 to 2016. Though, the introduction of dollarization and the multi-currency restricted the persistent hyperinflation which was prevalent in the period 2007 to 2009.

1.2 Statement of the Problem

There is a major area of distress or alarm due to the ever-changing low profitability levels of banks that is before and after the introduction of the multicurrency system. The ever changing ups and downs have been influenced by many elements some are micro economic elements whilst some of them are macro-economic elements. This study thus tries to evaluate the impacts of micro and macro-economic factors on the profitability of banks

1.3 Research Objectives

The objectives of the research study are:

- To assess the impact of micro-economic factors on profitability performance of banks

- To evaluate the effect of the gross domestic product to the profitability of banks.
- To examine the relationship of interest rates and bank profitability
- To identify the impact of inflation to the profitability of banks.

1.4 Research Hypothesis

H^1_0 : there is no positive significant impact of micro-economic factors to the profitability of banks.

H^2_0 : There is no positive significant relationship between macro-economic variables and banks profitability.

1.5 Significance of Study

The utmost purpose of the research is to cover the study gap that the preceding research left out. Many studies on the effect of micro and macro economies influence have been carried out across the world and there have been various outcomes obtained. As for the various studies done so far to ascertain the determinants of the basic profitability in the world, not even one of them managed to broadly examine the sources of profitability of banks in the dollarized economy of Zimbabwe. Mbizi (2010) did a research on the effects of capital on the performances of commercial banks a case of Zimbabwe but did not consider or look at the forces of other internal or external elements, hence this research significances to introduce a complete method in trying to cover the gap by encompassing internal variables as well as external variables. Kahika (2014) Study results showed that profitability was the chief origins of Zimbabwe banks' failure in the multiple currency era but failed to look at what precisely is the driving force behind banks profitability. Profitability is one of the major bank associated cause of Zimbabwean bank failure thus indicating that profitability is not an issue when it comes to the survival of banks. Thus it is vital to determine the sources in the era of new currency. The study is also going to assist bank managers, the national government as well as regulatory consultancies in articulating policies that brings bank profitability.

1.6 Limitations of the Study.

The study made use of the data that was collected from the World Bank, Reserve Bank of Zimbabwe and Central Statistics Records. Hence some of the information or data from these high-level institutions may fail to show the actual truth or face of what is on the ground due to data smoothing practises and they also make use of averages of the banks. Due to the fact

that some of the figures are estimates, they might not be real figures and then limit effective and as well as sound projecting for effective recommendations for policies.

1.7 Organisation of the rest of the Study.

The following chapter thus chapter two includes the literature review that provides theoretical and empirical evidence on the micro and the macro-economic variables on the profitability of banks. Chapter Three has the research methodology. Chapter Four shows the presentation and interpretation of the outcomes. Chapter Five concludes the study and hence policy recommendations and suggestions for future researches.

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

The chapter reviewed theoretical literature which comprises of the theories and models that are related to the study. Empirical review is also included in this chapter which shows the various studies that have been done before by previous researchers who have done the studies that are related with the impact of micro and macro-economic factors on the profitability of banks.

2.1 Theoretical Literature Review

This section consists of theories and model that will give a direction to the study in governing the profitability of banks. The study is guided by the Loanable Funds theory, Monti Klein Model, Deflation theory and J-curve theory effect on equity funds return

2.1.1 The Loanable Funds Theory

According to Andren (2008) the money that is available for borrowing is defined as loans in the loanable funds market. The theory explains that the interest rate is determined by the supply and demand of the loanable funds that is readily available in the market. The equilibrium of the nominal interest rates is determined by the forces of demand and supply. They exist a negative relationship between the interest rate and loanable funds, that individuals tend to demand more funds if the interest rates are low and demand less if the interest rates are high. On the other hand the supply side it can be explained like the banks want to supply more loanable funds if the interest rate is high and less loanable fund when the interest rates low. So the market forces will push both the demand and the supply of the loanable funds to a certain point that is called the equilibrium point where demand is equal to the supply.

According to Musgrave (1998), the theory itself explains how individuals in an economy save and how these savings are transformed into loans which are then loaned out by the financial institutions. Households and foreign entities constitute suppliers of loanable funds and firms and the governments are borrowers of the funds

The theory is applicable in Zimbabwe, the ongoing liquidity crunch has caused the local banks to offer the low interest rates that is the reward in parting with liquidity so as to encourage savings from the public and entities, hence in the motive to increase funds available for loans so that banks can boost their level of profitability. Due to high bank charges that are charged by the banks in performing transactions this has led to the decline of the supply of loanable funds since individuals are discouraged to save due to high bank charges that are performed during transactions hence individuals can be discouraged to save as a result less deposits and less supply of loanable funds. RBZ (2016) highlighted that there is US\$2 billion that was circulating in the informal sector meaning that it was not channelled to banks so therefore the reduce the funds available for lending and the supply of loanable funds will be lowered.

The interest's rates that was lowed on deposits has caused an increase in the short term saving leading to a mismatch of the demand and supply of long term loans. The scenario that has arises is that local banks are able to supply the loans for a short term causing the supply of long term loans to be hardly obtained. Due to the laws of demand, the increased demand of the long term loans has caused the interest rates to increase making the cost of borrowing to be at high when it comes of payback time. As argued by the RBZ (2017) 6% to 35% of the interest rates are charged by the indigenous banks annually and most if not all banks are charging the 20% interest and this was as a result of the high demand of the long term loans and therefore high interest rates are being noticed that will act as a catalyst leading to high loans payment defaults and profits will be lost leading banks profitability to decline.

2.1.2 The Mont-Klein Model

The main aim or goal of banks is to make super profits as depicted by (Monti and Klein, 1972) in their model. The model was borrowed to the industrial approach relating it to banks. All the objectives are channelled to the main one which is to make profit. The unquenched thirsty of shareholders to obtain profits will make them more innovative so as to drive their main motive to archive the super profits. Since banks are not price takers this makes it the second assumption that banks can have influence in the charging high levels of interest rates and of deposits and this power of charging prices is obtained from the market failures like asymmetric information and the market power. The lack of control of the interbank rates has pushed the model to reach the third assumption that banks has no control over interbank money which affect the deposits and loan funds that being cash out by the banks. The cost of funds is the main objective of the model and therefore determining the cost of funds. The

interbank fluctuations can be used to point out the cost of funds meaning that there is a positive relationship between the interbank rate and lending rates.

Early in January 2013, RBZ and Bankers Association in Zimbabwe (BAZ) reached a consensus the banks should be price takers and therefore the maximum interest rates to be charged by banks should 12.5% annually which exceeds the cost of fund. Daily News (2013) mentioned that some of banks reported positively to consensus that was made and some did not follow and therefore for those who did not follow the agreement that was made, the individuals who are in need of finance suffer from high interests rates which discourage the borrowers or even though if they borrow the chances that they can default are high because the high interest rates and the main objective in obtaining profits will not be archived.

2.2.3 The Deflation Theory

The deflation theory was developed by Fisher (1933), it states that after a deflationary disorder has occurred the consequent impact of a reduced price level, it may fail to draw back proximately the equal levels of output to its full employment worth again. Consequently, it means that if there is a decrease in the rate of inflation, it will lead to reduction in price levels thus resulting in a greater decrease in the total value of business, depressed profitability, thus triggering bankruptcies thus consequently moving towards losses resulting in output reduction in labour employment as well as trade.

The intricate instabilities that were being described above can be collectively taken as internal forces and external forces thus micro and macro elements. These manipulate the state of above indebtedness prevailing between creditors and debtors or both which formulate loan defaults. The principal issue is that devaluation offers a vital role to debtor's net worth as well as balance sheet. Endeavours trying to discharge debt in an environment of over-indebtedness and price levels that are very much probable to change into despair thus through an unbalanced relationship between multiple actual debt drains and also devaluation. Above and beyond, deflation always brings with it price changes impacts which hinder undesirability the projected lucrateness or profitability. It further lowers the total demand level. Its outcomes for as long as the level of prices are not affecting confidentially or positively and significant in the total demand and fails to frustrate the weakening changes in prices effects, restoration of full employment balance will be a challenge.

In relation to this research, the deflation theory is postulating that a reduction in the rates of inflation will in the end result in low profitability in firms eventually resulting in firms'

bankruptcy. This is conflicting with the anticipation that inflation that is amplified has a negative effect on the purchasing power of money, a fall in the real sales and an increase in the costs of operation as well as the economy's interest rate. According to the Deflation theory, if there are inflationary burdens existing from financial posture being transferred completely via the channels of finance. Inflationary burdens this can be covered if deprived of fiscal modification if sustainable causes of financing. Like external finance are present. On the ground some of the financial modifications are typically essential for the reason that also substitute finance is not adequate and the financial posture is the driving force of price increases throwing the demand the channel of total demand.

2.2.4 The J-curve Theory

Davies (1962) estimated the theory of J-curve, an occurrence that offers chief insight on how the private fairness works and also stockholders should look up for when allocating their capital funds. Particularly, the research is going to look at the J-curve effect. It is explained as the occurrence for which an unfavourable earnings are shadowed by a regular regaining which manages to calms at a level that is higher than that which existed before the reduction. The J-curve assumes can be described in brief as that first investment costs of financing a fund that is yet to earn its future advances.

According to Talaso (2015) in the first years of a personal equity funds, funding earnings are normally negative. The J-curve effect is seen where investment have a negative return for the first period of years. This expansion is very common because in the early years there are some factors such as capital draw downs and pre-mature investment portfolios. The effective management of the funds will result in the recovering of funds from its first losses and thus the earning will form a J-curve. Losses first drop down beyond the first investment and as time moves it will start to gain profits above its first level. As a way gaining the short-term and long-term impacts of a certain variable alteration, economic analysts and many policy makers make use of the J-curve in their policy analysis and decision making process.

In addition, due to illiquidity and a long-standing assurance investors are supposed to assume a greater reoccurrence earning from private equity as compared to from public equity finds. Though, it is very vital to remember that in comparison to public equity, private equity funds firstly experience a negative return and amassed negative net cash flows in the initial period of an investment span. When one truly comprehends the J-curve effect, this exclusive and specific characteristic of private funds investment converts to a less area of worry, actual

benefits of the private equity and an amplifier of returns and asset variation method can start to be acknowledged.

2.2 Empirical Literature Review

Khan (2015) did research on the impact of bank specific variables and the macro economic variables on the profitability of banks in Pakistan during the period of 5 years that is from 2011 to 2015, the research study used the time series data and used the Ordinary Least square method in analysing the data the interpretations. The bank specific variables that were used by the study included the bank size, earnings per share, cash equivalents, capital ratio, and Spread ratios and as for the macro economic variables GDP, inflation and Interests rates were the external factors that can affect the bank's profitability. The results that was obtained from the study highlighted that earnings per share, bank size, capital ratio and GDP has a significant impact on the profitability of banks at 5% level. Inflation and interest rates was not insignificant.

Another related study was conducted in Kenya by Kiganda (2014) on the effect of Macroeconomic factors on bank profitability. The study used the secondary data that was obtained from the Central bank of Kenya form the period of 2008 to 2012. The main goal of the study was to found the impact of the macro economic factors on the profitability of banks. The study was based on a specific bank that is called Equity Bank in the view to understand bank profitability in accordance of macro-economic factors, the study used the time series data and employed the OLS to establish or to present the results of the macro economic factors on the profitability of banks. The external factors that were used include the GDP, Interest rates and the exchange rates. The results that were obtained show that GDP, Inflation and exchange rates are not significant at 5% in explaining the Equity Bank profitability so in the conclusions of the study the researcher indicated that the internal factors therefore are significantly related to bank profitability hence managers need to efficiently and effectively in planning and coordinate resources so as to increase profits.

This study is different from other studies for instance that of Khan (2015) in that it only focused on macroeconomic variables on the profitability of a one bank of which Khan (2015) looked at commercial banks . However, the results of the study were in line with that of the study above since the macroeconomic variables were insignificant in both studies. Thus this will give supporting evidence for expected findings for variables in this study.

Furthermore, a study in contrast to that one above was conducted by Gutu (2015), analysing microeconomic factors affecting banks' financial performance in Romania. The study focused on 11 banking entities and covered a period of 2003 to 2013. The independent variables of this study included bank's size, financial leverage, loans to assets ratio, deposits to assets ratio, number of employees, liquidity, net result and monetary policy rate. Performance of banks was measured using ROA. To analyse the secondary data, the researcher employed an OLS regression model. The study concluded that banks size, loans to assets ratio and liquidity are insignificant to bank performance, while financial leverage has a negative impact and employees, deposits to assets ratio and net result had a positive impact.

This study concluded mixed results unlike other studies. It is however different from the study by Kiganda in that it focused only on microeconomic factors that affect bank performance. In terms of results, certain variable outputs in this study are in line with other empirics for instance Tasalo (2015). However, some variables such as size gave conflicting results with other empirics such as Khan *et al.* (2015).

Martinho (2017) titled bank profitability and macroeconomic factors, also looked at bank profitability in Europe. The study employed panel data on a sample of 110 European banks and covered the period of 15 years from 2001 to 2015. To identify the effect of GDP growth on profitability, the study used an instrumental variable approach with world GDP growth as an instrument. ROA was the dependant variable of the study. In analysis of the data, the study used a standard dynamic linear model with individual-specific intercepts. The findings of the study indicated that there was a positive association between real GDP growth and bank profitability due to the proxies of impairments.

The findings of this study are in line with theory analysed in the first section of this study. It can also be noted that the conclusions made in this study are in conflict with results from studies conducted in Africa for example Kiganda (2014) who concluded that GDP was insignificant. This can be explained by different in growth of economies and Europe and Africa which may have a different effect on bank profitability in the different continents.

In addition, Tasalo (2015) in Kenya looked into the effect of micro and macro-economic variables on the financial performance of deposit taking microfinance banks. The study used a descriptive research design and covered a five year period from 2010-2014. A total number of all nine MFBs in Kenya as at 31st December 2014 was used. Secondary data was collected and a multiple regression analysis model was used for data analysis. The independent micro

and macroeconomic variables of this study were Liquidity, Bank size, Capital adequacy, Market power, Inflation and GDP while financial performance was the dependant variable measured using ROA. The study results pointed out that micro and macro variables that is Liquidity, Bank size, Capital adequacy, Market power, Inflation except only GDP positively affect financial performance of Micro of microfinance banks. However some of the variables such as Liquidity, Bank size, Market power, Inflation and GDP had no significant effects on the financial performance of microfinance banks.

The conclusions of this study are in line with other studies analysed in this literature (Kiganda, 2014) who also found out that mostly macroeconomic factors were insignificant and Khan (2015) who also founds out that microeconomic factors are the major drivers of bank performance.

A related research was conducted by Chimkomo (2016) in Malawi where the researcher The research study used the secondary data from 2000 to 2014 which is 15 years .The study sampled all the banks in Malawi that is all the commercial banks. The macro economic variables that was included in the model were interest rate and GDP and the micro economic variables in other words banks specific variables were non-performing loans (NPL),cost efficiency and cash reserve requirement .The study used the generalised least squares model in relation to solve the panel data and solving the problems of heteroscedaticity and autocorrelation. The results that was obtained indicated that asset quality and cost efficiency and interest rates had expected signs and were statistically significantly at 5%.GDP was also significant meaning that it affects the profitability positively.

It can be noted that from the analysis and conclusions above, in line with most studies {Khan *et al.* (2015), Gutu (2015), Tasalo (2015)} that microeconomic factors have a more significant effect on bank performance. However in contrast with other studies {Martinho *et al.* (2017)}, this study concluded that the macroeconomic factor GDP was significant to bank performance in Malawi. This may be due to differences in economic performance in different nations revealed in the literature.

2.3 Conclusion

The chapter discussed theoretical and empirical literature review on the impact of micro and macroeconomic factors on the profitability of banks .The first section of the chapter looked at theoretical literature review and the discussed theories included is Loanable Funds theory the Monti-Klein Model among other theories. The second section of this chapter looked at the

empirical literature review. From the results of the empirics, the variable Inflation produced consistent results of a negative association with the profitability of banks. However, the other variables such as interest rates and the GDP had different signs in different researches discussed above. To add on, from the empirics the different studies have been carried out in countries that were not using the multicurrency. Again, very few studies in literature have left the exchange rates as the macro economic factors. Therefore, from the reviewed literature a model will be adapted so as to cover this gap that exists and further establish the impact of micro and macro-economic factors on the profitability of banks in Zimbabwe. The next chapter will specify the methodology and provide a clear justification of the variables.

CHAPTER 3 METHODOLOGY

3.0 Introduction

Various methodologies that was obtained from different literature was gathered there by creating the method that suits the analysis. This chapter will show the methodologies that is going to be used in the analysis and various different regression diagnostics to evaluate the significance of the study. The study will use the Ordinary Least Square OLS to evaluate the impact of endogenous variable to the exogenous variables

3.1 Model Specification

The study adapted the following linear equation as used by Tasalo (2015)

$$Y = \beta_0 + \beta_1 liq_t + \beta_2 lta_t + \beta_3 ca_t + \beta_4 mrktp_t + \beta_5 cpi_t + \beta_6 gdp_t + \varepsilon_t \dots \dots \dots (1)$$

Where:

Y = return on assets

liq = liquidity

lta = bank size

ca = capital adequacy

$mrktp$ = market power

cpi = inflation rate

gdp = gross domestic product

Therefore, the study adapted Liquidity, Capital adequacy, GDP, Inflation from Tasalo (2015). The researcher added total equity to assets ratio, Deposits and interests rates to the adapted model. Exchange rates were excluded because Zimbabwe does not have its own currency.

Therefore my main model is going to be an adaptation of the Tasalo (2015) model and is specified as:

$$ROA = \beta_0 + \beta_1 LQD_t + \beta_2 CA_t + \beta_3 DEP_t + \beta_4 TEA_t + \beta_5 GDP_t + \beta_6 INF_t + \beta_7 IR_t + \varepsilon_t \dots (2)$$

Where $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5 \wedge \beta_6$ are the coefficient and ε_t is the error term.

Where ROA is the return on assets, LQD is liquidity, CA is capital adequacy ratio, DEP is total deposits, TEA is the total equity to assets ratio, INF is inflation, GDP is the gross domestic product and IR is the interest rate.

3.2 Justification of variables

The relevance of the internal and the external factors that can influence the profitability of banks as evidenced by the previous literature, Therefore this study seeks to point how these variables will affect the bank's profitability

3.2.1 Deposits (DEP)

The money that is placed in banks for safe keeping are called bank deposits. Usually when they are placed in the financial institutions they are placed into deposits accounts such as savings accounts. A saving account is an account that is opened by the individuals or business to safe guard their wealth for future use. The user of the account has the right to withdraw the deposited funds at any time in line with terms and conditions that they have signed at first, so what this means is that the bank deposits is a liability that is owned by the financial institution to the depositor. The more the bank deposits the more the profitability of banks in the sense that, banks can use those deposits in lending individuals or groups that are in need of finance and the interest rate that was added is a profit to the banks Justification of this variable is put forward since Stein (2002) used this variable in determining the bank performance and the results of the study showed a positive relationship between the bank deposits and the profitability of banks there the study is also expecting the positive impact of Deposits on profitability of banks. The variable is going to be measured using the volume of the deposits in the whole banking sector.

3.2.1 Liquidity (LQD)

Liquidity in simpler terms are the assets that can be quickly converted into cash, there liquidity as it is defined by the banks are the obligations or the ability to cash out of the previous deposited cash to the customers when they need their cash or usually that of those under the terms and conditions when they are coming to due. In other words capital savings

accounts or the cash at hand can also be regarded as liquidity. The more the liquidity the more the profitability. To add on liquidity is of the great importance since it allows to seize opportunities. Liquidity can be calculated using the current ratios by dividing total assets and total liabilities. The variable is going to be measured by monthly volumes of liquidity of banks as presented by the RBZ for the period 2012-2016. Tasalo (2015) supported the variable as one of the measures that can cause an effect on banks performance. The study is expecting this variable to be positively significant at 5% on the profitability of banks as justified by (Tasalo, 2015) that bank liquidity showed a positive effect on banks profitability in Kenya

3.2.3 Capital Adequacy (CA)

Capital is the money that is used to start up a business or finance other projects in the banking sector, Capital can also be defined as the own fund to finance the banks activities .Capital adequacy is used to measure banks capital. Theory proved that capital is an important in determining the profitability of banks since it can be used during time of adverse situations. The capital of the bank can create liquidity of the bank due to the fact that deposits can be fragile in the prone therefore the larger the capital the larger the profit. The variable was justified by (Khan, 2015) in the support of capital adequacy ratio as one of the measures that can have an effect on the profitability of banks. The study is expecting this variable to be positively significant at 5% on the profitability of banks as justified by Abbas *et al.* (2015) that bank deposits showed a positive effect on banks profitability in India

3.2.4 Total Equity to Assets (TEA)

The total equity to asset ratio is the total assets that are owned by the investors in the business like in this case the banks, the total assets are showed in the balance sheet so basically it is a percentage of the total assets that the investors own in the business. The total equity to assets is calculated as the net worth over the total assets and the results is the equity to asset ratio. This variable is important in explaining the profitability of banks since it shows the total amount the investors own in the business This variable is of great importance in determine the profitability of banks as it was justified by Ponce (2013) in Spain. The variable is going to be measured by the monthly values of the TEA of Banks on the monthly economic reviews. The study is expecting this variable to be positively significant at 5% on the profitability of banks as justified by Ponce (2013) that bank deposits showed a positive effect on banks profitability in Spain

3.2.5 Inflation Rate (INF).

Inflation rate is the general increase in the price level of goods and services. It is viewed as the enemy of the state since inflation erodes or reduce the purchasing power of a currency. Inflation rate can increase the interest which would lead to the decrease on profitability of banks, this is in the sense that if inflation rate is high banks will adjust their rates to nominal interest rate which are adjusted to inflation so the if the interest rates are high this will discourage borrowers to borrow and therefore the profitability will decline. According to Bonilla (2012) when the inflation rate is high, it weakens the loan payment in the sense that inflation can be caused by the reduction of income purchasing power. Sharma (2011) Inflation can also discourage savings that is individuals tend to save more in the low inflationary periods and save less in the high inflationary periods and this will turn to affect the profitability of banks. Based on that argument, the variable inflation is justified, in this research is expected to carry a sign since the inflation rate in Zimbabwe is low and the wages are stagnant. The variable is going to measured using the monthly inflation rates as measured by consumer price index (CPI) as it is easy to understand and use.

3.2.6 Gross Domestic Product (GDP)

The monetary figure usually in billions of the products that is services and goods that is manufactured in a country is referred to GDP. This macro-economic factor is of great importance since it gives bird's eye the overall economy. It shows the overall performance of the economy. If the GDP is increasing or growing at a good pace the profitability of banks will also be increasing on a good pace due to the improvements in liquidity. If the liquidity is improved, individuals will have more assets that can be easily converted to cash and hence more financial transactions in the process and the more the profits to the banks. The justification of GDP is put forward since it was used by Fofak (2005). GDP is expected to affect the profitability of banks positively.

3.2.7 Interest Rates (IR)

The reward that is obtained after parting with liquidity is called interests rates. In other words is the reward for lending money. When the interest rates are high banks opt to supply more loans to the individual since it will a source of profitability of banks. The higher the interest rates the more the profitability. On the other hand if the interest rates are high it will become expensive to borrow funds hence discouraging borrowing and as a result the profitability of banks will decrease since nobody wants to borrow at high interest rate.in this research study the interest rates are expected to affect the profitability of banks positively conforming the

study that was done in India by Farhan *et al.* (2012) the results of the study indicated that interest rates affects banks profitability positively.

3.3 Data Sources and Characteristics.

The study used the monthly time series secondary data that is published on the RBZ website. The data with the empirical support on the impact of micro and macro-economic factors on the profitability of banks was obtained from the internet.

3.4 Diagnostics Tests

An examination of a procedure or to determine certain specifics strength and weakness areas in a situation to come up with a condition is called a diagnostic procedure

3.4.1 Stationarity Test

Gujarati (2004) the variables of a time series data are concluded to be stationary when the variance and the mean can change over time. To total avoid the dubious or nonsense regression, it is of great importance to test the unit root problem. Augmented Dickey Fuller (ADF) was employed by the study to test for stationarity.

The rule is based on the decision that rejects the H_0 if the ADF statistics > 0.05 significance level otherwise do not reject and conclude that unit root problem do not exist.

H_0 : There is unit root problem

H_1 : There is no unit root problem

3.4.2 Cointegration Tests

The long term interaction of the variables that is being employed in the model is determined by the Cointegration test. The movement of variables opposite or in the same direction radically shows the presents of cointegration. The study is going to use the Engler Granger methods in testing for cointegration The residual values that was generated from the time series is going to be tested for cointegration on the ADF test. The cointegration model signifies the applicability of the OLS. The hypothesis is :

H_0 : There is no cointegration

H_1 : There is cointegration

The decision rule is accept the null hypothesis if P values are greater than 0.05 level of significance otherwise we reject and conclude that they is cointegration.

3.4.3 Normality Test

The white noise of the residuals that was generate on the time series is technically tested by the normality test. If the mean is zero of the residuals and all the variances are the same the residual is said to be white noise. Normality is tested by the Jargue-Bera statistic. If the probability value of the generated residual is greater 0.05 level of significance we conclude that the sum of the residuals are normally distributed

3.4.4 Multicollinearity Test

In a model, if the explanatory variables exist the linear relationship it is conclude that they is multicollinearity. The existence of the multicollinearity makes it impossible to separate dependent variable on the independent variables. Its presence is show by the correlation matrix and therefore if the exists a coefficient that is greater than 0.8 or equal to in absolute that means there exist multicollinearity.

H₀: There is no Multicollinearity

H₁: There multicollinerity

The rejection criteria is based on the decision that we reject the null hypothesis if the correlation matrix coefficient if it's less than 0.8

3.4.5 Autocorrelation Test

Value of the past variable and the value of the current variable, the relationship that exists between them is measured by the autocorrelation tests meaning that how past variable will influence the present of future activity. The Presence of autocorrelation that means the data need to be adjusted to avoid problems related in doing the analysis of regression. The study is going to employ the Serial Correlation LM tests to test for autocorrelation and the Hypothesis that is going to used

H₀ : There is no autocorrelation

H₁: There is autocorrelation.

We accept the null hypothesis if the P value > 0.05 at level of significance

3.4.6 Heteroscedacity Tests

When the variance of error varies by time that where the heteroscedasticity is detected. Breush Pagan Godfrey test is used find the heteroscedastisity. The unbiasedness of the OLS estimators represents that they is heteroscedasticity. There to avoid dubious results the

Heteroscedasticity should be corrected either using the weighted least square and white heteroscedasticity consistent variance hence the hypothesis used

H_0 : there is no heteroscedasticity

H_1 : there is heteroscedasticity

Decision: reject null hypothesis if P-value obtained is less than 0.05 and accept the alternative hypothesis and conclude that heteroscedasticity is present.

3.4.7 Model Specification

According to Gujarati and Porter (2009) correctly specified model is one of the vital assumption, there if this assumption is not met that means the results of the model are dubious results due to model specification bias. Using the Ramsey Test RESET the hypothesis below was used:

H_0 : The model correctly specified

H_1 : The model is not correctly specified

The rejection criteria that was used is that we reject the null hypothesis of the probability value of the Ramsey Reset Test F- statistics if it's less than 0.05

3.5 Conclusion

The literature have different approaches and techniques that was used in analysing the impact of micro and macroeconomics factors on the profitability of the banks. Therefore, this study has been organised in relation to the empiric's methodologies as for requirements of the study. The diagnostics tests mentioned in this chapter are going to be presented on the next chapter

CHAPTER 4
RESULTS PRESENTATION AND INTERPRETATIONS

4.0 introduction

The objective of the chapter is to interpret the obtained results and explain it, on the impact of micro and macroeconomics factors on the profitability of the whole banking sector in Zimbabwe from 2012-2016. The study used the OLS, the diagnostic tests and estimations were done. All this will be presented in this chapter and the interpretations

4.1 Descriptive Statistics.

The table below shows the summary of the Descriptive statistics

Table 4.1 Summary of Descriptive Statistics

Mean	Standard Deviation
2.856643	0.235780

The mean value of the return on assets is 2.856643, and this indicates that the profitability of banks is moderate as indicated by the mean and a standard deviation of 0.235780, this indicates that the profitability of banks is not highly fluctuated. In this case the study is more concerned about the mean of the dependent variable. Refer to Appendix 2

4.2 Results of the Diagnostics Tests

4.2.1 Unit Root Test

The ADF test statistics was used to test the unit root problem and the results are indicated below

Table 2: Summary of Unit root Test

Variable	ADF Statistics	Probability	Intercept	Order of Intergration

ROA	-7.289980***	0.0000	YES	I(1)
LQD	-6.994107***	0.0000	YES	I(1)
CA	-12.08757***	0.0000	YES	I(2)
TEA	-7.466096***	0.0000	YES	I(1)
DEP	-8.027046***	0.0000	YES	I(1)
INF	-6.973698***	0.0000	YES	I(1)
IR	-7.489577***	0.0000	YES	I(1)
GDP	-4.789088***	0.0002	YES	I(0)

Means significant at 10% **means significant at 5% and *means significant at 1% and all level of significant.*

Table 4.2 shows that GDP and CA are stationary at level I (0) and at second difference I (2) respectively but as of all the variables where stationary at first difference I (1). The variable are set free from the unit root problem. Refer to Appendix 3

4.2.3 Cointegration Tests Results

Based on the outcome produced above, All the variables were not stationary at level except for GDP therefore there is need to run the cointegration tests. Johansen Cointegration test was used to test for the long run relationship between the variables in the model. Table 4.3 below indicates the results that was obtained.

Table 4.3: Summary of the Cointegration Tests results

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	Critical Value	Prob.**
None *	0.676425	249.0451	159.5297	0.0000
At most 1 *	0.621283	183.6024	125.6154	0.0000
At most 2 *	0.539628	127.2863	95.75366	0.0001
At most 3 *	0.428081	82.29447	69.81889	0.0037
At most 4 *	0.322659	49.88648	47.85613	0.0318
At most 5	0.198617	27.29081	29.79707	0.0947

At most 6	0.158659	14.44865	15.49471	0.0714
At most 7 *	0.073514	4.428691	3.841466	0.0353

means significant at 10% and **means significant at 5% and *means significant at 1%*

The null hypothesis was not rejected meaning that there is cointegration since the T-static values are greater than the T-critic values and therefore we use the majority rule that is the probability values that are less than 0.05 if they outpaced those that are greater than 0.05 we conclude that there is cointegration. Refer to Appendix 3

4.1.4 Results for Multicollinearity Test

The correlation matrix was used to detect Multicollinearity. The null hypothesis was reject since the multicollinearity coefficient found was less than 0.8. After the test it was found that there was no correlation coefficient that exceeds 0.8 and hence the hypothesis concludes that there is no extreme multicollinearity and the linear connection among the variables. Refer to Appendix 3

Table 4.4 Summary of the Multicollinearity Test Results

	ROA	TEA	LQD	IR	INF	GDP	DEP	CA
ROA	1.0000							
TEA	0.6851	1.0000						
LQD	0.7137	0.34383	1.0000					
IR	-0.5861	-0.5619	-0.7099	1.0000				
INF	-0.5463	-0.3416	-0.5556	0.3715	1.0000			
GDP	0.6615	0.6969	0.5354	-0.7591	-0.4151	1.0000		
DEP	0.7062	0.5939	0.7368	-0.7503	-0.4238	0.7456	1.0000	
CA	-0.6227	-0.2507	-0.4427	0.5289	0.1709	-0.4894	-0.5323	1.0000

4.1.4 Autocorrelation Test Results.

The results of Autocorrelation is shown below in the table 4.4

Table 4.4 - Autocorrelation Test Results

F-Statistics	Probability	Obs* R Squared	Probability
8.390724	0.0007	15.07734	0.0005

To discover the chances of autocorrelation in the model. Breusch-Godfrey test was used. The table below shows the results that the model is not correlated. Since the Probability value is greater 5% we do not reject the null hypothesis. Refer to Appendix 3

4.1.5 Normality Test Results

The table below shows the summary of the normality tests

Table 4.5: Summary of Normality Test Results.

Mean	Skewness	Kurtosis	Jargue-Bera Statistic	Probability
-0.0000005863	0.082989	2.142787	1.905904	0.385601

The Jargue Bera test was used to test residuals that was generated testing the normality. The results indicated that the Jargue Bera statistic was 1.905904 which is greater than 0.05. Therefore we do not reject the null hypothesis since the residuals generated are normally distributed. Refer to Appendix 3

4.1.6 Heteroscedasticity Test Results

The presence of heteroscedasticity was detected using the Bruesch-Pagan Godfrey Test in the model and the results are shown below

Table 4.6: Summary of Bruesch-Pagan Godfrey Test Results

F-statistics	0.932280	Prob.F(7,52)	0.4898
Obs* R-Squared	6.690323	Prob. Chi-Square(7)	0.4618
Scaled	2.871354	Prob.Chi-Square(7)	0.8966

After the regression the results indicated that the P-value is greater than 0.05, therefore we do not reject the null hypothesis and conclude that they is no heteroscedasticity, basing on the decision that we reject the null hypothesis is the P value > 5%. Refer to Appendix 3

4.1.6 Ramsey Reset test

The table 4.6 below shows the results that was obtained after running the Ramsey Reset Test

Table 4.6- Ramsey Reset test for Model Specification.

P- Value	R ²	Adjusted R ²	F- Statistics
3.174156	0.969976	0.965266	10.07527

The Ramsey RESET Test was used to test the model specification. The results showed that the Probability value was greater than 0.05 that is 3.174156 which is greater than 0.05, therefore we accepted the null hypothesis and conclude that the model is correctly specified. Refer to appendix 3

4.2 Presentation of Results

The ordinary least Squares was used to estimate the regression model in the study. Table 4.7 indicates the results that was obtained

Table 4.7 Results Summary

Variable	Coefficient	Standard error	t-statistic	Probability
Constant	1.260736***	0.433075	2.911130	0.00513
TEA	0.014426	0.015497	0.253496	0.8009
CA	-0.000215***	0.001508	-3.842144	0.0003
DEP	0.000215***	0.026412	5.478869	0.0000
GDP	0.000148***	0.000041	3.631600	0.0006
INF	-0.024868**	0.009872	-2.519020	0.0149
IR	-0.007970	0.011478	-0.694397	0.4905
LQD	0.000163***	0.024189	4.536332	0.0000

shows that the results 10% significant **shows that significant at 5% and *significant at 1% and all other levels*

$$R^2 = 0.964044$$

$$\text{Adjusted } R^2 = 0.959204$$

$$\text{D W statistic} = 1.893742$$

$$\text{F statistic} = 199.1749$$

$$\text{Probability (F-value)} = 0.000000$$

After running the OLS regression, the model is therefore specified as

$$ROA = 1.26736 + 0.000215DEP + 0.000163LQD - 0.000215CA + 0.000148GDP - 0.024868INF$$

4.4 Interpretation of Results

All the variables that was included in the model was expected to have a significant impact in the influencing the profitability of banks, however IR and TEA was not insignificant since we accepted the null hypothesis that the p-values were greater than 0.05. The implication signifies that the bank performance as measured by return on assets is influenced by all other factors included in the model except these two variables. Although IR and TEA had no significant impact, their signs conformed to the expectation. All the other variables also came out as expected

All the variables that were include in the model explains 96.40% of the changes that can affect profitability of banks as shown by the R^2 while other factors that are not included in the explains 3.60%. After correcting the degrees of freedom as shown by the adjusted R^2 indicates that 95.92% of banks profitability is reflected by the research model, while the other factors is accounted for 4.08%. F-statistic value 199.1749 means that the main model is able to detect the profitability of banks and the Durbin Watson statistic 1.893742 is close to 2 which dismisses the chances of serial correlation. The Results confirms that the model is correctly specified and eliminated the spurious regression. Therefore the results is worth to form a basis for policy formulation.

4.4.1 Liquidity (LQD)

The results indicated that, the LQD have a significant impact at 1% significance level and the p value is 0.000 and a coefficient of 0.000163 which is a positive relationship between LQD and ROA was found as expected that is being indicated by the positive sign of the coefficient. This means a unit increase in the LQD ratio is associated by an increase in the level of return on assets by approximately of 0.0163%. This confirms the study that was done by Illo (2011) assessed the impact of micro and macroeconomic determinants on the profitability of commercial banks in Kenya. The results that was obtained showed that liquidity has a positive impact on the profitability of banks. The expected sign of LQD was confirmed by the obtained results and therefore this supports the Liquidity Theory which states that the more the assets that can easily converted into cash the more the profitability.

4.4.2 Deposits (DEP)

The results that was obtained after the regression came out as expected, that is DEP was found to be significant at 1% significant level with the probability value of 0.0000. A positive relationship was obtained between DEP and the return on assets and also this was shown by

the positive coefficient of 0.000215 of the variable. If the level of bank deposits increase by one unit, return on assets will increase by 0.0215%. The more the bank deposits the more the profitability of banks in the sense that, banks can use those deposits in lending individuals or groups that are in need of finance and the interest rate that was added is a profit to the banks. The positive sign of the coefficient and the relationship between DEP and Return on Assets conforms to the other previous studies that was done before like the one that was done by Katuka (2013), who evaluated the impact of bank specific variables on the profitability of banks in Zimbabwe. The research indicated that the increase in the bank deposits will affect the profitability of banks positively. This supports the Monti-Klein Model, which states that the main objective of banks is to make profit so therefore bank managers took risk in lending bank deposits for the motive of profit.

4.4.3 Capital Adequacy (CA)

The results showed that CA is significant at 1% level with the probability value of 0.0003 and has a coefficient of -0.000215 which means that there is a negative relationship between CA and ROA, the negative sign of the coefficient was not expected. This means that a unit increase in the CA ratio is associated by a decrease in the level of return on assets by approximately of 0.02157%.if the level of capital is less the profitability will decrease that is the more the capital the more the profitability. The relationship between bank`s profits and its level of capital can be explained by the signalling theory which states that the higher the profit the more the capital. This conforms the study results that was done Khan (2015) also showed the results that are similar to study, the negative signal gives the information to banks to expand capital as future prospects are better.

4.4.4 Total Equity to Assets (TEA)

The results of TEA variable was not significant since the probability value was 0.8009 which was greater than 5% so the variable become insignificant in explaining the profitability of banks meaning there is no relationship between TEA and ROA. The study was expecting a positive relationship as to confirm the results that was obtained by Abbas (2015).The results showed that there is a positive relationship between TEA and ROA and these results were based on the study that evaluated the impact of bank specific on the profitability of banks.

4.4.5 Interest Rates (IR)

The IR was found not to be significant at 5% level and the probability value was 0.4905 meaning that they is no relationship between IR and the profitability. These results conforms

that of Kipngetich (2011) who carried out a study in Kenya and find out that interest rates was not significant in explain the profitability of banks. These results came out as not expected since there is a positive relationship between banks and profitability in the sense that higher the interest rates, banks supply more loanable funds so in time of payback the more revenue is generated and profitability increases This supports the theory of loanable funds that they exist a positive relationship between interest's rates and loanable funds. Banks want to supply more funds when the interest rate is high and the opposite is true.

4.4.6 Inflation (INF)

The variable INF was significant at 5% level and has a probability value of 0.0149 and has a negative impact on the profitability of banks and this was indicated by a negative coefficient of -0.024868. This shows that a unit percentage increase of the inflation rate will cause a decrease of 2.487% in the level of bank profitability. These results is based on the unanticipated rise of inflation that will cause the movement of money in circulation to lose value and therefore this will discourage borrowers and termination of loans thereby lead to non-performing loans. These findings are varied, the results of Syafri (2012), also obtained results that showed a negative relationship of inflation and ROA. In support of the Results above Huizinga (1997), indicates that's banks that are in the developing countries tend to be less profitable in the periods of high inflation. Basing with the judgement that was made by Huizinga (1997) in 2008 Zimbabwe has been hit by unanticipated inflation. According the RBZ (2010), three banks has closed due to the unanticipated rise of inflation and these banks are Capital bank, Trust Bank and Allied bank

4.4.7 Gross Domestic Product (GDP)

After the regression test. GDP was found to be significant with a probability value of 0.006 which is less than 5%. This was shown by the coefficient value of 0.000148 meaning that a unit increase in level of GDP will cause an increase of 0.0148 percent increase in profit of banks. The results came out as expected since the GDP reflects the condition of the economy and it is expected to affect the demand for bank loans positively. If GDP is expanding at a good rate, a sounding managed banks would make profit from lending loans and the sale of securities. GDP can enhance profitability of banks by increasing the demand of finance. Strong economy is characterized by the demand that is high for financial services, hence increases cash flows of banks. However Adonji (2012) carried out a study in Ghana and also obtained that GDP was significant in explaining the profitability of banks in Ghana and the conclusion was that GDP was in an important factor in determining the profitability of banks

4.5 Conclusion

This chapter reported the findings of the study. The methodologies that is outlined in the chapter three was employed to process data. The results that were obtained were in line with the hypothesis that was formulated in the late chapter. All the variables that were included in the model was expected to have a significant impact in influencing the profitability of banks, however IR and TEA emerged insignificant since their p-values were greater than 0.05. Therefore the variables that were not significant were not included in the main model. Chapter five will therefore give insights on policy recommendations to the stakeholders.

CHAPTER 5

SUMMARY, CONCLUSION AND POLICY RECOMMENDATIONS

5.0 Introduction.

This chapter seeks to focus on the effectiveness of both micro and macroeconomics towards aspects of profitability of banks in Zimbabwean banking sector. In this way the summary of the results and policy recommendations are then presented. However, such areas pertaining to studies of the future are brought about regarding the exact concept and conclusive information of this chapter give after.

5.1 Summary of the Study.

The major aim of the research focuses on the examination and analysis of the impact of micro and macroeconomic factors on the profitability of banks: a case of the Zimbabwean banking sector. An econometric model was used in the study and it used a monthly time series data set from 2012-2016. Empirical findings from the study showed that liquidity, deposits, Capital Adequacy, gross domestic product and inflation are favourably related with the profitability of banks. The empirical findings however showed that an inverse relationship occurs between the Interest rates and Total Equity to Assets are not important to Return on Assets

5.2 Conclusions

The fundamental focus of the research was to discover the effectiveness of the micro and macroeconomic aspects on the profitability of banks in the Zimbabwean banking sector using monthly time series data set starting from 2012 up to 2016. However, inflation must be kept at a lower rate reducing loan defaults to the banks in such a way that profit increases. The Gross Domestic Product should be increased by means of prudent policy intervention measures and interest rates being jointly determined by the RBZ and the banks. Micro

economic aspects namely Capital Adequacy, deposits, Total equity to Assets and Liquidity, Managers are supposed to plot effectively in order for factors to influence the profitability of banks.

5.3 Policy Implications and Recommendations.

The empirical outcomes of this study showed that there is a positive relationship between inflation and Profitability of banks. Having a present situation of stagnant monthly earnings and wages in Zimbabwe a rise of inflation has effects on the capacity of borrowers to pay back borrowed funds or amounts thereby decreasing the buying power. The government must maintain the inflation rate at a lower level. The economic theory argues that the monetary policy can be used to control the level of inflation. The adoption of the multicurrency regime however, the RBZ cannot put in place all the possible instruments of the monetary policy to be effective in curbing inflation. Such a setup however asserts that RBZ is not able to control and capture interest rates as well as supply of cash in order to have control of inflation. This research however supports the ongoing usage of the multi-currency system since it guarantees the stable situation of price. A reduced level of inflation will assist to lower non-performing loans thereby raising the deposit level as well as pushing forward the rise of profitability of banks in Zimbabwe. More so, inflation rates through securing salaries of public workers will help to keep inflation level reduced. Such is so due to the habit of price inflation caused by retailers when civil servant's monthly earnings are topped up. This way however maintains the inflation rate reduced because there will be no incentives to raise the prices thereby keep the buying power of a currency.

More so, the results of the study revealed a positive relationship between the bank's profitability and the level of GDP. This means that an increase in the level of Gross Domestic Product is accompanied by an increase in the level of profitability of banks. This compels the government of Zimbabwe to boost the GDP so as to increase liquidity in the economy. An increase in liquidity represents the availability of income in the economy. This calls for resilient and prudent policy intervention measures so as to boost the total output of the economy. The government can attract foreign direct investment and at the same time formulate policies that enhance value addition so as to avoid the exportation of unprocessed raw materials. This helps in increasing the level of GDP in the Zimbabwean economy at the same time increasing the liquidity.

Finally, the micro economic aspects namely Capital adequacy, Total Equity to Assets, Deposits and Liquidity are bank specifics there it includes banks managerial decision making, Managers are supposed to plan as well as coordinate programmes and put them into action efficiently and effectively in a bid to increase profits. They should as well bring about ways that solve those affecting the bank's profitability as mentioned by the RBZ (2016) that cash crisis is greatly affecting the financial sector so therefore banks should adopt the cashless policy

5.4 Suggestions for Future Studies.

The research omitted several variables that determine the profitability of banks. Some of the omitted variables include Bank size, cash equivalents, earning per share, spread ratios and many other micro economic factors as for macroeconomic aspects the research excluded exchange rates, therefore, future researches can be hinged accordingly with these variables since they were not attached in this model.

REFERENCES

- Abbas, C. (2015) 'Liquidity Assessment and the Use of Liquidity Ratio as Defined in the Basel Adonji, L. (2012) 'Structural Determinants of Banks profitability Latin America and the Caribbean, 1990-2009', *ECLAC*, LC/MEX/L.1087, Mexico.
- Andren, T. (2008) 'Econometrics Part III', Bussiness Sum Up, Sweden.
- Bonila, H. R, and Grigorian, D. A. (2007) 'Relationship between Bank deposits and Bank profitability: A cross-country analysis of Amernia's stubbornly low tax collection', *IMF Working Paper*, WP/07/106.
- Chimkomo, I.S. and Munir, F. (2010) 'The relationship Between Bank Specific and Bank Profitability', *Journal of Social Sciences (PJSS)*, Vol. 30, No. 2, pp. 439-452.
- Davies, Y. and Floros, C. (1962) 'Industrial Approach: A note', *Journal of Chinese Economic and Business Studies*, 10(3), pp. 267–273.
- Dzingirai,R. and Katuka, Z. (2014) 'Impact of Bank Specifics and the Macro economic Factors On The Profitability Of Banks: A case of Zimbabwe (1980-2012)', *Journal of Economics and Sustainable development*, ISSN-1700 (Paper) ISSN 2222-2855, Vol.5,No.17,2014.
- Farham, K.E., Sabir, R.I., Zulfiquar, S., Sarwer, B. and Bahadur, W. (2012) 'Determinants of Banks income in the Economy of Pakistan', *Journal of Basic and Applied Scientific Research: TextRoad Publication*.
- Fisher, I. (1933) 'Morden Economics on social welfare', pp. 1–44.
- Fofak ,A .J. and Storm, S. (1985) 'The size and growth of the hidden economy in Norway', *Review of Income and Wealth*,31/1, pp.21-38.

Fofak, D. and Karliberda, A. (2005) 'Integrating the Unofficial Economy into the Dynamics of Post-Socialist Economics: A framework of Analysis and Evidence', *World Bank Policy Research Working Paper Series*, No.1691. Washington, D.C. World Bank.

Greenidge, K. (2005) 'Estimating the Size of the Underground Economy in Barbados', Presented at the Annual Review Seminar Research Department Central Bank of Barbados.

Gujarati, D.N. (2004) '*Basic Econometrics*', 4th Edition, New York: McGraw Hill Company.

Gujarati, D.N. and Porter, D.C. (2009) '*Basic Econometrics*', 5th Edition, New York: McGraw Hill Irwin.

Gutu, E. and Urban, I. (2015) 'Measuring Underground (Unobserved, Non-Observed, Unrecorded) Economies in Transition Countries: Can we Trust GDP?', *Journal of Comparative Economics*, Vol.36. No.4, 190-202. 40

Huizinga, R. M., Martinez-Vasquez, J. and Togler, B. (1997) 'the impact of macro economic factors on the profitability of banks', Andrew Young School of Policy Studies, *Working Paper 04- 06*, Georgia State University.

Illo, M. (2011). 'Determinants of Return on Assets', *Critical Issues in Taxation in Developing Countries* (pp.13-44). Cambridge, MA: MIT Press.

International Monetary Fund. (2016). World Economic Outlook Database, October 2016. Available at: <https://www.imf.org/external/pubs/ft/weo/2016/02/weodata/index.aspx>.

Katuka, G. (2013) 'Effect of Macroeconomic Factors on Commercial Banks Lending to Agricultural Sector in Kenya', *Journal of Modern African Studies*, 2(4), pp. 12–19.

Khan .A. R. (2015) 'The impact of micro economics on banks profitability in Pakistan', *Pakistan Journal of Commerce and Social Sciences*, Vol.7(1), 59-69.

Khrawish, V., Globan, T. and Raguz, I. (2011) 'The impact of micro economic factors on the profitability of banks in Croatia:An Empiric Study', *Journal of Applied Environment and Biological Sciences*, ISSN: 2090- 4274, TextRoad Publication.

Kiganda, M.K. and Naseem, I. (2014) 'Impact of Industrial profitability on Economic Growth of Nairobi', *Nairobi Journal of Business and Management*; Vol.4, No.4, 190-202. 40

Kigngetich, M. (2011) 'Analysis of bank profitability in Poland', *Working Paper*, 119, International Monetary Fund.

Klein A and Monti E, (1971): The Monti-Klein Model, a derivative approach to banking: *Journal of money, credit and banking*, 36(3), 593-622.

Martinho, W and Tsai, H. (2017) 'The Impact of Capital Adequacy on The Profitability of Banks', *Review of International Economics*, Vol 6, Issue 2, 284-291. 39

Mbizi, A. (2010) 'Estimating the size and trends of banks profitability in Zimbabwe', *MPRA Paper No. 37807*.

Musgrave, A. (1998) 'The Laffer Curve: Past, Present and Future', Laffer Associates, January 24, 1998.

Ponce, V and Nikolov, V.A.M. (2013) 'Shadow economy in Macedonia', *Center for Economic Analyses (CEA)*, 1000 Skopje.

Reserve Bank of Zimbabwe (2008): 2008 Monetary policy Statement, available @ www.rbz.co.zw, accessed (19-1-18)

Reserve Bank of Zimbabwe (2010): 2010 Monetary Policy Statement, available @ www.rbz.co.zw, accessed (12-2-18)

Reserve Bank of Zimbabwe (2012), Monetary Policy Review, available @ www.rbz.co.zw, accessed (01-02-18)

Reserve Bank of Zimbabwe (2014), Monetary Policy Press Statement, available @ www.rbz.co.zw , accessed on (18-3-18)

Reserve Bank of Zimbabwe (2014): 2014 Monetary Policy Statement, available @ www.rbz.co.zw accessed (09-03-2018)

Reserve Bank of Zimbabwe (2014): Quarterly Industry Report (2014), available @ www.rbz.co.zw, accessed (16-04-18)

Reserve Bank of Zimbabwe (2015): Jan 2015 Monetary Policy Statement, available @ www.rbz.co.zw ,accessed (24-03-18)

Sharma, N.V. (2011) 'The Economics of the Informal Sector: A simple model and some empirical evidence from Latin America', *Carnegie- Rochester Conference Series Public Policy*, 45, pp. 129- 62.

Stein, G. (2012) 'Capital Asset Ratios and Bank Default Probabilities: An International Comparison Based on Accounting Data', *Swiss Journal of Economics and Statistics*, 132, pp. 743–754.

Syfri, J. (2011) 'Engine for growth or drag on productivity? The Informal sector and domestic Investment in developing countries', Georgetown University: Washington DC.

Tasalo, P. L. *et al.* (2015) 'The effects of micro and macroeconomic variables on the financial performance of deposit taking microfinance banks in. Research presentation degree in Masters of Science finance, University of Nairobi October 2015.

Tine, F. and Maggie, G. (2008) 'Macroeconomic Determinants of Loan Portfolio Credit Risk in Banks', *InzinerineEkonomika-Engineering Economics*, 23(5), pp. 496–504.

Vardin , P. (2014) 'The Subterranean Economy', *Financial Analysts Journal*, 34:1, pp.24-27.

Wen, W. (2012) 'Determinants of Bank profitability in Ethiopia (Johannsen Co-Intergration Approach)', *International Journal of Business, Economics and Management*, ISSN (e): 2312-0916/ISSN (p): 2312-5772.

Zimbabwe Economic Policy Analysis and Research Unit (2013), Contributions and challenges facing the finance sector of Zimbabwe, available@ www.zeparu.co.zw, accessed (13-04-18)

Zimstat (2017): Quarterly Digest of Statistics, available @ www.zimstat.co.zw, accessed (15-04-18)

Appendix 1

Data set used in the regression model

	Month	CA	DEP	LQD	TEA	INF	IR	GDP	ROA
2012	jan	60.55588	1205.5	1766.1	4700.1	0.36	14.285	1.33E+10	2.590474
	feb	58.45637	1165.9	1867.7	4862.1	0.49	14.03	1.34E+10	2.582685
	mar	59.14202	1140.9	1786.8	4871.1	0.43	13.42	1.36E+10	2.576093
	apr	75.22825	987.8	1907.9	5054.1	0.19	12.695	1.37E+10	2.570721
	may	76.43539	1080.5	1899.4	5234.4	0.07	12.6	1.39E+10	2.566592
	jun	77.40475	1228.8	1887	5259.8	0.2	13.195	1.4E+10	2.563718
	jul	77.4171	1174.7	1871.3	5483.4	0.23	12.195	1.42E+10	2.562112
	aug	75.88498	1197.6	1777.1	5443	-0.18	12.19	1.43E+10	2.56178
	sep	76.44035	1172.9	1773	5462.5	0.46	13.065	1.44E+10	2.562723
	oct	77.36491	1335.3	1825.5	5658.01	0.26	12.19	1.45E+10	2.564937
	nov	77.45296	1249.3	1932.4	5813.2	0.13	13.065	1.46E+10	2.568414
	dec	75.66894	1247.4	1945.7	5917.6	0.13	12.74	1.47E+10	2.57314
2013	jan	70.09102	1187.8	1417.7	6063.3	2.51	13.195	1.47E+10	2.579099
	feb	69.36256	1255	1142.5	5803.4	2.98	12.68	1.48E+10	2.586268
	mar	68.78536	1289.2	1454.7	6123.4	2.76	12.255	1.49E+10	2.594621
	apr	70.14541	1363.8	1712.4	6205.4	2.53	12.12	1.5E+10	2.604127
	may	68.09586	1295.4	1738.1	6371.6	2.2	12.07	1.51E+10	2.614755
	jun	64.77533	1284.8	1677	6352.3	1.87	11.875	1.52E+10	2.626467
	jul	64.86858	1338	1695.7	6368.8	1.25	12.02	1.53E+10	2.639224
	aug	63.98334	1258.5	1551.2	6357.8	1.28	11.57	1.54E+10	2.652986
	sep	64.69277	1318	1786.7	6514.1	0.86	11.7	1.54E+10	2.667709
	oct	65.61895	1271.3	1740	6523.4	-0.01	12.19	1.55E+10	2.683348
	nov	64.61872	1249.8	1626.1	6347.9	0.09	13.065	1.56E+10	2.699858
	dec	63.08718	1240.3	1708.1	6659.1	-0.08	12.74	1.57E+10	2.717192
2014	jan	64.26	1174.3	1638.2	6624.7	0.14	11.695	1.58E+10	2.753603
	feb	64.73241	1245.8	1704.5	6697.8	0.05	11.7	1.59E+10	2.77136
	mar	66.00762	1350	1768.7	6778.9	-0.22	11.755	1.59E+10	2.789088
	apr	69.53045	1357	1860.2	6979.9	0.58	11.67	1.6E+10	2.806785
	may	68.89001	1446.6	1975.8	7121.2	-0.13	11.82	1.61E+10	2.824445
	jun	67.12264	1463.1	1984.7	7050.5	-0.03	11.885	1.61E+10	2.842067
	jul	66.36279	1289.1	1816	6970.7	0.01	11.89	1.61E+10	2.859646
	aug	66.51653	1362.3	1909	7110.6	-0.31	11.865	1.62E+10	2.877179
	sep	66.45445	1439.8	1950.8	7192	-0.01	12.01	1.62E+10	2.894664
	oct	66.83318	1413.4	1935.3	7101.1	-0.11	12.13	1.62E+10	2.912098
	nov	68.2282	1360.6	1911	7368.1	-0.69	12.115	1.63E+10	2.929477
	dec	68.19538	1411.3	1891.1	7098.1	-0.09	11.935	1.63E+10	2.946801
2015	jan	66.66605	2032.8	1891.6	7030.6	-0.34	11.91	1.62E+10	2.983103
	feb	66.97267	1764.3	1855.2	6967.4	-0.07	11.865	1.62E+10	2.999207
	mar	66.21179	1880.8	1864.9	7107.6	-0.03	10.995	1.62E+10	3.014515
	apr	66.96456	1887	1865.6	7171.6	-0.89	10.775	1.62E+10	3.029058
	may	65.33579	2030.6	2131.3	7461.6	-0.19	10.765	1.63E+10	3.042866
	jun	66.09976	2043.8	2287.9	7482	-0.14	10.18	1.63E+10	3.055966
	jul	66.60924	1779.4	2222.9	7366.7	0.06	10.21	1.63E+10	3.068384
	aug	66.21603	1581.8	2215.8	7386.9	-0.36	10.235	1.63E+10	3.080142
	sep	65.53771	1935.2	2245.2	7572.9	-0.36	10.14	1.63E+10	3.091262
	oct	64.18045	1818.6	2318.8	7613.8	-0.29	9.13	1.63E+10	3.101763
	nov	65.23519	1838.8	2252	7609.5	0.16	9.935	1.63E+10	3.111663
	dec	67.48669	1998	2409.7	7620.2	-0.11	9.78	1.63E+10	3.12098
2016	jan	55.80596	1904.4	2135.7	6376.9	-0.05	9.73	1.63E+10	3.129727
	feb	56.80232	1918.6	2193	6251.4	-0.1	9.385	1.63E+10	3.13792
	mar	58.09329	1786.8	2297.7	6364.4	-0.12	9.3	1.64E+10	3.145572
	apr	58.56896	2016.2	2387.6	6412.4	-0.21	9.35	1.64E+10	3.152693
	may	58.98849	2200	2446	6407	-0.24	9.39	1.64E+10	3.159295
	jun	59.47743	1814.2	2555.6	6533.7	0.19	9.44	1.64E+10	3.165389
	jul	60.23887	1986.6	2656.2	6513.2	-0.19	8.74	1.64E+10	3.170982
	aug	60.65554	2004.8	2761.3	6645.4	-0.13	8.755	1.64E+10	3.176083
	sep	61.44995	1930	2878.8	6798.1	-0.26	8.805	1.64E+10	3.180699
	oct	60.86568	1834.8	2851.7	6794.1	-0.28	8.25	1.64E+10	3.184838
	nov	61.01771	1897.6	2587.5	6656.4	-0.06	9.42	1.64E+10	3.188504
	dec	60.7546	1678.9	2796.3	6776.3	0.05	10.98	1.64E+10	3.191703

APPENDIX 2

Descriptive statistics

View	Proc	Object	Print	Name	Freeze	Sample	Sheet	Stats	Spec									
										ROA	TEA	LQD	IR	INF	GDP	DEP	CA	
Mean										2.856643	6507.725	1999.062	11.38475	0.270667	1.56E+10	1523.597	66.24909	
Median										2.850857	6579.200	1895.500	11.86500	-0.010000	1.61E+10	1363.050	66.15578	
Maximum										3.191703	7620.200	2878.800	14.28500	2.980000	1.64E+10	2200.000	77.45296	
Minimum										2.561780	4700.100	1142.500	8.250000	-0.890000	1.33E+10	987.8000	55.80596	
Std. Dev.										0.235780	750.2699	365.2859	1.459436	0.832295	9.16E+08	329.6463	5.565933	
Skewness										0.060714	-0.629071	0.641623	-0.379567	1.964515	-1.045285	0.406795	0.459663	
Kurtosis										1.402776	2.724264	3.183829	2.236839	6.108903	2.818434	1.658263	2.745054	
Jarque-Bera										6.414670	4.147376	4.201285	2.896748	62.75638	11.00862	6.155465	2.275396	
Probability										0.040464	0.125721	0.122378	0.234952	0.000000	0.004069	0.046064	0.320556	
Sum										171.3986	390463.5	119943.7	683.0850	16.24000	9.36E+11	91415.80	3974.945	
Sum Sq. Dev.										3.279950	33211389	7872594.	125.6672	40.87017	4.95E+19	6411336.	1827.797	
Observations										60	60	60	60	60	60	60	60	

APPENDIX 3

Diagnostics Tests

2.1 Results of Unit Root tests

2.1.1 ROA Unit Root Test

Null Hypothesis: D(ROA) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=10)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-7.289980	0.0000
Test critical values:		
1% level	-3.548208	
5% level	-2.912631	
10% level	-2.594027	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(ROA,2)

Method: Least Squares

Date: 04/26/18 Time: 16:21

Sample (adjusted): 3 60

Included observations: 58 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(ROA(-1))	-0.969441	0.132983	-7.289980	0.0000
C	0.039381	0.392927	0.100226	0.9205

R-squared	0.486915	Mean dependent var	0.031662
Adjusted R-squared	0.477753	S.D. dependent var	4.140818
S.E. of regression	2.992430	Akaike info criterion	5.063923
Sum squared resid	501.4598	Schwarz criterion	5.134973
Log likelihood	-144.8538	Hannan-Quinn criter.	5.091598
F-statistic	53.14381	Durbin-Watson stat	1.986077
Prob(F-statistic)	0.000000		

2.1.2 LQD Unit Root

Null Hypothesis: D(LIQUIDITY) has a unit root

Exogenous: Constant

Lag Length: 1 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.994107	0.0000
Test critical values:	1% level	-3.550396	
	5% level	-2.913549	
	10% level	-2.594521	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LIQUIDITY,2)

Method: Least Squares

Date: 04/26/18 Time: 16:29

Sample (adjusted): 4 60

Included observations: 57 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LIQUIDITY(-1))	-1.267580	0.181235	-6.994107	0.0000
D(LIQUIDITY(-1),2)	0.327574	0.135821	2.411803	0.0193
C	23.19177	18.31801	1.266063	0.2109

R-squared	0.527146	Mean dependent var	5.082456
Adjusted R-squared	0.509632	S.D. dependent var	194.9003
S.E. of regression	136.4814	Akaike info criterion	12.72145
Sum squared resid	1005867.	Schwarz criterion	12.82898
Log likelihood	-359.5613	Hannan-Quinn criter.	12.76324

F-statistic	30.10002	Durbin-Watson stat	2.035501
Prob(F-statistic)	0.000000		

2.1.3 CA Unit Root Results

Null Hypothesis: D(CAPITAL_ADEQUACY,2) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
<hr/>			
Augmented Dickey-Fuller test statistic		-12.08757	0.0000
<hr/>			
Test critical values:	1% level	-3.550396	
	5% level	-2.913549	
	10% level	-2.594521	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(CAPITAL_ADEQUACY,3)

Method: Least Squares

Date: 04/26/18 Time: 16:36

Sample (adjusted): 4 60

Included observations: 57 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
----------	-------------	------------	-------------	-------

D(CAPITAL_ADEQUACY(-1),2)	-1.453057	0.120211	-12.08757	0.0000
C	0.004416	0.010882	0.405854	0.6864
<hr/>				
R-squared	0.726517	Mean dependent var	-0.000484	
Adjusted R-squared	0.721545	S.D. dependent var	0.155584	
S.E. of regression	0.082100	Akaike info criterion	-2.127298	
Sum squared resid	0.370723	Schwarz criterion	-2.055612	
Log likelihood	62.62798	Hannan-Quinn criter.	-2.099438	
F-statistic	146.1095	Durbin-Watson stat	2.213927	
Prob(F-statistic)	0.000000			
<hr/>				

2.1.4 TEA Unit Root results

Null Hypothesis: D(TOTAL_ASSETS) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=10)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	7.466096	0.0000
Test critical values:		
1% level	3.548208	
5% level	2.912631	
10% level	2.594027	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(TOTAL_ASSETS,2)

Method: Least Squares

Date: 04/26/18 Time: 16:45

Sample (adjusted): 3 60

Included observations: 58 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(TOTAL_ASSETS(-1))	-0.995961	0.1333987	-7.466096	0.0000
C	32.8672028	674571.146215	0.2566	

R-squared	0.498848	Mean dependent var	-	0.725862
Adjusted R-squared	0.489899	S.D. dependent var		301.9738
S.E. of regression	215.6738	Akaike info criterion		13.61929
Sum squared resid	2604850.	Schwarz criterion		13.69034
Log likelihood	-392.9593	Hannan-Quinn criter.		13.64696
F-statistic	55.74259	Durbin-Watson stat		1.994241
Prob(F-statistic)	0.000000			

2.1.5 DEP Unit Root Results

Null Hypothesis: D(DEPOSITS) has a unit root

Exogenous: Constant

Lag Length: 1 (Automatic - based on SIC, maxlag=10)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-8.027046	0.0000
Test critical values:		
1% level	-3.550396	
5% level	-2.913549	
10% level	-2.594521	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(DEPOSITS,2)

Method: Least Squares

Date: 04/26/18 Time: 16:57

Sample (adjusted): 4 60

Included observations: 57 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
----------	-------------	------------	-------------	-------

D(DEPOSITS(-1))	-1.734950	0.216138	-8.027046	0.0000
D(DEPOSITS(-1),2)	0.297343	0.132567	2.242965	0.0290
C	18.33887	18.86896	0.971907	0.3354
<hr/>				
R-squared	0.688878	Mean dependent var	-3.398246	
Adjusted R-squared	0.677355	S.D. dependent var	248.4344	
S.E. of regression	141.1153	Akaike info criterion	12.78823	
Sum squared resid	1075330.	Schwarz criterion	12.89576	
Log likelihood	-361.4645	Hannan-Quinn criter.	12.83002	
F-statistic	59.78270	Durbin-Watson stat	1.995768	
Prob(F-statistic)	0.000000			

2.1.5 GDP Unit Root Results

Null Hypothesis: GDP has a unit root

Exogenous: Constant

Lag Length: 1 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.789088	0.0002
Test critical values:	1% level	-3.548208	
	5% level	-2.912631	
	10% level	-2.594027	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(GDP)

Method: Least Squares

Date: 04/26/18 Time: 17:07

Sample (adjusted): 3 60

Included observations: 58 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP(-1)	-0.034913	0.007290	-4.789088	0.0000
D(GDP(-1))	0.318656	0.120500	2.644450	0.0106
C	5.79E+08	1.20E+08	4.841929	0.0000

R-squared	0.802435	Mean dependent var	50817978
Adjusted R-squared	0.795251	S.D. dependent var	51292589
S.E. of regression	23209502	Akaike info criterion	36.80836
Sum squared resid	2.96E+16	Schwarz criterion	36.91493
Log likelihood	-1064.442	Hannan-Quinn criter.	36.84987
F-statistic	111.6946	Durbin-Watson stat	2.146725
Prob(F-statistic)	0.000000		

2.1.7 IR Unit Root Results

Null Hypothesis: D(INTEREST_RATES) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.489577	0.0000
Test critical values:	1% level	-3.548208	
	5% level	-2.912631	
	10% level	-2.594027	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(INTEREST_RATES,2)

Method: Least Squares

Date: 04/26/18 Time: 17:11

Sample (adjusted): 3 60

Included observations: 58 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(INTEREST_RATES(-1))	-1.094715	0.146165	-7.489577	0.0000
C	-0.060531	0.069591	-0.869814	0.3881

R-squared	0.500418	Mean dependent var	0.031293
Adjusted R-squared	0.491497	S.D. dependent var	0.731595
S.E. of regression	0.521696	Akaike info criterion	1.570410
Sum squared resid	15.24133	Schwarz criterion	1.641460
Log likelihood	-43.54190	Hannan-Quinn criter.	1.598086
F-statistic	56.09377	Durbin-Watson stat	1.819803

Prob(F-statistic) 0.000000

2.1.8 INF Unit Root Results

Null Hypothesis: D(INFLATION) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=10)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-6.973698	0.0000
Test critical values:		
1% level	-3.571310	
5% level	-2.922449	
10% level	-2.599224	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(INFLATION,2)

Method: Least Squares

Date: 04/26/18 Time: 17:15

Sample (adjusted): 3 60

Included observations: 49 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(INFLATION(-1))	-1.013925	0.145393	-6.973698	0.0000

C	-0.010414	0.069988	-0.148795	0.8824
R-squared	0.508535	Mean dependent var		-0.010000
Adjusted R-squared	0.498078	S.D. dependent var		0.691517
S.E. of regression	0.489915	Akaike info criterion		1.450791
Sum squared resid	11.28079	Schwarz criterion		1.528008
Log likelihood	-33.54437	Hannan-Quinn criter.		1.480087
F-statistic	48.63247	Durbin-Watson stat		2.032179
Prob(F-statistic)	0.000000			

2.2 Cointegration Results

Date: 04/30/18 Time: 18:01

Sample (adjusted): 3 60

Included observations: 58 after adjustments

Trend assumption: Linear deterministic trend

Series: ROA TEA LQD IR INF GDP DEP CA

Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.676425	249.0451	159.5297	0.0000

At most 1 *	0.621283	183.6024	125.6154	0.0000
At most 2 *	0.539628	127.2863	95.75366	0.0001
At most 3 *	0.428081	82.29447	69.81889	0.0037
At most 4 *	0.322659	49.88648	47.85613	0.0318
At most 5	0.198617	27.29081	29.79707	0.0947
At most 6	0.158659	14.44865	15.49471	0.0714
At most 7 *	0.073514	4.428691	3.841466	0.0353

Trace test indicates 5 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

2.3 Multicollinearity Test Results

	ROA	TEA	LQD	IR	INF	GDP	DEP	CA
ROA	1	0.685176	0.713672	-0.58608	-0.54634	0.66147	0.706196	-0.62286
TEA	0.685176	1	0.34383	-0.56198	-0.34161	0.696962	0.593983	-0.25072
LQD	0.713672	0.34383	1	-0.70995	-0.55556	0.535441	0.736823	-0.44267
IR	-0.58608	-0.56198	-0.70995	1	0.371464	-0.75907	-0.75026	0.528866
INF	-0.54634	-0.34161	-0.55556	0.371464	1	-0.41509	-0.42375	0.170984
GDP	0.66147	0.696962	0.535441	-0.75907	-0.41509	1	0.745617	-0.48943
DEP	0.706196	0.593983	0.736823	-0.75026	-0.42375	0.745617	1	-0.53234
CA	-0.62286	-0.25072	-0.44267	0.528866	0.170984	-0.48943	-0.53234	1

2.4 Autocorrelation tests

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	8.390724	Prob. F(2,50)	0.0007
Obs*R-squared	15.07734	Prob. Chi-Square(2)	0.0005

Test Equation:

Dependent Variable: RESID

Method: Least Squares

Date: 04/30/18 Time: 13:09

Sample: 1 60

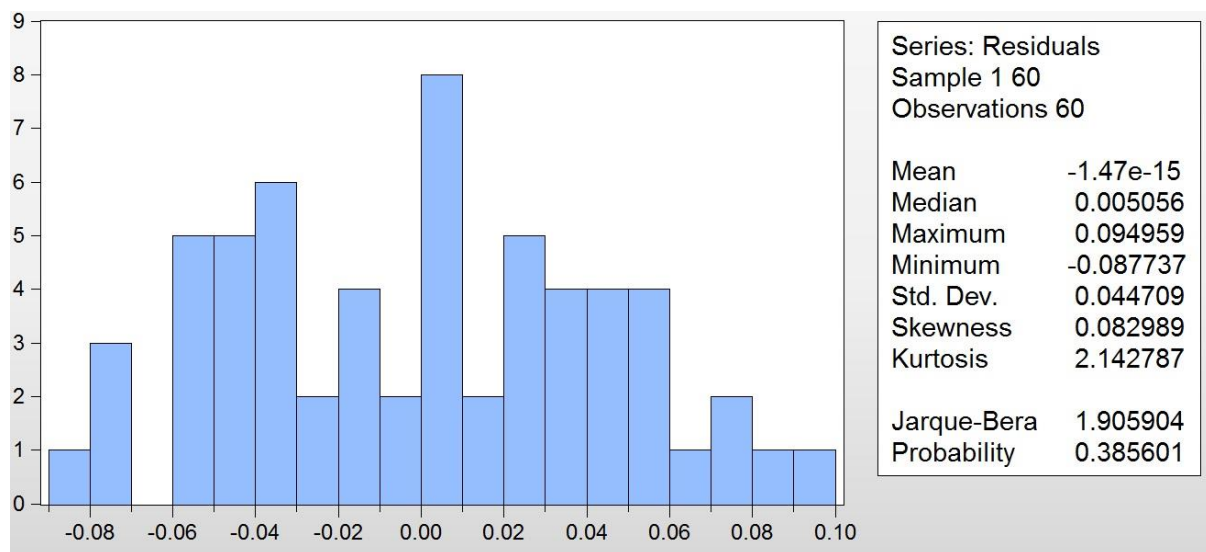
Included observations: 60

Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TEA	-5.19E-06	2.03E-05	-0.255223	0.7996
LQD	1.47E-05	3.19E-05	0.461311	0.6466
IR	-0.001134	0.010146	-0.111791	0.9114
INF	0.002622	0.008736	0.300174	0.7653
GDP	1.58E-11	2.22E-11	0.712321	0.4796
DEP	-6.13E-05	4.02E-05	-1.524886	0.1336
CA	-0.000595	0.001352	-0.439674	0.6621
C	-0.096521	0.382943	-0.252051	0.8020
RESID(-1)	0.545330	0.143176	3.808801	0.0004
RESID(-2)	0.046662	0.154437	0.302144	0.7638

R-squared	0.251289	Mean dependent var	-1.47E-15
Adjusted R-squared	0.116521	S.D. dependent var	0.044709
S.E. of regression	0.042023	Akaike info criterion	-3.350176
Sum squared resid	0.088298	Schwarz criterion	-3.001118
Log likelihood	110.5053	Hannan-Quinn criter.	-3.213640
F-statistic	1.864605	Durbin-Watson stat	1.760972
Prob(F-statistic)	0.079507		

2.6 Normality testing



2.7 Heteroscedasticity test

Heteroskedasticity Test: Breusch-Pagan-Goefrey

F-statistic	0.932280	Prob. F(7,52)	0.4898
Obs*R-squared	6.690323	Prob. Chi-Square(7)	0.4618
Scaled explained SS	2.871354	Prob. Chi-Square(7)	0.8966

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 04/30/18 Time: 08:59

Sample: 1 60

Included observations: 60

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.010055	0.019347	-0.519696	0.6055

TEA	-1.45E-08	1.03E-06	-0.014091	0.9888
LQD	4.37E-07	1.60E-06	0.272695	0.7862
IR	0.000170	0.000513	0.332006	0.7412
INF	0.000719	0.000441	1.629519	0.1092
GDP	5.53E-13	1.09E-12	0.505803	0.6151
CA	3.44E-05	6.74E-05	0.510934	0.6116
DEP	-1.18E-06	1.75E-06	-0.677106	0.5013

R-squared	0.111505	Mean dependent var	0.001966
Adjusted R-squared	-0.008100	S.D. dependent var	0.002119
S.E. of regression	0.002127	Akaike info criterion	-9.344180
Sum squared resid	0.000235	Schwarz criterion	-9.064935
Log likelihood	288.3254	Hannan-Quinn criter.	-9.234952
F-statistic	0.932280	Durbin-Watson stat	1.909861
Prob(F-statistic)	0.489817		

2.8 Model Specification

Ramsey RESET Test

Equation: UNTITLED

Specification: ROA TEA CA DEP GDP INF IR LQD C

Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	3.174156	51	0.0025
F-statistic	10.07527	(1, 51)	0.0025
Likelihood ratio	10.81688	1	0.0010

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	0.019455	1	0.019455
Restricted SSR	0.117933	52	0.002268
Unrestricted SSR	0.098478	51	0.001931

LR test summary:

	Value	df
Restricted LogL	101.8232	52
Unrestricted LogL	107.2316	51

Unrestricted Test Equation:

Dependent Variable: ROA

Method: Least Squares

Date: 04/30/18 Time: 08:44

Sample: 1 60

Included observations: 60

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TEA	1.01E-05	2.12E-05	0.475104	0.6367
CA	0.025319	0.009901	2.557267	0.0136
DEP	-0.001039	0.000396	-2.619701	0.0116
GDP	-3.93E-10	1.53E-10	-2.559711	0.0135
INF	0.097475	0.039605	2.461164	0.0173
IR	0.047352	0.020394	2.321827	0.0243

LQD	-0.000796	0.000304	-2.619782	0.0116
C	1.804388	0.434764	4.150271	0.0001
FITTED^2	0.979137	0.308471	3.174156	0.0025
<hr/> <hr/>				
R-squared	0.969976	Mean dependent var	2.856643	
Adjusted R-squared	0.965266	S.D. dependent var	0.235780	
S.E. of regression	0.043943	Akaike info criterion	-3.274388	
Sum squared resid	0.098478	Schwarz criterion	-2.960237	
Log likelihood	107.2316	Hannan-Quinn criter.	-3.151506	
F-statistic	205.9532	Durbin-Watson stat	1.192698	
Prob(F-statistic)	0.000000			

2.9 Model Estimation Results

Dependent Variable: ROA

Method: Least Squares

Date: 04/30/18 Time: 08:24

Sample: 1 60

Included observations: 60

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TEA	5.82E-06	2.30E-05	0.253469	0.8009
CA	-0.005796	0.001508	-3.842144	0.0003

DEP	0.000215	3.92E-05	5.478869	0.0000
GDP	8.89E-11	2.45E-11	3.631600	0.0006
INF	-0.024868	0.009872	-2.519020	0.0149
IR	-0.007970	0.011478	-0.694397	0.4905
LQD	0.000163	3.59E-05	4.536332	0.0000
C	1.260736	0.433075	2.911130	0.0053

R-squared	0.964044	Mean dependent var	2.856643
Adjusted R-squared	0.959204	S.D. dependent var	0.235780
S.E. of regression	0.047623	Akaike info criterion	-3.127440
Sum squared resid	0.117933	Schwarz criterion	-2.848194
Log likelihood	101.8232	Hannan-Quinn criter.	-3.018212
F-statistic	199.1749	Durbin-Watson stat	1.893742
Prob(F-statistic)	0.000000		
