Strengthening central bank regulations to stimulate economic growth through commercial bank lending system: A study of central bank lending system in the kingdom of eSwatini

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DECLARATION

I, **Samuel Nkosinathi Dlamini**, declare that

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SIGNATURE

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PROVERBS: 1:5

"The wise will hear and increase their learning,
and the person of understanding will acquire wise counsel and the skill [to steer his course wisely] and lead others to the truth" **Amplified Bible**.

ABSTRACT

This dissertation assesses the state of compliance to central regulation, impact of the central bank lending system on commercial banks credit to the private sector, and determines the optimal thresholds for monetary policy instruments with the aim of strengthening the lending policy of the Central Bank of eSwatini. The CAMELS Rating System Framework was used to establish the status and effect of compliance. The Autoregressive Distributed Lag (ARDL) regression model was used on monthly time series spanning from 2000 to 2019 to establish the links and impact of monetary policy instruments on bank credit to the private sector in the Kingdom of eSwatini. Thresholds of the three variables of concern, the discount rate, reserve requirement and liquidity requirement, were obtained by applying a Quadratic model.

The CAMELS results show that the commercial banks were compliant, except for management efficiency. The results on management efficiency imply that there is a need to closely monitor and capacitate commercial banks' principal officers and board of directors, who are posing a risk in the banking sector. The results also show that excess liquidity was associated low credit to the private sector.

The ARDL results show that out of the three monetary policy variables of concern (discount rate, reserve requirement and liquidity requirement), only the discount rate is statistically significant in the short and long-run, suggesting a weak policy mix. This study shows that the optimal thresholds for the lending system are: 5.42 percent (3.50 percent to 5.42 per cent) for the discount rate, 4.03 percent (2.5 percent to 4.03 per cent) for the reserve requirement and 12.48 percent (10 percent to 12.48 per cent) for the liquidity requirement to influence bank lending and economic growth in the right path. This implies the need for the Central Bank of eSwatini to actively use the reserve requirement and liquidity requirement to balance its policy mix. Therefore, strategies to stimulate bank lending and economic growth should recognise the need to adjust the three instruments downward. This will increase bank credit to high-yielding investments, translating to economic growth.

Keywords: Discount rate, reserve requirement, liquidity ratio, cointegration, thresholds.

TABLE OF CONTENTS

List of Tables

List of Figures

GLOSSARY OF ACRONYMS

AIA	American International Assurance
AIC	Akaike information criterion
ARDL	Autoregressive Distributed Lag
BIS	Bank for International Settlements
CAMELS	Capital adequacy, Assets, Management Capability, Earnings, liquidity, Sensitivity
CRR	Reserve requirement
DR	Central Bank rate/discount rate
L	Logarithm
LBCR	Logarithm of bank credit to the private sector (proxy for bank lending)
LEDOLLAR	Logarithm of the lilangeni/dollar exchange rate
LINFL	Logarithm Inflation
LRGDP	Logarithm of Gross Domestic Product
LQR	Liquidity ratio
SIC	Schwarz information criterion
TBR	Treasury bills rate

CHAPTER ONE: INTRODUCTION

1. Introduction

Central bank regulation is important to ensure stability and efficiency, to improve the banking system's competitiveness, mitigate the occurrence of superfluous financial distortions that emanate from bank panics and crises, and moderate depositors' risk exposure during financial distress (Poole and Wheelock, 2008). While the central bank's mandate is to ensure stability and foster economic growth, it is of paramount importance to understand that monetary policy and prudential regulation may not be costless to the economy and its effect may be more pronounced via the lending system to the private sector. Through prudential and monetary policy regulation, bank regulation is important to ensure a stable, efficient and competitive banking system, to mitigate the occurrence of superfluous financial distortions that emanate from bank panics and crises and moderate depositor's risk exposure during financial distress. While the mandate of the Central Bank is to ensure stability and foster economic growth is crucial, it is crucial to understand that regulation may not be costless to the banking sector and its effect may be more pronounced via the bank lending to the private sector. The main challenge stems from the likelihood that regulatory authorities' stance can unintentionally result in costs that may be excessively onerous, thereby causing bank lending instability.

Similar to other countries, the banking industry in the Kingdom of eSwatini is regulated by the Central Bank of eSwatini. The Central Bank of eSwatini was officially launched in 1974. The Bank's mission is to ensure monetary stability and foster a stable and sound financial system. Since foreign banks dominate the banking industry, the Central Bank always encounters challenges in executing its regulatory role because foreign banks sometimes provide services directly to customers using their head offices in South Africa. The Kingdom of eSwatini is largely dominated by foreign banks, namely First National Bank, Nedbank, and Standard Bank (Thring, 2008). These banks account for the lion's share in the financial sector. There is only one government-owned institution, the Swazi Bank (Central Bank of eSwatini, 2014). In total, there are fifty-one branches countrywide for the four commercial banks, and these branches remain well-capitalised and profitable. Despite the expansionary monetary policy, especially low interest rates, the private sector credit growth remained sluggish in the past ten years (Central Bank of eSwatini, 2014).

Developments from 2011 to 2017 were characterised by significant changes in monetary policy instruments, namely: the discount rate, reserve requirement and liquidity requirement. The CAMELS indicators remained tight in terms of prudential regulation. Both the monetary policy instruments and the on-site regulation measures directly affect the Commercial Bank Lending System, which in turn influences economic growth in the Kingdom of eSwatini. Since 2012, the Central Bank Lending system policy mix became a cause for concern amid a decline in credit to the private sector despite adjustments made by the monetary policy authorities on the discount rate, cash reserve requirement and liquidity ratio. Worth noting is that the period 2000 to 2019 has episodes of low bank rate/discount rate supported by high levels of the reserve requirement and liquidity requirement (Central Bank of eSwatini, 2014) resulted in low bank credit to the private sector and low economic growth in the Kingdom of ESwatini.

While there are several studies on prudential regulation and monetary policy regulation, the effect of both on bank lending to the private sector that influences economic growth has not been given much thought in the Kingdom of eSwatini (Central Bank eSwatini, 2014). The standard procedure globally is that commercial banks are occasionally evaluated through on-site examinations and off-site monitoring (Bassett, Lee and Spiller, 2015). The assessment provides a clear picture of the safety and soundness of the overall financial health of each bank. If the results show a downgrade in the rating of 1 to 5, that suggests that banks' financial health has worsened, and there is a need to consider corrective action to improve its supervisory rating. Usually, CAMELS rating downgrades such as 3, 4, or 5 are associated with strong lending practices control. Also, the central bank has at its disposal monetary policy instruments to influence money circulation in the economy.

The chapter sets out the study perspective regarding motivation, focus, problem, aims, research objectives, questions, research hypothesis, research tools, study significance, scope, and limitations. The main aim is to assess the central bank lending system (prudential regulation and monetary policy instruments) on bank lending to the private sector – the key driver of economic growth. In terms of prudential regulation, the focus is on on-site supervision. Prudential regulation in this way (on-site) is used to protect consumer interests and safeguard the stability of banks. In terms of monetary policy, the focus is on three main instruments: the discount rate, liquidity requirement, and reserve requirements. Elements of both prudential regulation and monetary policy regulation led to a discussion of the challenges faced concerning the lending system in the Kingdom of eSwatini as the regulator of bank credit to the private sector.

1.1 Motivation/Rationale for the Study

In the Kingdom of eSwatini, the Central Bank is currently using three monetary policy credit regulation measures to influence commercial bank lending, namely cash reserve requirement, liquidity ratio, bank rate and open market operation. The Central Bank of eSwatini also utilises six on-site indicators - the CAMELS (capital adequacy, asset quality, management quality, earnings, liquidity and sensitivity) framework to ensure soundness and compliance with prudential regulation. As indicated above, the Central Bank of eSwatini has not given much thought to the effects of monetary policy instruments and prudential regulation – on-site indicators; thus, information on this subject matter remains scarce and insubstantial. In the past ten years, credit to the private sector remained subdued despite monetary authorities' adjustments on cash reserve requirement, liquidity ratio, and bank rate. According to the Central Bank of eSwatini Monetary Policy Consultative Committee (2014), there is still a need for research to be conducted in the Kingdom of eSwatini to establish the impact of on-site prudential requirements and monetary policy instruments on bank credit to the private sector. Further, there is a need to determine the optimal thresholds (range) for monetary policy instruments for the Central Bank of eSwatini to aim when setting these instruments.

In addition, there is still a gap in the literature of a study that links the commercial bank compliance, monetary policy and prudential on-site regulation and thresholds for all bank lending. Authors of previous research studies have separately assessed the effect of prudential regulation, monetary policy regulation and thresholds of monetary policy instruments. However, none of these studies attempted to link the three in one conceptual framework. For example, Haile and Assefa (2006) and Daniel (2008) examined the determinants of private investment in Ethiopia; Abebe (2008) and Tadesse and Melaku (2019) explored the effectiveness of monetary policy in Ethiopia; Bajide (2011) and Misati (2010) investigated how different monetary and fiscal elements crowd out the private sector; Wirnkar and Tanko (2008), Mihailović, Bulajić and Savić (2009), Roman and Şargu (2013) and Rozzani and Rahman (2013) utilise the CAMELS framework to examine the state of regulation – compliance with prudential regulation; and Younus and Akhteruzzaman (2012), Tule, Audu, Oji, Oboh, Imam and Ajay (2015), and Olade (2015), who applied the quadratic function to determine thresholds for monetary policy indicators. Despite other research studies on central bank regulation (prudential regulation and monetary policy instruments), none of the studies were conducted on the Kingdom of eSwatini Central Bank Lending system.

The consolidated conceptual framework is of particular value in the body literature because it goes beyond assessing the determinants of bank lending to the private sector by determining the optimal thresholds of monetary policy instruments to influence credit extension to the private sector and economic growth in the right direction in the Kingdom of eSwatini. Thus, unlike other previous studies,

this study provides a framework for exploration and strengtheningthe lending system of the Central Bank of eSwatini, which can be replicated to the other CMA countries.

1.2 Focus of the Study

This study focuses on strengthening the Central Bank policy mix to stimulate bank lending to the private sector by assessing the effect of prudential regulation, monetary policy regulation and thresholds of monetary policy instruments. The focus is the effect of central bank regulation (on-site prudential regulation and monetary policy instruments) on the bank lending system – bank credit to the private sector in Swaziland (now called the Kingdom of eSwatini). This research study answers the following questions: what is the state of compliance with the regulation? What are the effects of monetary policy instruments on bank lending? What are the links and impact of monetary policy instruments on bank credit to the private sector in the Kingdom of eSwatini? What are the optimal thresholds for monetary policy instruments to stimulate bank lending to the private sector in the Kingdom of eSwatini?

The population for the study comprises twenty-five participants who are within the financial regulation department and financial markets department[1] of the Central Bank of eSwatini. In addition, there are other departments at the Central Bank of eSwatini. This selection of the participants was motivated by Khotari (2003), who asserts that for non-probability sampling, researchers can purposively select a sample on the basis that the sample will represent the entire population, thus creating a basis of estimation. In this study, the sampling strategy utilised was purposive sampling because it allowed me to select the population based on their expertise (Khotari, 2004, Saunders, Lewis, and Thornhill, 2009, Hair, Celsi, Money, Samouel and Page, 2011). Thus, 100 percent of the population was selected.

In line with the insights gained through this dissertation, recommendations were made for how the Central Bank of eSwatini could strengthen its regulation system to promote growth through its lending system. The results of this research study are envisaged to bring about a significant transformation in stimulating bank credit to the private sector which will stimulate economic growth in the Kingdom of eSwatini.

[1] Officers responsible for commercial banks credit and monetary policy instruments, regulation of commercial banks and risk.

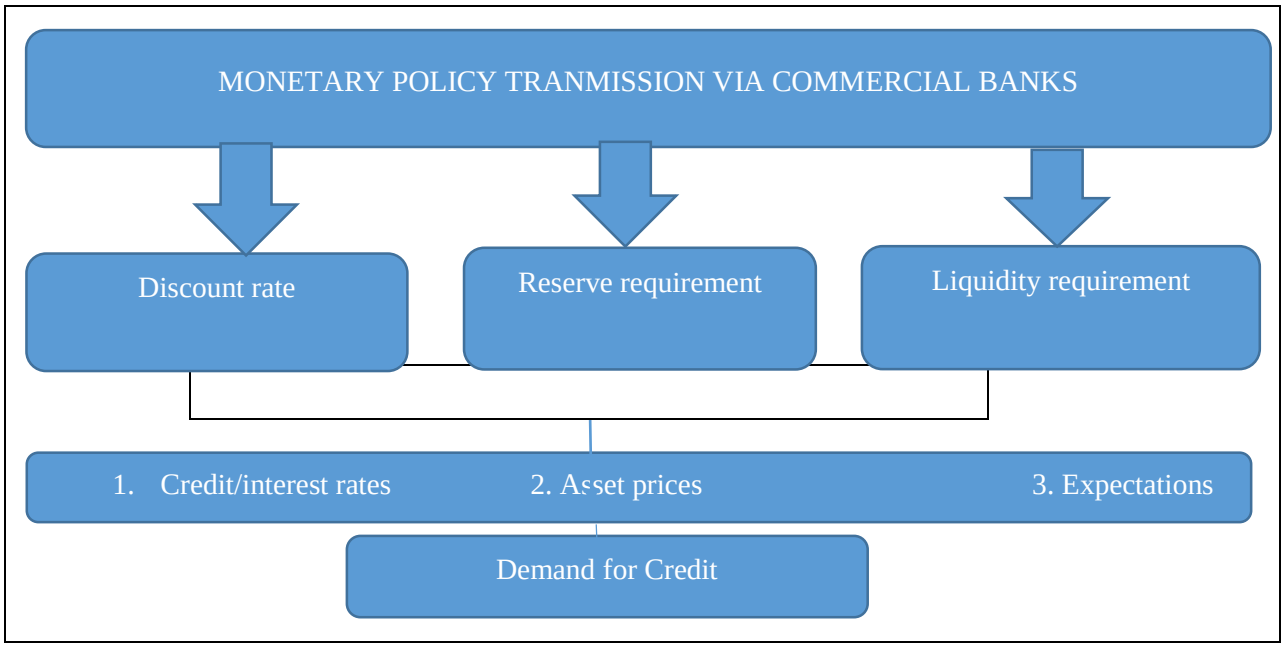
1.2.1 Prudential regulation

In terms of prudential regulation, the focus is on on-site supervision. Prudential regulation on-site supervision is used to protect consumer interests and safeguard the stability of banks. Prudential regulation was designed to ensure safety and soundness by minimising the probability of banks failures. The Central Bank of eSwatini utilises the CAMELS (Capital Adequacy, Asset Quality, Management Efficiency, Earnings, Liquidity and Sensitivity) framework for enforcing compliance with the requirements. These requirements are aligned to the Basel I Accord. Worth noting is that the Kingdom of eSwatini was implementing Basel I for 2000 to 2016 but with elements of Basel II.

1.2.2 Monetary policy regulation

In terms of monetary policy, the focus is on three main instruments, the discount rate, the liquidity requirement and reserve requirements. The regulator often uses these monetary policy instruments to influence commercial bank loans in the Kingdom of eSwatini (Dlamini and Skosana, 2017).

Figure 1.1: Monetary policy transmission



Source: Generated by Author (2017)

1.3 Problem Statement

Central bank regulation is one of the main economic management channels that governments use to influence commercial bank lending and economic activity. An appropriate or optimal central bank policy mix should consider the effect of both prudential and monetary policy credit control instruments

(International Monetary Fund, 2013). This is essential for a Central Bank to achieve its mandate to keep inflation within reasonable levels and ensure financial sector stability, which in turn encourage investment and stimulate economic growth. While there are studies that assess Central Bank instruments on inflation and bank credit determinants, the policy mix and effectiveness of the Central Bank Lending system to encourage bank lending to private sector investment that translates to economic growth is still a subject under intense debate.

In the past ten years, the Central Bank Lending system policy mix became a cause for concern amid a decline in credit to the private sector (manufacturing, agriculture and mining) despite adjustments made by the monetary policy authorities on the bank rate, cash reserve requirement and liquidity ratio. The period 2000 to 2019 has episodes of low bank rate/discount rate supported by high reserve requirement and liquidity requirement (Central Bank of eSwatini, 2014). The knock-off effects of bank credit were experienced after a major economic slowdown and significant government's financing shortfalls in 2010. In the period between 2012 and 2016, credit to the private sector on averaged was 11.5 percent. In 2015, the country experienced a major shock on credit to the private sector (corporate lending turned negative), which reduced the average to 7.5 percent in 2016 (Central Bank of eSwatini, 2015). This episode was accompanied by deterioration in banks' asset quality, with NPL escalating to more than 10 percent of total loans in March 2017 (International Monetary Fund Article IV (2017). Despite efforts by the Central Bank of eSwatini, such as maintaining an accommodative monetary stance using the discount rate, credit to the private sector never recovered. The effect of the Central Bank state regulation and Central Bank Lending system on commercial bank lending to the private sector and its effect on economic growth has been less interrogated. While the total loans and advances of the banking sector remain positive they are very low to encourage investment and stimulate economic growth. As such, bank lending, investment and economic growth have remained subdued in 2000 to 2019. The average economic growth of 1.9 percent recorded in recent years is way below the SADC region target of 7 percent growth (Southern African Development Economic Performance, 2017).

Therefore, the problem summarised above, imposes the need to conduct this research study, which provides evidence of the actual impact of the Central Bank Lending system policy mix which has a direct effect on bank lending and indirect effect to economic growth in the Kingdom of eSwatini. Depending on the results and conclusions, this study will change and guide policy directives in the Central Banks of eSwatini. The results of this study are envisaged to positively influence policy on Central Bank regulation in general and that of the smaller member states of the Common Monetary Area. Furthermore, the results of the research study could unlock the bottlenecks in the economy that are associated with a choice of policies. In addition, this study will determine the optimal limits of monetary policy instruments for the Central Bank of eSwatini to aim at when setting these instruments.

1.4 Aim

The study assesses the combined effect of on-site prudential regulation, monetary policy instruments and macroeconomic factors on bank lending to the private sector and to further determine the optimal thresholds that the Central Bank of eSwatini can aim at when setting its monetary policy instruments to influence bank credit to the private sector to the right direction and indirectly stimulate economic growth in the Kingdom of eSwatini.

1.5 Research Objectives

This study seeks to:

(a) establish the state of commercial bank compliance in the Kingdom of eSwatini

(b) establish monetary policy factors that stimulate bank lending and those that impede lending to the private sector – the core sector of the economy

(c) determine the link and impact of monetary policy instruments on bank credit to the private sector in the Kingdom of eSwatini

(d) establish the optimal range/threshold(s) for the monetary policy instrument(s) that the Central Bank of eSwatini should aim to stimulate commercial bank lending to the private sector in the Kingdom of eSwatini, in line with the economic growth strategy.

1.6 Research Questions

The research questions are questions that the study seeks to uncover. They form the basis for the study. The study utilises different research variables and instruments; the research seeks to answer the following questions:

(a) What is the state of commercial bank compliance in the Kingdom of eSwatini?

(b) What are the monetary policy factors that stimulate and impede bank lending to the private sector – the core sector of the economy?

(c) What are the links and impact of monetary policy instruments on bank credit to the private sector in the Kingdom of eSwatini?

(d) What are the optimal limits/threshold(s) for monetary policy regulation to influence bank lending in the Kingdom of eSwatini?

1.7 Research Hypotheses

In ordr to respond to the four research questions mentioned above, a conceptual framework (subsection 2.4.1, figure 2.4) was developed with a strong theoretical (Classical theory, Keynesian theory, asset price channel theory, monetarist theory and Bank lending channel theory) background by building on the works informed by Wirnkar and Tanko (2008), Mihailović *et al.* (2009), Roman and Şargu (2013), Rozzani and Rahman (2013), Assefa (2014), Guo and Stepanyan (2011), Olokoyo (2011), Younus and Akhteruzzaman, (2012), Tule *et al.* (2015), Olade (2015) and Gumata and Ndou (2017). The conceptual framework entails both central bank regulations instruments and macroeconomic factors, which according to the researcher, are relevant variables for this study. Therefore, the conceptual framework is based on the classical theory, Keynesian theory, monetarist theory, Bank lending theory (Bernanke and Gertler's theory) and the CAMELS concept since the five are interconnected and relevant to this study. The variables for prudential regulation are capital adequacy, asset quality, management quality, earnings, liquidity and sensitivity analysis. The variables of concern are bank rate/discount rate, cash reserve requirement, and liquidity requirement in terms of monetary policy.

The following four hypotheses were used to guide the process of responding to the four questions of this research study:

Question 1:

Null Hypothesis (H_0): The commercial banks are not compliant with central bank regulation measures.

Alternative Hypothesis (H_1): The commercial banks are compliant with central bank regulation measures.

Question 2:

Null Hypothesis (H_0): The monetary policy instruments do not impede/stimulate bank lending in the Kingdom of eSwatini.

Alternative Hypothesis (H_1): The monetary policy instruments impede/stimulate bank lending in the Kingdom of eSwatini.

Question 3:

Null Hypothesis (H_0): There is no link/impact of monetary policy instruments on bank credit to the private sector in the Kingdom of eSwatini.

Alternative Hypothesis (H_1): There is a link/impact of monetary policy instruments on bank credit to the private sector in the Kingdom of eSwatini.

Question 4:

Null Hypothesis (H_0): There are no optimal monetary policy instruments to stimulate bank lending directed to the private sector in the Kingdom of eSwatini.

Alternative Hypothesis (H_1): There are optimal monetary policy instruments to stimulate bank lending directed to the private sector in the Kingdom of eSwatini.

1.8 Research Tools

Primary and secondary data were utilised to achieve the results of this dissertation. A survey questionnaire[2] was used to collect primary data. This instrument entails a combination of closed and open-ended structured questions. Primary data was used to achieve objective (a). To ensure maximum participation, the researcher used face-to-face interviews in the administration of the questionnaire. Quarterly or monthly secondary data from 2001 to 2015 were obtained from published documentation, including previous research, quarterly reports, annual reports and financials statistics from the commercial banks and the Central Bank of eSwatini. Secondary data was used to achieve objective (b), (c) and (d) using CAMELS, ARDL model and quadratic model.

1.9 Significance of the Study

Based on the theory, empirical literature and data analysis, this study identifies the factors that affect bank lending to the private sector in the Kingdom of eSwatini. This dissertation further determines the optimal thresholds for three monetary policy instruments: reserve requirement, liquidity ratio and the bank rate/discount rate. Therefore, this dissertation makes five main contributions to monetary policy and bank lending to the private sector.

- First, it provides new insights into how on-site prudential regulation and monetary policy affects bank lending to the private sector, the main driver of economic growth. This will help the Central Bank of eSwatini utilise its monetary policy instruments to ensure the banking industry's stability, stimulate credit to the private sector, which in turn lead to economic growth.

- Secondly, the study contributes by providing the optimal threshold(s) or policy mix for the Central Bank Lending system that the Central Bank of eSwatini should aim at to stimulate commercial bank lending to the private and indirectly influence economic growth in the Kingdom

[2] Appendix 2

of eSwatini, in line with the economic growth strategy. This was achieved by determining the optimal threshold for the three variables of concern (monetary policy instruments).

- Third, the study's findings will benefit commercial banks' management in formulating strategies, policies, and guidelines with which to manage their lending effectively and efficiently to the private sector in the Kingdom of eSwatini.

- Fourth, it contributes to future research by providing additional empirical evidence of regulation and bank lending in the Kingdom of eSwatini.

- Finally, in line with the implications of the research findings, the research gives specific recommendations.

1.10 Constraints and Limitations to the Study

The constraints of the research study show challenges faced during the time of conducting the study. The limitations of a research study indicate possible weaknesses in the examination of the investigation. This research studies strengthening Central Bank regulations to stimulate economic growth through the Commercial Bank Lending System.

The last chapter of this study provides details on how the researcher minimises the constraints on the study by establishing a pleasant working relationship with the senior officials in the financial regulation and financial markets departments targeted for this study. Again, the following constraints were encountered, but the researcher was able to deal with all of them:

(i) Participants were of the view that information on the performance of commercial banks should only be shared by the Communications Expert of the Bank. Some respondents were reluctant to participate, fearing that their jobs might be at stake. To lessen the fears, a copy letter of approval to conduct the interview will be obtained and shared to all participants.

(ii) Access to the senior Central Bank of eSwatini official who were pacitipants of the survey was a challenge. The targeted officers of the Central Bank are always busy with the Common Monetary Area (CMA), Southern Africa Development Community (SADC) regional integration and continental assignments. Therefore, the researcher had to reschedule appointments to ensure that all targeted officers were interviewed.

(iii) The researcher also encountered challenges of getting high-frequency data for variables such as real GDP, which is released annually. In addition, the model used to analyse secondary data requires more than thirty-two observations to allow for generalisation of the findings.

The Reliability and Validity of the results of this study may be compromised by the model adopted to analyse data.

The following are the limitations of the study. The last chapter of this study provides a summary of how the researcher normalised all of them to produce credible results.

(a) Data used for question 1 (2003- 2019) were not the same period compared to questions 2 to 4 (2000 -2019) because the central Bank of eSwatini adopted the CAMELS framework in 2003.

(b) This study may not have dealt with the endogenous effects of GDP that affects the right and the left-hand side of equations 3 and 4.

(c) The study was limited to the effect on commercial banks; therefore, the effect on microfinance institutions, non-financial institutions, associations and development financial institutions while they also play a role in providing lending, in general, was noted assessed. Since the effect of central bank requirements and monetary policy instruments on microfinance institutions, non-financial institutions, associations and development financial institutions is felt in the short term, the result of this study can be generalised.

(d) Out of the twenty-five questionnaires distributed, two were not useful because they were not well answered.

1.11 Assumptions

The first assumption of this research study is that the banking industry is compliant to Central Bank regulation and compliance has a positive impact on the bank lending system. This study also assumes that both macro-prudential and monetary policy tools are designed to stimulate bank lending to the private sector and economic growth. Central Bank of eSwatini staff will provide both primary and secondary statistics and other relevant information for this research study. Finally, this research study assumes that the Central Bank Lending system policy mix (discount rate, reserve requirement and liquidity requirement) is optimal to stimulate bank lending to the private sector and economic growth.

1.12 Structure of the Dissertation

The structure of this thesis comprises five chapters.

Chapter One presents an economic overview of the Central Bank regulation methods of prudential regulation and monetary policy, the rationale for the research, the objectives of the study, and its contribution to the body of knowledge.

Chapter Two reviews the theory and literature of regulation. This section focuses on the evolution of Central Bank regulation, theories and objectives of regulation, international regulation standards, monetary policy regulation measures and determinants of bank lending to the private sector. It also provides a conceptual framework for the study.

Chapter Three provides the methodology followed to achieve the objectives of this study. It further provides the rationale for adopting the approach.

Chapter Four presents the findings of the research study based on the methods adopted. Following the methodology chapter, chapter four of the dissertation entails four interrelated subsections that provide answers to the four questions of the study. Therefore, this chapter is structured as follows:

(a) The first subsection applies a mixed approach – qualitative and descriptive – to analyse the compliance to Central Bank regulation. The CAMELS indicators are used to establish whether banks comply with the regulator's measures. The descriptive approach was utilised to confirm the results obtained from CAMELS concerning compliance.

(b) The second subsection of the research study assesses the views of the senior officials of the Central Bank of eSwatini to establish monetary policy factors that stimulate and impede bank lending to the private sector – the core sector of the economy. This is based on information provided by during the survey and secondary data of monetary policy instruments and selected relevant macroeconomic indicators. The analysis of factors that stimulate bank lending and those that impede lending to the private sector is based on Likert scale analysis, descriptive analysis – pairwise correlation matrix – and Granger causality analysis. Evidence of the response of bank credit to the private sector to shocks of the independent variables is presented using the variance decomposition and impulse response function.

(c) The third subsection applies the Autoregressive Distributed Lag (ARDL) cointegration method to explore the factors that significantly affect (impede or stimulate) bank credit to the private sector and, second, provide evidence of the relationship between bank credit to the private sector and the selected variables.

(d) The fourth subsection is devoted to estimating the optimal thresholds for the variable of concern. As such, the objective is to determine optimal thresholds for the discount rate, cash reserve requirement, and liquidity ratio (monetary policy instruments). The Central Bank of eSwatini will utilise the thresholds to set its instruments optimally in order to stimulate commercial bank lending to the private sector in the Kingdom, in line with the economic growth strategy.

Chapter Five discuss the findings obtained in chapter four and compares the same with previous studies. This chapter also provides conclusions, presents the original contribution of the study and practical contributions to policy implications, recommendations and suggested areas for further study.

1.13 Chapter Summary

This chapter serves as a roadmap that guided the researcher throughout the dissertation by providing a snapshot progression. The following chapter presents literature drawn from relevant research studies.

CHAPTER TWO: THEORY AND LITERATURE REVIEW

2. Introduction

This chapter attempts to examine relevant existing literature and theory on central bank regulation to develop a conceptual framework for this study. The chapter entails five main subsections. The first subsection provides literature on prudential regulation and monetary policy regulation. The second subsection summarises the theory on regulation, specifically prudential regulation and monetary policy regulation. The third subsection summarises the gaps identified in literature and theory. The fourth subsection presents the conceptual framework of this study. The last subsection provides a summary of this chapter and introduces the following chapter.

2.1 Literature Review

2.1.1 Central Bank regulation definition

According to Greenidge (2006), the regulation of commercial banks entails public administrative policing of private activities in line with a set of rules designed to ensure fair trade in the financial sector. Greenidge (2006) asserts that financial regulation defines the process in which the Central Bank monitors the financial institutions, a body directed by the government to strive to attain macroeconomic goals through monetary policies.

Coglianese (2012) defines regulation of commercial banks as a set of rules or norms adopted by the government to ensure the financial sector's stability. Orbach (2012) also argues in line with Coglianese by stating that regulation is a state intervention in the private sector to ensure the financial sector's stability and sustainability in an economy.

Kirkpatrick, Parker and Zhang (2004) assert that banking regulation entails a range of instruments used by governments to influence enterprises' and citizens' activities in an economy. Kirkpatrick further states that regulations entail laws, orders and rules issued by governmental entities to which governments have given regulatory powers. Therefore, financial regulation can vary from one country to another.

According to Spong (2000), commercial banking regulation refers to the framework of law and rules under which banks operate. These include who can open banks, what products can be offered and how banks can expand.

Monetary policy regulation can be defined as the tools at the disposal of the monetary authorities to influence the availability and cost of credit/money with the ultimate objective of achieving price stability (Ibeabuchi, 2007).

2.1.2 Rationale for banking regulation

The debate in international research on why commercial banks are regulated seems to be far from converging. Regulation refers to endorsing an authoritative set of rules, supplemented by some mechanism, implemented and monitored by a public agency. There are three generic types of banking regulation. First, there is regulation that ensures safety and soundness of the banking system. Secondly, regulation serves to protect customers from bank practices that contravene the rules and policies governing the financial sector. Thirdly, regulation seeks to address possible market failures in the allocation of resources. Finally, bank regulation forms part of government intervention in the bank sector. The government subjects banks to several requirements and restrictions to ensure price stability and a conducive environment for economic development (Benjamin, 2007).

Studies by Heffernan (2005), Pilbeam (2010) and Heffernan and Fu (2010), provides that commercial banks may sometimes exercise too much power in markets with limited competition to the detriment of the customers. For example, they may exaggerate their pricing of financial products and services because of their monopolistic power. Therefore, policies and instruments to protect consumers against exploitation practices are necessary to ensure competition and fair price setting. Further, Pilbeam (2010) suggests that since banks play a crucial role in resource allocation and economic growth, a banking institution's failure may trigger instability of the entire economy. Governments, therefore, intervene through the central bank monetary and macro-prudential systemic to ensure financial stability and mitigate against systemic failure that may compromise economic development.

Kenneth (2000) suggests that the need to regulate banks originates from several concerns about the ability of bank depositors to monitor the risks that emanate from the commercial banks' lending coupled with micro and macroeconomic dynamics. Apart from the statutory and administrative regulatory enforcements, the banking sector has been subject to many regulations, such as the use of government discretion, monetary frameworks and other legislation. As a result, banks are considered to be inherently unstable and structurally fragile. Banks' fragility emanates from keeping low ratios of capital to assets relative to their high short term debt and cash reserves to assets. Kenneth (2000) asserts that regulating commercial banks is very important since banks are in a business of profit-making, which is achieved by investing depositors' money. Therefore, banking laws and regulations entail several aspects of

banking, including who is eligible to open banks, products allowed to be offered, and banks 'expansion. Bank regulation has evolved to cater to different goals that have been revised over time and sometimes conflict with one another.

Furthermore, governments worldwide were compelled to establish systems to ensure financial sector stability due to the global financial crisis in recent decades. The last bank crisis created calls for the introduction of reforms in bank regulation and supervision. As a result of innovation, bankers have introduced some new financial instruments and practices, which has complicated banking regulation. Thus, keeping financial stability is the priority of most countries, and the central banks have been mandated to monitor and implement monetary policy stance geared to stimulate economic growth.

In line with intensifying regulation measures, there are ongoing debates regarding the justification of regulation of banks and the entire financial sector. According to macroeconomic theory, sound monitoring and regulation of the banking industry are vital for the proper functioning and performance of the economy. The past financial crisis provides enough evidence of the need to regulate the banking sector, such as. the Asian and Latin America crises in the 1980s. These crises were an eye-opener to the financial regulators that they should strengthen their financial regulation measures, including monetary policy strategies in all their strides to prevent or mitigate risk. Thus there is a positive relationship between sound regulation and banking sector stability.

According to Kenneth (2000), banks are regulated for the following reasons: monetary and financial stability; protection of depositors; efficient and competitive financial system; consumer protection; and the bank supervisory role of the Central Bank. Kenneth also asserts that banking regulation is meant to protect consumer interests in various aspects of banking operations. The intervention of government in this sector is justified by market failures resulting from abuse of market power coupled with the existence of externalities or public goods and asymmetric information between sellers and buyers. It is essential that the two latter factors must be monitored and regulated in the banking industry. The failure of any bank creates externalities, and this problem tends to spread across the banking industry, resulting in a financial crisis (Kenneth, 2000).

Since the banking industry plays a crucial role in fostering economic growth, most governments seek to ensure its stability. Banks play an intermediary role in an economy by providing different systems such as payments systems, and once they are faced with challenges, the whole economy suffers. Furthermore, the provision of means of payment is considered a public good; therefore, governments should strengthen measures to protect the public and the whole economy. Therefore, regulation also plays an important role in preventing bank panics because they are contagious.

Before the Second World War, the Federal Reserve avoided intervening in the private sector loanable fund credit markets, but recenty it has. During financial turmoil, central banks will react to offset the disturbance of intermediation by providing “imperfectly secured loans” to banks and by lending them directly to non- financial borrowers (Gertler and Kiyotaki, 2010). Further, the central bank injected equity to some large banks to influence credit flows to different sectors of the economy. (Gertler and Kiyotaki, 2010) asserts that these interventions facilitated financial markets stabilisation and, as a result, assisted in limiting the slowdown in real aggregate economic activity.

According to the IMF (2014), a credible banking system offers a platform for central banks to influence the economy through its monetary and macro-prudential tools to support investment and growth. Therefore, an unregulated banking system corrodes the efficacy of the central bank in influencing the economy to the right direction, deepen economic downturns, encourage capital flight and weakens the banking lending system. Moreover, since regulation includes several interventions, this implies that, authorities should always ensure that policies and guidelines are aligned to with best global practices to foster financial stability and economic development.

2.1.3 The Supervision and Monetary Policy Functions of the Central Bank

Supervisory functions include several activities, which can be grouped into three classes: (i) investor protection activities, which are designed to enforce rules on the conduct of business and the disclosure of information; (ii) micro-prudential supervision, which entails both on-site and off-site surveillance of the safety and soundness of commercial banks, to protect depositors and other retail financial institutions; and (iii) macro-prudential analysis, which includes activities for monitoring the exposure to systemic risk and at identifying potential risk emanating from macroeconomic or financial market developments. A majority of central banks believe that the most efficient framework is micro-prudential supervision, since it is directly linked to systemic concerns and serves to protect depositors and investors (IMF, 2014).

The objective of monetary policy functions of the central bank is two-pronged: (ii) ensure price stability and (ii) financial stability. If the central bank can achieve price stability and financial stability, a country can influence the economy on the right trajectory. Price stability safeguards the currency's value in terms of its value in the domestic economy and internationally. There is evidence that economies perform well when inflation is contained in reasonably low levels and discount rate. Experience shows that in such environment economies can achieve positive growth and encourage investment. This is true in the sense that when there is no disruptive effects of high and fluctuating inflation, producers and consumers can make decisions with fear. Thus, price stability and financial stability promotes sustainable long-term growth of economic activity, investment and employment. The central bank uses

monetary policy instruments such as the discounted rate, reserve requirement, liquidity requirement and open market operation to influence the economy (IMF, 2014).

2.1.4 Evolution of central banks credit regulation

The Central Bank credit regulation instruments have evolved according to the historical conditions of each period, but their main goal remains the stability of the financial banking sector. Kirkpatrick *et al*. (2004) suggest that regulation plays a vital role in ensuring bank liquidity and controlling commercial banks' lending behaviour.

Literature provides three dimensions of Central Bank traditional credit regulation (Kenneth (2000) and Greenidge (2006)). First, traditional bank credit regulation had its origins in the banking crisis of the early 1930s. The regulator reacted to the second-round effect during that period instead of controlling it (Greenidge, 2006). The second phase of commercial bank credit regulation was that bank regulation was confined by rules restricting banks from particular activities or investments rather than simply regulating the conduct of those activities. Third, traditional bank regulation was confined to certain narrowly circumscribed areas of operation that are considered the core business of banking, namely taking deposits and making loans. The limitations of the traditional bank regulation approach include the emphasis on regulation and protection of bank assets as a reaction, which at times resulted in overreaction and further destabilising the banking sector.

Since the mid-70s, there has been a drastic shift in regulatory reform in the financial systems of most countries. This process entails a shift towards adopting a more market-oriented regulation approach coupled with liberalisation of interest rate controls, quantitative investment restrictions on financial institutions, line-of-business restrictions and regulations on ownership linkages among financial institutions, and controls on international capital movements and foreign exchange transactions.

2.1.4.1 Interest rate controls

Before the early 1970s, controls on borrowing and lending rates were popular in most countries. During that episode, both the borrowing and lending rates were held below their free-market levels. Commercial banks rationed credit allocation to the most privileged borrowers. The use of interest rate control diminished in the 1990s, and only a few countries pursued these controls.

2.1.4.2 *Quantitative investment restrictions on financial institutions*

Quantitative investment restrictions regulation introduced controls on the total volume of credit expansion to risky sectors. Compulsory holdings of treasury bills, government bonds and prudential regulation acted as an alternative form of taxation since it allowed governments to maintain security yields artificially low. With some exceptions, these controls were eliminated by the early 1990s.

There is consensus among economists (Kirkpatrick et al., 2004; Kenneth, 2000; Greenidge, 2006; Ibeabuchi, 2007; Coglianese, 2012; and Orbach, 2012) that commercial bank regulation is designed to prevent commercial bank failures that create negative externalities which eventually led in a loss of confidence in the financial system. Regulation may take the form of structural, conduct, and prudential.

2.1.4.3 Structural regulation

Structural regulation is concerned about the financial soundness and stability of commercial banks. A contractionary regulatory stance on asset portfolios tends to constrain the efficiency of commercial banks because it motivates banks to venture into a risky investment that can result in bankruptcy. Therefore, the theory states that a bank should be a risk-averse portfolio manager with optimal assets. It supports regulation of commercial banks to augment a risk-averse manager who decides to invest in a riskier asset which can trigger bank runs and bankruptcy in the long-term. Structural regulation also entails the functional separation of banks into different activities, such as creating entry barriers through minimum capital requirements or imposing restrictions on the types of business banks undertake (Beck, Demirgüç-Kunt and Levine, 2007).

Structural regulation is criticised for increasing barriers to entry into banking markets, allowing incumbent banks to exercise market dominance.

2.1.4.4 Conduct of business regulation theory

Conduct regulation assesses the various types of asymmetric information, namely moral hazard and adverse selection problems banks face. It further recommends the need for regulation of commercial banks to ensure the financial sector's stability. Economists such as Dowd (2000) and Diamond and Rajan (2000) support the concept of conduct regulation. The conduct theory argues that moral hazard affects the liability side of the banks' balance sheets. It further asserts that higher transaction costs due to asymmetric information exacerbates banks' vulnerability. The other aspect of the concept hinges on

the tendency of banks to venture into risky investments as a result of the deposit insurance commitment, hence the need for screening and monitoring of bank managers as a result of the 'principal-agent' problem and the credit rationing effect of capital requirements.

As a result of emerging risk, new demands to stabilise the banking sector and the need to stimulate economic growth via bank lending to the private sector, central bank measures for the lending system gave birth to prudential and monetary policy regulation. While prudential regulation aims to ensure compliance to rules and thresholds, studies on CAMELS framework provides evidence that it affects bank credit to the private sector.

2.1.5 Prudential regulation

According to Clement (2010), the origin of prudential regulation can be traced back to the late 1970s (unpublished paper) – the minutes of a meeting of the Cooke Committee before the formation of the Basel Committee for Banking Supervision, and a paper by the Bank of England. The term generally implied a systemic approach to regulation and supervision for the macroeconomy (Borio, Furfine, and Lowe, 2001). In the mid-1980s, prudential policy evolved, and it became a policy aimed at ensuring the safety and soundness of the financial industry, and improving mechanisms for payments. The Basel Committee, which came into effect in 1988, provides international requirements on prudential regulation followed by almost all countries to ensure stability and compliance in the banking industry.

According to Goodhart, Sunirand and Tsomocos (2006), financial instability results from either systemic shocks, contagion after distinctive shocks or both. Commercial banks' soundness defines the likelihood of a bank becoming insolvent (Goodhart *et al*., 2006). The higher the likelihood of a bank becoming insolvent, the lower is the soundness of a bank, and the reverse is true. Bank capital is an important buffer against market failure. Low bank capital may lead to capital insolvency. Before the 1990s, regulatory authorities benchmarked their capital adequacy policy principally on the leverage ratio, presented as:

$$\text{Leverage} = \text{Capital}/\text{Total Assets} \quad \ldots\ldots(2.1)$$

The smaller the ratio, the lower the buffer for the bank to survive during crises. It holds that if the asset risk increases, that only increases the likelihood of insolvency, but capital may remain the same provided the bank satisfies the minimum leverage ratio. Therefore, the leverage ratio depicts the minimum capital ratio fixed by the regulatory authorities, not an optimal insolvency likelihood.

Notable and significant strides in terms of prudential regulation began in 1988, introduced by the Basel Committee. s Several Basel levels have been introduced since 1988, but for the purpose of this study, Basel I and II were reviewed, which best describe prudential regulation in the context of the Kingdom of eSwatini. Subsections 2.1.5.1 and 2.1.5.2 below provide details on Basel I and II.

2.1.5.1 Basel I requirements

In 1988, the Basel Committee introduced the Basel I Accord as a risk-based capital requirement to mitigate the weaknesses in the leverage ratio – an indicator of solvency. The 1988 accord requirement provides that international banks under the G10 countries had to hold capital equal to at least 8 percent of their assets measured in different approaches based on riskiness. This accord defines the capital requirement in two tiers, namely Tier 1 and Tier 2. Tier 1 depicts the shareholders' equity and retained earnings, while Tier 2 captures both internal and external resources at the bank's disposal. According to this capital requirement, a bank must maintain at least fifty percent of its measured capital in Tier 1 form (Ingves, 2013).

According to the debtor category, assets are classified into four buckets (0, 20, 50 and 100 percent) in Basel I. According to this classification, assets such as treasury bills and bonds do not have any capital requirement. Claims on banks have a 20 percent weight, which is equivalent to a capital charge of 1.6 percent of the total value of the claim. Therefore, all claims on the non-bank private sector must adhere to the standard 8 percent capital requirement. Basel I provide that the risk-based capital ratio is measured as:

Risk-Based Capital Ratio = Capital /Risk - Adjusted Assets……..……(2.2)

Due to the limitation of the 1988 accord and as a result of new risk dynamics, the Basel Committee has revised the first requirements several times, and significant improvements were made, especially in the treatment of off-balance sheet activities. For example. in 1996, the committee introduced a measure that addressed issues associated with trading positions in bonds, equities, foreign exchange, and commodities which were initially under the credit risk framework, and these were given explicit capital charges linked to the banks' open position in each instrument (Bank for International Settlements, 2001).

Supplementary components of Basel I

Core Capital (Tier 1 Capital)

(i) Paid-Up Capital

(ii) Disclosed Reserves (General and Legal Reserves)

Supplementary Capital (Tier 2 Capital)

(i) General Loan loss Provisions

(ii) Undisclosed Reserves (other provisions against probable losses)

(iii) Asset Revaluation Reserves

(iv) Subordinated Term Debt (5+ years maturity)

(v) Hybrid (debt/equity) instruments

- The weight of zero percent was allocated to assets such as loans lent to OECD states, investment with OECD central governments' securities, loans to borrowers, supported by the guarantees of the OECD states. Given that OECD states are considered advanced countries; their securities were allocated zero credit risk. This also involves loans extended to non-OECD countries, and central banks were assigned zero percent risk weights if and only if loans advanced to them were in their currency. This was done to remove the risk associated with exchange rate fluctuations on the loans advanced due to the currency depreciation of non-OECD member states.
- Loans and investments with domestic public sector enterprises outside the central government's jurisdiction were allocated risk weights ranging from 0 to 50 percent depending on the target of the regulator, which may be 0, 10, 20 and 50 percent.
- Loans extended to multilateral development banks, OECD banks, non-OECD banks with tenure of one year, loans guaranteed by OECD incorporated banks, and short term loans guaranteed by non-OECD banks were allocated a weight of 20 percent.
- Loans to non-OECD banks given on tenure of more than one year are assigned a weight of 50 percent.
- Loans extended to private sector enterprises, non-OECD banks with more than one year tenure, and capital market instruments issued by other banks were allocated a weight of 100 percent.
- A credit conversion factor (CCF) was utilised to capture the risk in off-balance sheet items such as contingent liabilities. For example, general guarantees against loans were allocated a weight of zero percent and letters of credit for shipments were given a weight of 20 percent.

In 1996, the Basel Committee introduced a component of market risk in response to financial innovations. Market risk can be best defined as the risk of losses due to movements in market prices, especially for the on-balance sheet and off-balance sheet positions. Market risk consists of interest rate, equity position, foreign exchange, and commodities risk.

Basel I and the lending system

Previous research studies provide evidence that changes in prudential regulation are associated with variations in the supply of bank loans which reduces or stimulates economic activity (Kashyap *et al*., 2010). Gambacorta and Mistruli (2004) investigated the effect of capital on bank lending behaviour and established that well-capitalised banks could better safeguard their lending from regulation shocks. Admati, DeMarzo, Hellwig and Pfleiderer (2010) and Jiménez, Ongena, Peydró and Saurina (2012) provide evidence that banks with low capital and liquidity ratios were negatively and severely affected by the global financial crisis. They further established that Tier 1 bank capital affected bank lending during the financial crisis.

Kim and Sohn (2017) established that as a result of regulation, commercial banks in Japan focused more on capital positions, resulting in reducing bank lending to the private sector. Woo (2003) provides evidence that there was a capital crunch on lending growth in the early 1990s. Another study by Honda (2002) revealed that international capital standards reduced credit expansion more than domestic regulation.

Barajas and Steiner (2002) used eight Latin American cases to investigate different banks' approaches post-Basel I. Barajas and Steiner (2002) found that some increased their capital, others decreased total assets, or opted to shift the composition of assets by investing in less risky investments, which in turn reduced credit to the private sector. Furthermore, Chiuri, Giovanni and Giovanni (2002) used a panel of data for 572 banks in fifteen developing countries and provides evidence that capital regulation's imposition reduces loan supply and overall total lending. Watanabe (2004) provides evidence of the effect of prudential regulation in slowing down credit to the private sector and further concludes that the capital crunch emanated from tightening regulation. Ghosh, Timothy, Marianne, Ales, Javier and Mourmuras (2002) used a sample of sixteen emerging countries to investigate the effect of the minimum capital requirement on bank lending and found that the implementation of higher minimum bank capital requirements resulted in a slowdown of bank credit.

Aiyar, Calomiris and Wiedalek (2014) investigated the effect of capital requirements on loan supply by regulated banks. Utilising time-varying bank-specific minimum capital requirements imposed by UK regulators, they established that regulated banks quickly reduce lending in response to tighter capital requirements. According to Francis and Osborne (2012), the capital requirements affect the commercial banks' desired capital ratio, hence the total lending. They argue that the actual and desired capital ratio difference has a significant effect on bank lending. Furthermore, the results obtained by Brun, Fraisse, and Thesmar (2013) are consistent with Francis and Osborne's results who examined the effects of the capital requirement on bank lending utilising loan level data and the transition from Basel I to Basel II.

Studies such as Rime (2001) and Ashcraft (2001) provide evidence that commercial banks respond to the effects of capital requirements by cutting lending in the short term. They further argue that there is little evidence that capital regulation induces banks to increase their capital-to-asset ratios more than they would do in an unregulated environment.

Therefore, notwithstanding that Basel I was an effort to regulate the financial market sector, the desired results were not realised. The outcome of its implementation was that banks that were initially under-capitalised improved their capital ratios to adhere to Basel I. For example, in 1988, major banks' capital to risk-weighted assets in the G-10 recorded 9.3 percent. By 1996, this rate stood at 11.2 percent. In a nutshell, Basel I introduced a standardised approach to defining capital adequacy globally and amplified the importance of prudent capital management in the financial sector across the world.

Critiques of Basel I

There are certain drawbacks in the 1988 Basel Accord; some of them are mentioned hereunder:

- The '1988 Basel framework' does not make adequate differentiation of credit risk, as there are only four risk weights of 0, 20, 50 and 100 percent". The risk weight applied for AAA Company is similar to any business even though the two risk profiles tend to differ substantially. For example, treasury bills and bonds held in banking books are allocated the same risk weights, even although the risk varies as recouping the two instruments is completely different.
- The accord did not emphasise portfolio diversification effects for credit risk, but at the same time, it acknowledges it for market risk under banks' internal VAR models. This approach does not appreciate that banks with the same capital adequacy under the current rules can have completely different levels of credit risk depending on how they have diversified. Therefore, the accord does not accurately provide a true picture of the riskiness for banks.
- Basel I do not provide a credible structure of credit risk. Charges imposed on capital are set at the same level regardless of their maturity structure and credit exposure. The limitation of such a structure is that it tends to overlook a longer period and may be linked to a high-risk of default.
- Basel I also distorted the credit risk pricing because margins are not a true reflection of the differences between various degrees of default risk, different weights of instruments and their exposure.
- Basel I do not provide any measures for credit risk mitigation practices and does not anchor their controls on collateral which can play a crucial role in reducing the losses from credit risk.

2.1.5.2 Basel II requirement

Basel II[3] came into effect as a second international standard in June 2004 to control the level of capital of banks and as a means to guard against financial and operational shocks for banks. The aim was to maintain sufficient consistency of regulation to avoid competitive inequality amongst internationally active banks. The Bank of International Settlement (2003) states that Basel II seeks to ensure that capital provision is more risk-sensitive; augment disclosure requirements that permit market participants to assess the capital adequacy of an institution; safeguard that credit risk, operational risk and market risk are computed based on data and formal techniques; and endeavour to align economic and regulatory capital more closely to minimise the scope for regulatory arbitrage. Gordy and Luetkebohmert (2006) state that Basel II seeks to protect the financial system if a financial crisis occurs. Basel II attempts to achieve this by fixing up risk and capital management requirements to ensure that a bank has enough capital for its risk exposure via its lending and investment activities. According to Taylor and Goodhart (2006), the more risk the banks are exposed, the more the amount of capital the bank requires to hold to safeguard its solvency. Since banking regulation tends to vary from country to country, the Basel Accord provides an integrated framework of Basel I and, subsequently, Basel II to assist countries in lessening anxiety over regulatory competitiveness and radically different national capital requirements for banks.

Basel II is premised on three pillars; minimum capital, supervisory review and market discipline (Bank of International Settlement, 2003).

Figure 2.1: Basel II Capital Accord

Source: Adapted from Umar Rafi (2004:1) & Bankexamstoday.com

[3] Issued by Basel Committee

Pillar 1: Minimum capital requirement

The minimum capital is the technical and quantitative heart of the accord. Through minimum capital requirement, the central banks compel commercial banks to hold a certain percentage of capital/assets after adjusting their assets for risk (Hassan, 2005).

The capital requirement defines the minimum regulatory capital for three different risk categories, credit, market, and operational risk.

Credit risk

Credit risk is established by utilising the recommended risk weights articulated in Basel II for the various on- and off-balance sheet items. Assets of the balance sheet of a bank are weighted between 0 and 100 percent. Zero depicts the safest assets such as government securities, and 100 signals the riskiest exposures such as unsecured personal loans and corporate debt. Secured loans such as residential property were allocated a 50 percent risk weighting. The Prudential Guidelines (2010) provide that central banks should ensure that commercial banks hold Tier 1 capital of at least 8 percent of risk-weighted assets.

Market risk

The Prudential Guidelines (2010) further provide that the market risk will be calculated based on the value at risk. The value at risk captures how much the market value of a portfolio of assets is likely to decline over a given time in normal terms.

Operational risk

This is the risk of loss emanating from insufficient or unsuccessful internal processes, staff and systems or external shocks. Operational risk is calculated based on the formula stated below, as articulated in Basel II.

$$K = [(GI\ 1 + GI2 + GI3) * \alpha]/n, \quad (2.3)$$

Where:

K = capital levied under the Basic Indicator Approach

GI = Gross Income (GI) which depict the net interest income plus net non-interest income.

α = 15 percent.

n = is the previous three years for which a positive gross income recorded.

Pillar 2: Supervisory review process/regulatory framework for banks

The supervisory review comprises a process whereby central banks and other regulators ensure that commercial banks adhere to stipulated rules. Therefore, if the minimum capital requirement serves as the rulebook, the supervisory review process is the referee system. According to the Basel II, Bank supervision seeks to evaluate the risks to ensure that bank management exercises sound decisions for its business, including, allocating loans and maintaining adequate capital to safeguard against such risks. Central banks utilise the CAMELS rating to evaluate commercial banks' soundness and compliance for regulation measures. A rating of 1 is classified as the best, while 5 signals the worst case.

Pillar 3: Market discipline

Market discipline is aimed at enhancing the disclosure of risk. Commercial banks may utilise their own models (and gain lower capital requirements) for transparency (Ghosh, Nachane, Narain, and Sahoo, 2003; and Ghosh and Das, 2003). Commercial banking is monitored by customers, trade counterparties, and investors. Discipline is measured by the formula below:

Capital Structure = Total Debt/Total Equity……..(2.4)

Basel II and the lending system

The enforcement of capital requirements by central banks tends to affect commercial banks' capital position, especially if they are compliant with such regulatory standards. If commercial banks' equity is not perfectly elastic, a bank with little capital may attempt to enhance its capital position by reducing its size, which involves decreasing loans. Ingves (2013) provides evidence that banks wanting capital adjusted their capital positions in the 1980s by growing more slowly relative to other banks. Therefore, banks with healthier capital positions tend to have a greater capacity to expand loans and still adhere to regulatory capital standards (Ingves, 2013).

Athanasoglou, Delis and Staikouras (2006) assert that capital is one of the bank-specific determinants that influence commercial banks' lending decision to extend loans. Previous research studies such as Naceur, Marton, and Roulet (2018), Kosak, Shaofang, Loncarski and Marinc (2015), Kim and Sohn (2017), and Kupiec, Lee, and Rosenfeld (2017) provide evidence that the main factors affecting lending are bank capital, bank liquidity, and bank supervision. In their view, the Basel capital requirements were introduced to track and supervise bank activities. Empirical research studies on the effect of capital requirements and bank lending provide mixed findings. Some studies (i.e. Aiyar *et al*., 2014a, 2014b; Meeks, 2017; Noss and Toffano, 2016) conclude a negative short run effect of capital requirements on

bank lending and growth. Aiyar *et al*. (2014a, 2014b) provide evidence that a percentage increase in capital requirements reduces the rate in real lending by 4.6 percent and credit by 6.5 percent to 7.2 percent. Meeks (2017) also provides evidence that tightening regulatory bank capital charges tends to reduce bank credit to the private sector, and if it expands, credit spreads. In terms of its impact on GDP growth, Noss and Toffano (2016) found that the impact is statistically insignificant.

Critiques of Basel II

Worth noting is that Basel Committee in Basel II failed to recognise the importance of key factors such as underwriting standards, leverage, liquidity, and other factors covered by Stefan Walter, the former Secretary-General of the BCBS, in an ex-post analysis of the fiscal environment in the run-up to the GFC (Walter, 2010). Walter's (2010) ex-post review provides evidence that the crisis has revealed the importance of these factors; therefore, there are concerns about why the architectures of Basel II ignored them. One glaring limitation of Basel II was to overlook the fact that capital-based regulation is inadequate and that risk-based capital regulation may yield disastrous results with the potential to trigger a financial sector crisis. Furthermore, Basel II is criticised for allowing banks to use their own models to calculate regulatory capital, increasing their vulnerability to domestic and global risk.

The current system of prudential regulation is a product of the evolution of the Basel Accords. Prudential regulation provides two supervision methodologies that central banks use to regulate commercial banks: on-site inspection and off-site inspection.

(a) On-site inspection

On-site inspection of commercial banks is undertaken based on an approved annual plan. The on-site examinations include routine inspections regularly conducted, targeted inspection addresses designed for specific issues of bank operation, e.g. credit, trade finance, monitoring inspection as a follow-up based on issues and directions established from previous inspections, and special inspections carried out as and when required. The issues that are established from the commercial banks during on-site inspections are evaluated using the CAMELS framework. According to Wirnkar and Tanko (2008), CAMEL originally entailed five components, namely capital adequacy, asset quality, management quality, earnings, and liquidity. However, in recent years, central banks have introduced sensitivity as a sixth factor.

The CAMEL framework was introduced in 1979 by the USA bank regulatory agencies, and currently utilise it in evaluating the soundness of the banking industry (Roman and Șargu, 2013). This framework was improved in 1997 by adding a sixth factor (sensitivity) designed to capture the systemic risk component that emanates from the current global competitive markets. The most accurate approach to

measure the financial performance of the banks is to assess the financial ratio and make a comparison with the benchmarks (Mihailović *et al*., 2009). According to Rozzani and Rahman (2013), each component of this rating is based on a scale of 1 to 5. This system follows both US regulation and American International Assurance (AIA)'s CAMELS approach. The components of the framework are summarised by Sarker (2005), Gunsel (2007), Peterson (2006), Nimalathasan (2008), and Rozzani and Rahman (2013).

C - Capital adequacy

The requirement on capital adequacy is that commercial banks should maintain balance with the risk exposure to avoid bank failure. There are two methods of calculating the adequacy of capital, namely (i) capital adequacy ratio (CAR) or capital to risk-weighted assets ratio, and (ii) by computing the ratio of capital to assets. The rationale for ensuring that banks maintain enough capital hinges on the fact that banks are vulnerable to credit, operational and market risks. If a bank maintains balance with its risk exposure, that provides a buffer that helps to absorb the potential losses and cushion its position in the banking sector. In Pakistan, Sarwar and Asif (2011), established a strong positive relationship between credit and capital adequacy, which was rated one or high. Therefore, central bank regulation should emphasise maintaining the statutory minimum capital requirement and keeping an adequate level of capital (Sarker, 2005; Gunsel, 2007; Peterson, 2006; Nimalathasan, 2008; and Rozzani and Rahman, 2013).

Capital Adequacy = Total Tier 1 Capital/RWA as calculated under credit risk……..(2.5)

The central bank requires commercial banks to meet a minimum capital ratio of 8 percent set by the Bank for International Settlements (BIS). However, it is crucial to note that, in some countries, the required minimum capital may be high depending on the objectives of that particular country.

The rating process involves scoring the results in a range of 1 to 5. In the case of capital adequacy, a rating of 5 depicts a weak capital level relative to the financial institution's risk and for such a level, shareholders' intervention or external resources are the main options (Sarker, 2005; Gunsel, 2007; Peterson, 2006; Nimalathasan, 2008; and Rozzani and Rahman, 2013).

Recent debates on the effect of capacity adequacy include Ly (2015) for the European banks, Ozili (2015) for Nigeria, Kayode, Obamuyi, Ayodeleowoputi and Ademolaadeyefa (2015) for Nigeria, Suganya and Kengatharan (2018) for Sri Lanka, Rahman (2018) for Bangladesh, Chen (2018) for Pacific Basin financial markets, Majumder and Li (2018) for emerging market and Sarkar, and Sensarma and Sharma (2019). Ly (2015) assessed the relationship between liquidity, risk, regulation and bank performance using data from 2001 to 2011. Ly found that capital restrictions on bank activity

policies are positively associated with bank performance. Further, capturing capital requirements and allocating more power to official supervisors is generally preferred in the market-based than bank-based countries. Ozili (2015) also examined the factors affecting bank profitability and established an insignificant effect of Basel capital on bank performance. Ozili also uncovered that the bank CAR was a major determinant of bank profitability. Another study by Kayode, Obamuyi, Ayodeleowoputi and Ademolaadeyefa (2015) proves that increased exposure to credit risk negatively impacts bank profitability. Therefore, they recommended an aggressive deposit mobilisation, adequate punishment for defaults and a reliable credit risk management strategy.

Further, Suganya and Kengatharan (2018) established that bank capital positively affected on bank profitability while Non-Performing loans and operating cost efficiency showed a negative effect on profitability. Rahman (2018) for Bangladesh established a negative relationship of capital regulation with risk-taking and a positive with capital regulation. Majumder & Li (2018) assessed the influence of bank capital requirements on the performance of the Bangladeshi banking sector and found that found a positive and significant impact of bank capital on bank performance. Sarkar *et al.* (2019) examined the effect of capital, risk and efficiency of Indian banks. They found a relatively lower efficiency with higher credit risk in private sector banks and public sector banks but a comparatively higher efficiency with more credit risk in of foreign banks.

A - Asset quality

Grier (2007) posits that the essential asset category is the loan portfolio because the banks' significant risk is that of not recovering a loan. The asset quality indicator provides the true picture of non-performing loans (NPLs) ratios, which serve as the proxy of asset quality and loan losses reserve. NPLs are unhonoured debts that exceed 90 days. The results may vary from country to country; for example, some regulators are flexible for a longer period, normally 180 days. The central banks require commercial banks to back up such bad debts by providing adequate loan loss reserve account. The provision of loan loss to total loans is considered when estimating the quality of a loan portfolio (Sarker, 2005; Gunsel, 2007; Peterson, 2006; Nimalathasan, 2008; Rozzani and Rahman, 2013). The sector also registered strong capitalisation levels due to the retention of profits and additional capital injection. The Central Bank of Kenya (2011) assed asset quality of the banking industry and found that the net NPLs ratio declined to 1.2 percent from 2.1 percent recorded in 2010. This was a result of implementing Risk Management Programmes that improves credit appraisal and administration standards. Contrary, Ongore and Kusa (2013) assessed the determinants of financial performance in Kenya and found that asset quality ratio was high at 15.52 percent, signalling a high exposure to credit risk. Otoritas (2017) theory recommends that banks maintain a minimum CAR of 8 percent and non-performing loan (NPLs) maximum of 5 percent to safeguard against credit risk.

Studies of Abata (2014), Adebisi and Matthew (2015), Bace (2016), Bhattarai (2016), Kiran and Jones (2016), Duraj and Moci (2015), Etale *et al.* (2016), Hashem (2016), Ozurumba (2016), provides evidence on the relationship between asset quality and profitability. These studies found a negative relationship between non-performing loans (NPLs) and bank profitability. Contrary, Adebisi and Matthew (2015) concludes that there is no relationship between ROE and NPLs. Kimanzi (2015) examined the relationship between asset quality and the financial performance of commercial banks in Kenya. Findings show that there is a negative link between asset quality and financial performance. Further, a similar assessment on Turkey banks confirms a statistically significant negative correlation between asset quality and financial performance. The results contradicted by Aguenaous, Lahrech, Bounakaya (2017), where the study revealed that all the CAMEL factors except management efficiency have a positive correlation on bank efficiency in Moroccan banks. The results contradict that of Buchory (2015) and Bhattarai (2016), which provides evidence of a positive relationship between ROE and NPLs.

Asset Performance = Total Non-Performing Loan/Total Loan Book……(2.6)

The rating process entails scoring the results in a range of 1 to 5. In asset quality, a rating of 5 shows a critically low asset quality that presents a signal threat to the institution's viability.

M - Management efficiency

There is consensus that management quality shows the ability of the board of directors and management to detect and control the risks of bank activities and to maintain a safe, sound, and competent operation in compliance with applicable laws and regulations (Sarker, 2005; Gunsel, 2007; Peterson, 2006; Nimalathasan, 2008; Rozzani and Rahman 2013), Majithiya and Pattani (2010). These studies provide evidence that a poor rating of management quality signals both a strong base for growth and a high level of competency employees in the banking industry, required for growth in the future and competency. Tiisekwa (2013) also found poor management for commercial banks in Tanzania, which indicates the need for commercial banks to consider the value of money by focusing on the three E's; efficiency, effectiveness and economy.

Management is responsible for the allocation of a bank's resources and the day-to-day operations of the bank. The quality and capability or efficiency of the management of a bank is reflected by its ability to comply with prudential requirements set by bank regulators, the quality of the bank's assets, and its profitability, among other indicators. Therefore, the assessment of management capacity is considered (Sangmi and Nassir, 2010) as qualitative so that it can be understood through subjective evaluation of management systems, organisation culture, and control mechanisms, amongst other things (Sarker, 2005; Gunsel, 2007; Peterson, 2006; Nimalathasan, 2008; Rozzani and Rahman, 2013).

According to Jeitschko and Jeung (2005), a low-cost efficiency is a signal of poor management systems. Managers without experience in credit scoring may easily issue high volume of loans. Linking this to the "moral hazard" hypothesis, bank managers may opt for a riskier investment, especially when banks are more inefficient (Jeitschko and Jeung, 2005). Therefore, poorly managed banks with more moral hazard incentives are more likely to pursue an aggressive lending schedule. On the other hand, Havranek, Irsova, and Lesanovska (2016) assert that low operating expenses are enough to cover and sustain the same volume of loans in a properly managed bank. Therefore, Ben Naceur *et al.* (2018) suggest that low borrowing costs may stimulate loan demand.

A study by Sanderson and Pierre (2016) assessed the determinants of banking sector profitability in Zimbabwe for the period 2009-2014. The study explored the evolution and determinants of banking sector profitability after Zimbabwe assumed a multicurrency system. The study shows that that the banking sector's performance in Zimbabwe is largely driven by bank management decisions, particularly for asset composition, liquidity risk, credit risk and management, capital size, and expense management. Sanderson and Pierre (2016) recommended that there was a need for the Zimbabwean banking sector to improve the quality of the assets, capital levels, improving liquidity and improving expense management.

Management Capability = Total operating expenses/Total operating income,

Net loans to customers/number of shares ……..…….(2.7)

The rating process involves scoring from 1 to 5. A rating of 1 shows that the management and board of directors are fully effective. The rating of 5 indicates that there is critically deficient management.

E - Earnings performance

This rating is limited to the quantity and trend in earning and shows indicators that may affect the sustainability of earnings. The argument here is that poor management may lead to loan losses and the need for a higher loan allowance or a high level of market risk. Therefore, to avoid any anomalies, future performance in earnings should be allocated equal or greater value than past and present performance (Sarker, 2005; Gunsel, 2007; Peterson, 2006; Nimalathasan, 2008; and Rozzani and Rahman, 2013).

Earnings = Total Operating Income - Total Operating Expenses. ……..……(2.8)

Grier (2007) suggests that consistent profit earning is essential to the sustainability of banking institutions, and it builds public confidence in the bank. Profitability ratios show the ability of a bank

to make profits from revenue and assets. Similar to the other components of the CAMELS rating system, the rating process scores from 1 to 5. A rating of 1 suggests strong enough earnings to maintain adequate capital and loan allowance and support operations. A rating of 5 depicts consistent losses and signals a glaring threat to the institution's solvency via the capital erosian (Sarker, 2005; Gunsel, 2007; Peterson, 2006; Nimalathasan, 2008; and Rozzani and Rahman, 2013). A study by Sarwar and Asif (2011) for Pakistan and Malaysia established poor management in terms of earnings quality and liquidity. The earnings quality rating reflected rigid lending policies, tight lending criteria, and poor management due to lack of experience in Islamic banks.

A study by Rajan (2006), suggests that higher returns discourage banks from searching for yield, hence the refrain from issuing loans. Thus high competition in the banking sector and lower interest margins creates apatite to issue loans (Laidroo, 2010). Nier and Zicchino (2006), using a sample of 600 listed banks worldwide, established that bank returns are positively related to loan growth. This results are consistent with Bustamante, Cuba, and Nivin (2019) banking system in Peru. Contrary, Adesina (2019) found a negative relationship between bank profits and loan growth and concluded that banks might reduce loan supply while searching for a higher rate of return.

L - Liquidity management

Liquidity shows the ability of the bank to meet its financial obligations effectively and promptly. There are variations among scholars concerning the measurement ratios. The most common approach to measuring the liquidity position of banks is customer deposits to total assets and total loans to customer deposits. Other scholars used different financial ratios to measure liquidity. Kamau (2009) suggests that if a bank holds high liquidity, that is at the opportunity cost of private sector investment. The need to ensure that banks maintain certain liquidity ratios emanates from the fact that commercial banks are in the business of generating money by mobilising short term deposits at lower interest rates, to lend it long-term at higher rates. This is sometimes hazardous for banks mismatching their lending interest rates (Sarker, 2005; Gunsel, 2007; Peterson, 2006; Nimalathasan, 2008; Rozzani and Rahman, 2013). Kamau (2009) for Kenya, the liquidity ratio for the banking sector averaged 37 percent in 2008 and 39.8 percent in 2009, way above the statutory minimum liquidity requirement of 20 percent, while the levels of credit to the private sector and economic growth remain low. According to Levine (1998) and Uzhegova (2010), high liquid assets serves as a provision for commercial banks to create cash on short notice, but it has the potential to reduce the ability of management to properly identify investment options, thus limiting the capacity to raise finance. On the flipside, Shen, Chen, Kao and Yeh (2010) provides that the relationship between liquidity risk and NIM is positive. It implies that there are higher interest revenue gains when liquidity is high. Liquidity is calculated as follows:

Liquidity = Liquid Assets/Liquid Liabilities…….(2.9)

A rating score of 1 shows that the bank has strong liquidity levels and well-developed funds, thus it will be capable of meeting present and any unanticipated liquidity obligations. On the other hand, the rating of 5 signals a critical liquidity deficiency, which implies that the bank needs immediate external assistance to meet its liquidity obligations (Sarker, 2005; Gunsel, 2007; Peterson, 2006; Nimalathasan, 2008; and Rozzani and Rahman, 2013).

According to Lartey, Antwi and Boadi (2013), bank liquidity refers to the ability of a bank to meet its short term financial obligations when they fall due. Lartey *et al.* (2013) also assert that management of liquidity is crucial for commercial banks since customer's confidence in the banks is highly dependent on the availability of money on time. From a commercial bank's perspective, liquidity is essential because it reflects the ability to meet contractual obligations on due dates and is part of the normal course of business (Lartey, Antwi & Boadi, 2013). Therefore, liquidity remains a precondition for the daily operation of banks (Edem, 2017). Central Banks ensures the availability of liquidity to protect both customers and the proper functioning of banks. According to Agbada and Osuji (2013), it is the central banks' mandate to monitor and ensure adherence to the liquidity requirement. Agbada and Osuji further posit that liquidity and its efficient management are the main components for a credible banking system in a country.

Dzapasi (2020) argues that for a bank to ensure effective liquidity management there is a need to balance inflows and outflows to ensure stability in the banking sector. Efficient liquidity management is associated with a successful business operation, increased return in assets and better earnings and capital (Businge, 2017). A study by Gennaioli, Martin, and Rossi (2014) provides that banks optimally opt to store liquidity by purchasing liquid assets to back credit to the private sector in the future. On the contrary, Cornett, McNutt, Strahan, and Tehranian (2011) argues that as banks increase their liquidity positions to protect themselves from liquidity risk during stressed times, they restrain investments.

Berrospide and Edge (2010) and Roulet (2018) used assets and liabilities ratios to examine the relationship between liquidity positions and bank loan growth. The results show that more liquidity is associated with more loans. Chen (2018) assessed the dependence of liquidity risk on external funding, macroeconomic factors, and supervisory and regulatory factors and established a reverse impact of liquidity risk on bank performance in a market-based financial system. In addition, Kaur and Sharma (2019) investigated the liquidity risk and credit risk of commercial banks in India and established that only the bank size and profitability had impacted liquidity risk and credit risk in the case of public and foreign banks. A study by Mucheru, Shukla, and Kibachia (2017) on liquidity management and the financial performance of commercial banks in Rwanda for the period from 2014 to 2016, provides evidence that liquidity risk management has a significant negative effect on financial performance.

Further, Mwangi (2014) and Muthoga (2019) also conclude that high liquidity is associated with a severe decline in bank profits.

S - Sensitivity

Gasbarro, Sadguna, and Zumwalt (2002) state that the sixth factor of the improved CAMELS version captures banks' sensitivity to interest rate, foreign exchange, and price risk. Sensitivity in this context implies the ability of a bank to identify, monitor, control, and manage its market risk predominantly. As the bank's currency income decreases, the sensitivity to market risk increases, which sometimes has a negative impact on banking soundness. If the investments, assets and interest income decrease, the receivables, loans, currency capital and total assets increase.

Masood, Mohammad, Ghauri, and Aktan (2016), applied the CAMELS framework for Pakistan found a high rating for sensitivity and found that there are limitations in terms of investment opportunities in the banking industry. Overall, a decrease in sensitivity implies improving the banking industry soundness (Sarker, 2005; Peterson, 2006; Gunsel, 2007; Nimalathasan, 2008; and Rozzani and Rahman, 2013).

Literature on the impact of sensitivity is scarce. However, available literature suggests that more exposures to interest rate risk make bank lending more sensitive to shocks in interest rates (Van den Heuvel, 2002). In an environment of unpredictable adverse changes in interest rates, banks are usually anxious that in the presence of a banking profile with high-interest rate risk might cause serious losses and reduce bank equity capital. Given that this funding source is pricy, banks may choose to reduce lending to adhere to regulators' safety obligations (Beutler, Bichsel, Bruhin, and Danton, 2020).

Table 2.1 below provides the CAMELS composition rating, which is used for on-site regulation. Worth noting is that some central banks sets thresholds based on the level of development of their banking industry.

Table 1.1: The CAMELS Composite Rating

Rating Scale	Rating Range	Rating Analysis	Exposure Limits	Rating Interpretation
1	1.0-1.4	Outstanding	1st limit (maximum)	The bank outperforms the average bank in all respects and by easily measurable differences
2	1.6-2.4	Superior	2nd limit	Measurably better than the average bank, but not quite outstanding in all respects
3	2.6-3.4	Average	3rd limit	A well-run, good bank that just meets all of the major standards
4	3.6-4.4	Underperform	Not recommended	The bank demonstrates significant weakness that, if not corrected, could lead to a very severe or unsatisfactory condition that will threaten its survival
5	4.6-5	Doubtful	Not recommended	The bank's financial health is substandard, with asset quality impairing over half of the bank's primary capital. If not corrected, further deterioration will lead to regulatory control and a high probability of failure

Source: Adapted from Dang (2011: 26)

Studies on banks' soundness can be traced back to the late 1980s and early 1990s. According to Zouari (2010), the first studies on soundness utilised one of the following two models – the Market Power (M) model or the Efficiency Structure (E) model. Baral (2005) asserts that CAMELS has become the most popular method for evaluating bank performance and soundness. This framework is also utilised as one of the central banks' best instruments for bank supervision (Hays, De Lurgio & Gilbert. 2009).

(b) Off-site supervision

Off-site supervision provides off-site surveillance of commercial banks. The focus of this function is to undertake periodic reviews of commercial banks to detect potential risks and examine compliance with regulatory provisions. It further provides advice and red flags areas that require special attention during on-site inspections. In addition, it conducts reviews of the financial performance of banks by utilising reports, statutory returns and other relevant information based on new developments. It also tracks trends and developments of the whole banking industry and generates industry reports oquarterly and

annually. The bank supervision department of the central banks usually utilises a manual that guides the inspection procedures. The off-site inspection also monitors compliance with provisions related to the cash reserve ratio (CRR), statutory liquidity ratio (SLR), and single borrower limit (SBL) and further recommends penalties in the case of non-compliance. In addition to the three, it is the mandate of the central bank also to monitor the following factors.

(i) Sector-specific capital buffers

The sector-specific capital buffer index is utilised to capture regulatory changes targeted to limit the growth in bank claims to some sectors of the economy. Changes in sector-specific capital buffers, either tightening or loosening the risk weights of specific bank exposures within a given financial cycle, affect bank credit. The three sets of credit regulated by central banks in sector-specific capital buffers, are consumer credit, real estate credit, and other credit. The sector-specific capital buffer index depicts the sum of prudential instrument variation across the three different types of credit. Therefore, the index may vary, recording values lower or greater than 1 or -1 for a given period, and that illustrates the fluctuation of capital buffers for different sectors at a given period.

(ii) Loan-to-value ratio limits

The loan-to-value (LTV) ratio limits are restrictions on the maximum amount offered as a loan to individuals or firms against their collateral. This instrument is used for real estate transactions. The central banks may restrict the amount that an individual can buy against the value of the property. This type of restriction influences the demand for credit, as it holds to any transactions under the policy regardless of the type of lender. Despite this instrument being used in the Kingdom of eSwatini, it is not considered an effective indicator that drives bank lending to the private sector.

(iii) Concentration limits and interbank exposure limits

Concentration exposure limits and exposures to other banks are multidimensional policies that influence claims between banks and borrowers. These limits can be divided into five and are discussed below:

- *Large exposures*: The Basel Committee on Banking Supervision. (2014) classifies an exposure to be large if "*the sum of all exposure values of a bank to a counterparty or a group of connected counterparties… is equal to or above 10 percent of the bank's eligible capital base"* Basel Committee on Banking Supervision (2014:11-16).
- *The level of the limit*: The level of the limit is defined either in monetary terms or as a share of a bank's capital. The appropriate risk weights are used to weigh the exposures.
- *Differentiation across counterparties*: Weights on exposures may depend on the "riskiness" of the counterparty and the duration of the claims.

- *Aggregate limits*: Central banks may also impose limits on aggregate concentration. Banks are not supposed to exceed a threshold expressed as a share of eligible capital. In the Kingdom of eSwatini, the SBL is 25 percent.
- *Sectors and assets covered by the regulation:* In this case, the regulation seeks to safeguard against exposures of depository institutions. This limit is applied to large groups and non-bank financial institutions. The central bank may exempt some sectors from banks' concentration limits, particularly those contributing significantly to gross domestic product. The definition of qualified assets considered when determining the exposure limits may vary from time to time, depending on the interbank exposures.

Literature (Nnanna, 2001 and Ibeabuchi, 2007) provides that in addition to the commonly used prudential regulation instruments, other countries may opt to utilise the following strategies:
Special deposits: The central bank may use its powers from time to time to obligate all banks to hold with it as a special deposit an amount equating to the percentages of the institution's deposit liabilities or the absolute surge of its deposit liabilities over an amount outstanding at a certain date (Ibeabuchi, 2007).

Selective credit control: Nnanna (2001) asserts that this tool is used to distinguish between the sectors of the economy into less preferred and priority sectors. Central banks use this approach to influence the direction of credit to some sectors of the economy.

Direct credit control: Central banks sometimes set credit ceilings such as interest rate caps and liquid asset ratio, and issue credit guarantees to preferred loans. This is done to direct credit to investments of choice (Ibeabuchi, 2007).

2.1.6 Monetary policy regulation

The literature on the effectiveness of monetary policy instruments on bank lending is very scarce. The scarcity of research has been attributed to a lack of data, as stated by authors such as Xie (2004), Goodfriend and Prasad (2006), Zhang (2009), Liu and Zhang (2010). According to Mishra, Das and Pradhan (2009), the country's monetary policy is mainly targeted to ensure the stability of the financial sector and foster economic growth. Therefore, a contractionary monetary policy stance that negatively affects the standard of living, consumption, and investment is contrary to the central bank's mandate. Bank credit is loans afforded to individuals, industries or firms and the government to stimulate consumption and investment to generate interest when borrowers honour their obligations. The private sector usually borrows money from commercial banks for investment purposes. In extreme cases, governments borrow money from commercial banks to cushion their recurrent and capital expenditure.

Mishra and Montiel (2013) assert that bank lending to the private sector is the main driver of economic growth, which is more evident in emerging and developing countries. Economists such as Olokoyo (2011) and Igan and Pinheiro (2011) conclude that central bank credit regulation is vital for economic growth. Onouorah, Shaib, Oyathelemi and Friday (2011) assert that monetary policy is rules and regulations enforced by the monetary authority to control the money supply to achieve economic growth. According to Chigbu and Okonkwo (2014), monetary policy refers to the cautious efforts of the government to regulate and influence changes in money supply, credit costs, amount of credit, and direction of credit to stimulate the level of economic activity to achieve the desired macroeconomic stability in an economy.

According to Loayza and Schmidt-Hebbel (2002), monetary policy involves the formulation and implementation of policies by the central bank to achieve the desired set of objectives. The policies and decisions aim to influence bank lending rates to points where credit demand and money growth are consistent with aggregate supply elasticity. Obeid and Awad (2017) assert that the effectiveness of monetary policy instruments and their importance in ensuring economic stability varies from one economy to another, due to differences among economic structures, divergence in degrees of development in money and capital markets resulting in differing degrees of economic progress, and differences in prevailing economic conditions.

Ewert, Szczesmy, and Schenk (2000) investigated the determinants of bank lending in the German economy and concluded that major companies with more collateral tend to get loans from commercial banks because they are less risky customers and the reverse is true for high-risk companies. They must comply with the provision of collateral and restrictive covenants and yet are not exempted from high-interest rate charges on loan facilities. Ewert *et al*. (2000)'s study is criticised for basing their conclusion on the interest rate as the only determining factor for bank lending behaviour. Ewert *et al*. (2000) also conclude that the interest rate is the bargaining mechanism when collateral and other restrictions or agreements are fixed in the lending policies. Thus, the study concludes that interest rates, restrictive covenants, and collateral are the main drivers of bank lending behaviour. This study also fails to establish optimal limits to stimulate credit to the private sector.

Another study by Kakes and Sturm (2002) provides evidence of the effectiveness of the bank lending channel in Germany, utilising a VAR method. Similar results were also found by Alfaro, Franken, Garcia and Jara (2003) in Chile utilising aggregated data. Contrarily, Ramlogan (2004) established that the bank lending channel does not significantly affect the bank's lending behaviour in the Caribbean countries. In Kenya, Buigut (2010) found significant effects of monetary policy on bank lending behaviour using a VECM approach.

Kimani (2013) also examined the effect of monetary policy instruments on the commercial banks' lending behaviour in Kenya. The study adopted a descriptive research design to establish the effect of central bank rate (CBR), cash reserve ratio, open market operation, and uncertainty on bank lending. The population was drawn from five profitable commercial banks using purposive sampling. The credit department team was used based on their vast knowledge of this subject matter. The study found that changes in CBR, open market operation, cash reserve ratio and uncertainty due to monetary policy changes influence commercial banks' lending behaviour in Kenya.

Van den Heuvel (2002) asserts that the effect of central bank regulation on the bank lending channel is a result of changes in prudential and monetary policy regulation. First, the monetary policy directly affects bank lending, which in turn affects the real economy. Therefore, by reducing bank reserves, the contraction eliminates the incentives for banks to accept reserve deposits if reserve requirements are binding. The shrinkage in reserve liabilities will, in turn, induce banks to reduce credit to the private sector, especially if it is difficult to switch to alternative forms of finance or liquidate assets. Second, central banks utilise prudential regulation (capital adequacy) to influence an imperfect market and where the maturity transformation performed by banks exposes them to interest rate risk. Van den Heuvel (2002) also states that an increase in the short term interest rate reduces bank profits because it reduces the number of loan issuances. Van den Heuvel (2002) further states that the effect is not significant to banks if they reduce dividends substantially, but such a decision lowers bank capital in the long-run. Thus, Van den Heuvel concluded that monetary policy affects the supply of bank loans through its effect on bank equity. However, Van den Heuvel's (2002) findings are not backed by quantitative evidence; therefore, the conclusion should be viewed with great caution.

Gambacorta and Mistrulli (2004) study provides evidence that well-capitalised banks are less affected by capital requirements, and such banks can increase their loan portfolio without challenges. The results also indicate that the lending behaviour of banks is negatively affected by contractionary monetary policy. The results also indicate that the effects of a contractionary monetary policy stance are not significant for banks with higher capital ratios, especially those with easier access to uninsured funds. Altunbas, Fazylovn, and Molyneux (2002) used a panel data approach for the European Monetary Union (EMU). The results show that under-capitalised banks are sensitive to changes in monetary policy instruments with EMU systems.

Gambacorta and Iannoti (2007) investigated the velocity and asymmetry of the bank interest rates to monetary policy shocks in Italy. The Asymmetric Vector Error Correction Model (AVECM) was used to determine the pass-through of changes in money market rates to bank interest rates from 1985 to 2002. The results show that the speed of adjustment of bank interest rates to monetary policy alterations surged significantly after 1993 due to the Consolidated Law on Banking. The results also depict that

commercial banks tend to adjust their credit faster during episodes of monetary policy tightening, hence are not severely affected.

Punita and Somaiya (2006) investigated the effect of monetary policy instruments on profitability in India for the period 1995 to 2000. Banks' profitability was estimated as a function of the banks' rate, lending rates, cash reserve ratio, and statutory ratio. The results show that the lending rate is positive and significant. The other variables – bank rate, cash reserve ratio, and statutory ratio – were found to have a negative but significant effect on banks' profitability. The results were the same when the lending rate, bank rate, cash reserve ratio and statutory ratio were regressed against credit to the private sector. Punita and Somaiya (2006) provide evidence that an increase in cash reserve, bank rate, and statutory ratio yield significant negative effects on credit to the private sector and the profitability of commercial banks. Rao and Somaiya (2006) examined the effect of monetary policy instruments on banks' profitability in India for the period 1995 to 2000. Bank profitability was regressed against the bank, lending, cash reserve, and statutory ratios. Except for the lending rate, all variables were found to negatively affect profitability and lending to the private sector.

Using the ANOVA, Arnold, Kool, and Raabe (2006) assessed commercial banks sensitivity to industry-specific bank demand and monetary policy for Germany. To estimate individual bank lending functions, quarterly bank balance sheets and bank lending data for the period 1992 to 2002 was utilised. The results of dynamic panel data models depict that industry-specific bank lending growth was largely sensitive to movements in industry-specific bank credit demand compared to changes in monetary policy. These authors further concluded that the industry composition of bank credit portfolios is significant determinant of bank lending and monetary policy efficacy.

Campa and Minguez (2006) assessed the amalgamation process of European countries and established that the pass-through of bank lending was very slow and varied according to a financial product and country by country. Finally, Jimborean (2009) examined the effect of monetary policy for ten Central and Eastern European states, using data for the period 1998 to 2006. The study provides evidence that the bank size and liquidity have a significant effect compared to the lending rate, while capitalisation was insignificant.

Amidu used a similar approach (2006) examined the effect of monetary policy instruments on bank lending in Ghana using cross-sectional panel data for the period 1998 to 2004. The explanatory variables employed were money supply and prime lending rate as a proxy for monetary policy instruments. The results depict that the money supply had a positive effect on bank credit to the private sector, but the prime lending rate negatively affected bank lending behaviour during this period.

Chukwu (2009) used a Structural Vector Autoregressive (SVAR) model to explore the impact of monetary innovations in Nigeria and established that central bank instruments are ineffective in stimulating economic activity, including decisions made by commercial banks for loans. However, the gap in Chukwu's (2009) study in ascertaining the effect of monetary policy innovations in Nigeria is that the interest rate variable was not included in the model, contrary to Keynesian theory.

A study conducted by Younus and Akhteruzzaman (2012) assessed the effect of cash reserve requirements on bank credit in Bangladesh. They adopted a descriptive approach – trend analysis and summary statistics. The results depict that a reduction in cash reserve requirement positively affects bank credit and investment. Younus and Akhteruzzaman (2012) conclude that the cash reserve requirement was an important instrument in influencing bank lending to the private sector, especially small and medium businesses. The gap in Younus and Akhteruzzaman, (2012) study is that a descriptive approach does not provide enough evidence to allow the research to conclude with confidence; therefore, there is a need to test and validate the results empirically. Furthermore, there was no effort to dictate the optimal range for the cash reserve requirement to guide the central bank.

Hofmann (2001) estimated the determinants of private sector credit using variables such as real GDP, interest rates, and property prices for developed countries from 1980 to 1998 utilising quarterly data. The real GDP was used as a proxy to capture real economic activity, and short term interest rates were included to proxy the actual financing costs of supplying credit. A cointegrating vector autoregressive (VAR) model was used. The results of the long-run indicate that there is a positive relationship between bank credit to the private sector and real economic growth. Furthermore, Calza, Gartner and Sousa (2001) modelled the determinants of loans to the private sector, a case of the euro area for the period 1980 to 1999. Calza *et al*. (2001) applied the Johansen approach. The analysis used general real GDP, short term market rates, and bond yield rates as independent variables. Applying a Vector Error Correction Model, they establish that credit is positively related to real GDP in the long-run. In addition, Flamini, McDonald and Schumacher (2009) provide that the real GDP affects several factors directly linked to the supply and demand for loans and deposits. For example, episodes of cyclical downswing such as financial crises are followed by an increase in NPLs and, consequently, a deterioration in bank credit. In contrast, cyclical upswings are characterised by an increase in bank credit.

Guo and Stepanyan (2011), using a regression equation, conducted a cross-country analysis on the determinants of bank credit growth in emerging market economies. They used quarterly data series from the first quarter of 2001 to the second quarter of 2010 for thirty-eight countries from Asia, Europe, the Middle East, and Africa. The credit growth rate was used as the dependent variable, while the explanatory variables included foreign deposits, domestic deposits, real GDP, inflation, deposit rate, exchange rate, and the US Fed funds rate. The results show that domestic and foreign financing

contributes positively to the growth of credit. The study also concludes that strong economic growth induces credit growth. Guo and Stepanyan (2011) also conclude that the expansionary monetary policies in domestic and global economies led to a surge in the volume of credit.

Hasan (2011) estimated the impact of monetary policy instruments on Pakistan's bank lending and deposit rates. The study used data for the period 2001 to 2011. The results provide evidence of a long-run relationship between lending and discount rate. The deposit rate is not cointegrated in the long-run, and the pass-through is incomplete. The short run shows that commercial banks pass on 16 percent of the on depositors. The study also established that the pass-through for foreign and nationalised banks is 0.30 and 0.20, respectively. In addition, the results depict that monetary policy is limited, and there is a lag period for its completeness. The study established that, overall, banks immediately pass on only 20 percent of the impact of a change in the discount rate to borrowers.The short run results provide that the pass-through of the deposit rate is relatively lower at 0.16, which indicates that the effectiveness of monetary policy is limited in Pakistan.

Jiménez *et al*. (2012) examined a novel supervisory dataset with loan applications from Spain. Their results provide evidence that changes in monetary policy instruments affect both loan supply and demand. Concerning time-varying firm heterogeneity in loan demand, Jiménez *et al*. (2012) established that contractionary monetary policy significantly reduces loans to the private sector in an ailing economic condition. This was found to be more prominent for banks with lower capital or liquidity ratios. Thus, Jiménez *et al*. (2012) conclude that expansionary monetary policy is more effective when the bank balance sheets are weak, especially during crisis episodes.

Gichuki, Oduor and Kosimbei (2012) examined data from 1994 to 2010 using an Error Correction Model (ECM) for Kenya. The results show that the interest rate is more effective than reserve money as it produced the least minimum loss in output than the reserve money instrument. They found that combining both instruments minimises losses from equilibrium output far better than when the two instruments are treated separately. Therefore, they concluded that the Central Bank of Kenya should rely on the interest rate if it prefers to use only one instrument, but if it wishes to utilise both instruments, it should construct a monetary conditions index that determines the optimal degree of adjustment of each variable.

Ajayi and Atanda (2012) investigated the effect of monetary policy instruments using time series data for the period 1980–2008. The total bank loan was estimated as a function of the minimum policy rate, liquidity ratio, cash reserve ratio, inflation, and exchange rate. The study utilised the Engle-Granger two-step cointegration approach. The results indicate that the interest rate, inflation rate, and exchange rate positively affected bank loans. On the other hand, the liquidity ratio and cash reserve ratio

negatively effected bank credit to the private sector. Ajayi and Atanda (2012) concluded that monetary policy instruments do not stimulate bank lending in Nigeria. Meltzer (2003) also opine that a rise in cash reserve requirement would zero impact on bank lending and the ability to create loans.

Olumuyiwa, Oluwatosin, and Chukwuemeka (2012) examined the determinants of commercial banks' lending behaviour in Nigeria using a cointegration analysis for the period 1975 to 2010. Bank credit was modelled as a function of the volume of deposits, investment portfolio, lending rate, the annual average exchange rate of the naira to dollar, gross domestic product, and cash reserve requirement ratio. The results suggest a positive relationship between the annual average exchange rate of the naira to dollar, loans and advances and volume of deposits, gross domestic product, and cash reserve requirement. However, the investment portfolio and lending rate were found to have a negative relationship.

Olweny and Chiluwe (2012) investigated the impact of monetary policy on private sector investment in Kenya. These authors traced the effects of monetary policy through the transmission mechanism to establish the changes that emanated from monetary policy alterations. The study utilised quarterly data for the period 1996 to 2009. A cointegration methodology was used to detect short- and long-run dynamics in response to an exogenous shock. The results show an inverse relationship between domestic government debt and the TBR to private sector investment. The results also depict that money supply and domestic savings have a positive relationship with private sector investment in line with the IS-LM model. Olweny and Chiluwe (2012) conclude that a 1 percent tightening of monetary policy can reduce private sector investment by 2.63 percent.

Olusanya, Oyebo, and Ohadebere (2012) examined the determinants of commercial banks' lending behaviour in Nigeria using data from 1975 to 2010, applying the Johansen cointegration and error correction models. The Nigerian commercial bank loan and advances were modelled as a function of the volume of deposits, the annual average exchange rate of the naira to the dollar for the period of thirty-seven (37) years, investment portfolio, interest rate (lending rate), gross domestic product at current market price, and cash reserve requirement ratio. Olusanya *et al.* (2012) provide evidence that there is a positive relationship between bank credit and gross domestic product at current market price, the volume of deposits, the annual average exchange rate of the naira to dollar, and cash reserve requirement ratio. The study further shows that the investment portfolio and interest rate (lending rate) negatively correlate. The results also suggest the existence of a long-run relationship between credit and all determinants. The study concludes that commercial banks in Nigeria should consider creating more deposits in order to stimulate credit. However, the results of Olusanya *et al*.'s (2012) study should be implemented with caution because of the limitation of the model. A Johansen cointegration approach

is credible provided all the variables are integrated of the same order, such as I(0) or I(1), which was not the case with Olusanya's variables.

Sharma and Gounder (2012) investigated the determinants of bank credit extension to the private sector in six economies in the South Pacific for the period 1982 to 2009. Bank credit to the private sector was used as a dependent variable, while the explanatory variables included the rate of inflation, the ratio of deposits to the GDP, average interest rate on the loans, the size of the banks' assets of output, a dummy variable reflecting the existence of a financial market, and the GDP. The results depict that the higher interest rates on credit and the higher inflation rate tend to have a negative effect on the rate of growth in credit. They further conclude that the size of the deposits and assets had a positive effect on the growth of credit. The results also provide evidence that strong economic growth tends to stimulate credit to the private sector. However, the gap in Sarma and Gounder's study is that they ignored other critical factors such as the cash reserve requirement, SBL, and exchange rate. In their study, a dummy variable is used to determine the impact of the financial market instead of investigating the impact of participating in open market operations to determine its effect on bank lending.

Imaran and Nishatm (2013) investigated the determinants for bank credit to companies in Pakistan from 1971 to 2008, using multiple regression analysis. They used supply factors, including the rate of growth in foreign liabilities, growth in domestic deposits, money supply, the interest rate of the market, inflation, exchange rate, and real gross domestic product. The results show that the growth rate in foreign liabilities, growth in domestic deposits, inflation, exchange rate, and real gross domestic product are significant in the long-run. Imaran and Nishatm further indicate that the interest rate does not affect credit. In addition, the results show that financial health and liquidity in banks play a major role in determining credit. The gap in Imaran and Nishatm's study is that most of the quantitative variables that better explain banks' lending behaviour were not included in the model. Therefore, the study does not recommend the range to guide monetary authorities when setting this regulation instrument.

Mishra and Montiel (2013) used a structural vector panel autoregressive (VAR) approach for the period 1978 to 2013 (a sample of 132 countries). Mishra and Montiel find a strong relationship between policy rates and lending rates with deeper financial markets, less concentrated banking systems, and a better institution. However, the results also show a significant heterogeneity in interest rate pass-through of changes in monetary policy innovations and the lending rates. This heterogeneity suggests country-specific characteristics.

Hsing (2014) used quarterly data from 2002 to 2013 to examine the relationship between bank loans and its determinants. The study utilised a reduced-form equation based on a simultaneous bank loan demand and supply model for China. Bank loans were regressed against bank lending rate, industrial

production, Consumer Price Index, the CBR, bank deposits, nominal effective exchange rate, and foreign interest rate. The results depict a negative relationship between equilibrium bank loan, discount rate, and the 10-year US government bond yield. However, the results also provide evidence of a positive relationship between bank deposits, industrial production, the exchange rate (yuan), and the inflation rate.

Ayodele (2014) used the Vector Error Correction Mechanism to establish the effects of monetary policy instruments on commercial bank lending in Nigeria between 1988 and 2008. The variables used are liquidity ratio, exchange rate, interest rate, money supply, and commercial bank loans and advances. The results provide evidence of a long-run relationship for the variables included. The results depict that the liquidity ratio and money supply had a significant negative relationship with commercial banks' loans and advances in the long-run. Ayodele's findings also suggest that the exchange rate and interest positively affected commercial banks' lending. This implies that the interest rate in Nigeria as a monetary policy instrument was not effective in influencing commercial bank loans and advances during the period 1988 to 2008; fluctuation in banks' total credit resulted from changes in cash reserve ratio. Thus, Ayodele (2014) suggests the need to establish an appropriate range to influence bank lending to the private sector in Nigeria positively.

Amino (2014) utilised a balanced fixed effect panel regression to establish determinants of lending behaviour in Ethiopian banks for the period 2001 to 2013. The explanatory variables were deposits, liquidity ratio, cash reserve requirement, interest rate, bank size, inflation, and GDP. The results provide evidence that the volume of deposits, cash reserve requirement, inflation rate, and bank size were the main drivers of bank credit to the private sector. The study also shows that the liquidity ratio and interest rate had a negative effect on the issuance of loans and advances by commercial banks. The study recommends that commercial banks should put more effort into mobilising deposits to increase their lending.

Malede (2014) investigated the main determinants of commercial bank lending in Ethiopiausing panel data of eight commercial banks from 2005 to 2011. The explanatory variables of bank lending are bank size, credit risk, gross domestic product, investment, deposit, interest rate, liquidity ratio, and cash reserve required. The ordinary least squares (OLS) approach was used to determine the impact of those determinants on commercial bank lending. The results show a significant relationship between commercial bank lending and its size, credit risk, gross domestic product, and liquidity ratio. The results also depict that deposits, investment, cash reserve required, and interest rate did not affect commercial bank lending in Ethiopia for the period. Thus, Melede concludes that Ethiopian commercial banks should develop strategies to attract deposits and apply sound credit policies to ensure that the creditworthiness and performing ability of borrowers is properly assessed. In addition, commercial

banks should improve in managing liquidity, credit risk and foreign exchange vulnerability management systems to eliminate their negative effects on lending performance. The gap in Melede's study is that other macroeconomic variables that may affect individual demand for borrowing were omitted, such as inflation and exchange. The conclusion drawn by Melede should be viewed with caution because the number of observations for the sample period is limited to seven years. The OLS approach cannot effectively produce credible results when the sample period is less than thirty-two observations.

Olokoyo (2012) examined the determinants of commercial banks' lending behaviour in Nigeria. Olokoyo (2012) estimated the Nigerian commercial banks' loan advances (LOA) is a function of the volume of deposits, investment portfolio, prime rate, cash reserve requirements ratio, and liquidity ratio. Data for the period 1980 to 2005 was used. The model was premised on the assumption that there is a relationship between the dependent variable and the explanatory variables. The results suggest that commercial banks should endeavour to aggressively mobilise deposits to boost lending and develop realistic and holistic strategic and financial plans.

Assefa (2014) used the ARDL econometric model on time series data to assess the effect of credit instruments and other macroeconomic variables on bank lending to the private sector in Ethiopia. Bank credit to the private sector was modelled as a function of lending interest rate, reserve requirement, money supply (M2), bank deposits, foreign liabilities, GDP, and inflation. The findings suggest that real lending interest rate, money supply, bank deposits, foreign liabilities, GDP, and inflation significantly impact on banks' credit to the private sector in the long-run. In the short run, all variables were significant except for the reserve requirement. The main gap in Assefa's study is that some of the monetary policy instruments were omitted in the model. Another gap in Assefa's study is that the optimal range(s) the central bank can aim when setting its monetary instruments was not established. Therefore, based on the gaps identified in Assefa's research and literature, this study provides an extended version of Assefa's ARDL model, including all monetary policy instruments[4] as explanatory variables and three relevant macroeconomic variables[5] (bank deposits, exchange rate and Consumer Price Index). This approach is relevant to this study because variables of concern are similar. This study also uses time series data, and the model can capture both the short and long-run effects on bank lending. This approach also permits conducting of simulations in order to get the optimal range(s) (for each instrument) that the regulating authority can aim at when setting its instruments.

[4] The Bank rate, Cash Reserve Requirement, Liquidity ratio, open market operation
[5] Determinants of bank lending in the Kingdom of ESwatini

Nwannebuike (2015) assessed the effect of monetary rule instruments on commercial banks in Nigeria, adopting a descriptive research design using time series data sourced from Zenith Bank Plc financial statements and Central Bank of Nigeria Bulletin for 2005 to 2012. The Pearson Product-moment correlation technique was utilised to analyse the data. In line with Gambacorta and Lannoti (2005), the study concluded that monetary policy instruments do not affect commercial banks' productivity in Nigeria

Ndugbu and Okere (2015) examined the impact of monetary policy on banks' deposits in Nigerian for the period 1993 to 2013. The results of the Augmented Dicker Fuller (ADF) unit root test and cointegration provide evidence of a long-run relationship. Total credit was regressed against bank deposit rate, liquidity ratio, cash reserve ratio, inflation rate, and exchange rate. The results also depict that the bank deposit rate has a significant negative effect on credit issued to the private sector. Ndugbu and Okere (2015) state a need to establish an optimal level for both the deposit rate and the monetary policy instruments. The limitation in Ndugbu and Okere's (2015) study is that the optimal range for both the bank deposits and monetary policy instruments was not determined. Thus, this study aims to bridge the gap in Ndugbu and Okere's (2015) study by establishing the optimal range for the monetary policy instruments that will stimulate credit and respond fast if disequilibrium has occurred.

2.1.6.1 Interaction between central bank regulation, bank credit and economic growth

Theories of the effect of monetary policy instruments on economic growth are well covered in the following channels: interest rate, credit, exchange rate, and asset price. The interest rate channel is more in line with Keynes IS/LM framework, which provides that an expansionary monetary policy stimulates aggregate demand by raising the demand for interest-bearing assets, which, in turn, restrict the interest structure of the economy (Aslan and Korap, 2007).

Adimu (2006) suggests that central bank regulation is important to stimulate and slow down economic activities. Adimu asserts that extending credit to sectors such as the agricultural sector has yielded positive results for many developing countries. Adimu further states that an increase in bank credit to industrial corporations also stimulates industrial production. Adimu (2006) concludes that the main driver of gross domestic product is bank lending; therefore, the secret to attaining sustainable economic growth is to ensure that access to bank credit is possible. In line with other authors, Igan and Pinheiro (2011) suggest that bank credit can spur investment and economic activity. However, it is crucial to regulate the banking industry because excessive credit growth can trigger price and financial sector instability.

According to Basyal (2009), bank lending plays a crucial role in money transmission; it provides finances for consumption, production, and capital formation, stimulating economic growth. Therefore, Basyal (2009) asserts that a country can attain its desired growth through an accommodative monetary policy stance through central bank regulation. Basyal (2009) further argues that bank lending to the private sector in a regulated environment will be instrumental in encouraging production and stimulating economic growth.

A study by Timsina (2014) provides evidence of the impact of regulating commercial bank credit on economic growth via private sector lending. The study utilised the supply side determinants to establish the impact of bank lending on economic growth in Nepal. Timsina (2014) used the Johansen cointegration approach and ECM to analyse time series data from 1975 to 2013. The results provide evidence that bank credit to the private sector has a positive impact on the economic growth in Nepal, but this holds only in the long-run and not in the short run. Therefore, Timsina (2014) concludes that the government of Nepal should focus on developing its banking sector, financial market, and infrastructure to stimulate economic growth both in the short and long-run.

Murty, Sailaja, and Dimissie (2012) adopted a multivariate Johansen cointegration approach for assessing the long-run effect of bank lending on economic growth in Ethiopia. Murty *et al*. (2012) established that bank lending has a positive influence on economic growth, evidenced by its effective role in making resources available and internal capital accumulation. Therefore, Murty *et al*. (2012) advocate that policymakers should focus on long-term policies to enhance investment and economic growth.

Gul, Faiza and Khalid (2012) examined how monetary instruments affect macroeconomic variables such as real GDP, inflation, commercial bank interest rate, money supply, and exchange rate in Pakistan. They utilised an OLS to establish the relationship between monetary policy instruments and the above-stated variables. Secondary data for the period 1995 to 2010 were used. Findings from the study show that the money supply has a strong positive correlation with economic growth and inflation. Therefore, Gul *et al*. (2012) conclude that a contractionary monetary policy reduces economic growth and negatively affects inflation, and the reverse is true for Pakistan.

Adefeso and Mobolaji (2010) investigated the effects of monetary policy instruments on economic growth in Nigeria by applying a Johansen maximum likelihood cointegration procedure. The result depicts a long-run relationship between economic growth, broad money supply (M2), degree of openness, and government expenditure. Owalabi and Adegbite (2014) also explored the effect of monetary policy instruments on industrial growth in the Nigerian economy using multiple regression analysis. Growth was regressed against manufacturing output, treasury bills, deposits and lending,

rediscount rate, and industrial growth. The results show that the variables have a significant impact on growth.

Thierrya, Ericc, Doumbe, Yannickd and Landrye (2016) assessed the causal effect between bank credit and economic growth in Cameroon using domestic credit to the private sector by banks and bank deposit as proxies for bank credit development and GDP per capita for economic growth. Data for the period 1969-2013 was used. The Johansen Multivariate cointegration test and Vector ECM were utilised to establish the relationship between bank credit and economic growth. As a result, Thierrya *et al*. (2016), concludes that there is a unidirectional causal relationship from bank credit to the private sector by banks and bank deposit to GDP per capita for economic growth. Similarly, Jotwani (2015) also found no causal relationship between economic growth and bank credit to the private sector-the relationship was unidirectional. Contrary, Apergis, Fillipidis and Economidou (2007) established a bi-direction causality between GDP growth and bank credit to the private sector.

Micheal and Ebibai (2014) analysed the effect of monetary policy on selected macroeconomic variables such as gross domestic product, inflation and balance of payments in Nigeria using OLS regression analysis. The results show that an accommodative monetary policy stance creates an investment-friendly environment and stimulates the rate of GDP. Akujobi (2012) examined the effect of monetary policy instruments on the economic development of Nigeria by adopting multiple regression techniques and established that the minimum rediscount rate and liquidity rate treasury bill have a significant impact on the economic development of Nigeria. Finally, Onyeiwu (2012) investigated the effect of monetary policy on Nigerian economic growth using the OLS method. The results show that monetary policy proxied by money supply yields a positive impact on GDP growth and balance of payments but a negative impact on the inflation rate.

Bank credit adds to economic growth in numerous ways. The information above provides a clear picture that economic growth is largely connected to the central bank stance. Contractionary prudential and monetary policy stance will negatively affect economic growth. On the other hand, accommodative monetary policy is likely to stimulate the same. The following subsection provides a review of related literature on optimal thresholds for monetary policy instruments.

2.1.6.2 Optimal thresholds for monetary policy instruments

The debate on the appropriate monetary policy can be traced back to the early 1960s when Friedman introduced the k-percent rule. Friedman believed that central banks should stimulate the money supply by a programmed amount (the k-variable) each year to control the inflationary spiral, despite the cyclical state of the economy. Specifically, Friedman advocates that the growth rate of the money supply should

match the growth rate of gross domestic product (GDP) each year. Later, Poole (1970) provided evidence that money stock is more appropriate than the interest rate in curtailing the economy in episodes of distortion from equilibrium output emanating from a shift in IS-curve.

A major shift to threshold regression models was observed after the seminal work of Tong in the early 1980s. Researchers who contributed to the evolution of threshold regression include Abdulai (2002), who applied a threshold cointegration to assess asymmetric price transmission in the Swiss Pork Market, and Gonzalo and Pitarakis (2002), who applied multiple thresholds.

Widjaja and Mardanugraha (2009) adopted a mathematical and econometric model to explore Indonesia's optimal monetary policy instrument. Secondary quarterly data were used covering a period between 1993 and 2006. The findings suggest that, even though the nominal interest rate policy was not aligned to inflationary trends during the period, the varying policy stance of the Indonesian Central Bank for inflation stability or output growth does not explain the direction of the nominal interest rate policy. Widjaja and Mardanugraha (2009) concluded that the Bank of Indonesia should focus on policies geared to stimulate economic growth, given its weak influence in manipulating the nominal interest rate. In Nigeria, a study by Olaniyi (2019) found that the threshold for prime rate on investment was 22.6 percent. High interest rate thresholds should be viewed with caution because the theory on bank lending suggest the relationship between the interest rate and investment is negative and significant.

James and VanHoose (2000) used an extended version of the model of monetary policy discretion to ascertain Poole's (1970) findings, where central banks have to choose between interest rates and bank reserves as a monetary policy instrument. The results show that Poole's criteria on the selection of monetary policy instrument present features of the challenges central banks face when they are supposed to balance between their mandate and political pressure. However, the findings also provide evidence that despite the higher precision caused by interest rates than the reserve-based policy, there is always a natural bias towards choosing interest rate, especially if the benefit derived from using interest rate is high.

Vargas and Cardozo (2012) examined the conditions for the efficacy of reserve requirements as an optimal monetary policy instrument in Colombia. The findings show that the optimal monetary policy for Colombia entails fixing the reserve requirements at their long-term level while manipulating the interest rate in line with the prevailing macroeconomic fundamentals. This indicates that for central banks to fix their instruments at an optimal level, there is a need to understand the interplay between their instruments. Borio and Disyatat (2009) and Montoro and Moreno (2011) provides five interrelated transmission channels which summarise the effect of a misaligned reserve requirement. Firstly, the

tightening of the reserve requirement is used by central banks to manage deposit and loan rates. Borio and Disyatat (2009) suggest that the high reserve requirement is usually followed by an increase in market interest rates due to change market expectations. As a result of changes in market expectation, bank credit is negatively affected. Secondly, the knock-off effect of tightening the reserve requirement is the squeeze in excess reserves, which constrains the capacity of banks to issue loans. Thirdly, Borio and Disyatat (2009) assert that an increase in reserve requirement tends to introduce a tax levy on banks, increasing bank credit cost. Fourthly, the impact of tightening the reserve requirement has the potential of influencing commercial banks to adjust their portfolios, which increase the bond yields and money market rates. Finally, according to Montoro and Moreno (2011), the cost of increasing the reserve requirement induces commercial banks to expand their loan-deposit rate spread and pass some of the cost to their customers. In Lesotho, the International Monetary Fund (2018) established that in terms of the reserve requirement and liquidity requirement, the system is secure if the Central Bank of Lesotho could fine-tune the liquidity requirements and ensure that commercial banks comply with the 3 percent reserve requirement.

Maynard and Moore (2006) provide that in Barbados, episodes of high levels of excess reserves/liquidity had a negative relationship to the business cycle, which implies that commercial banks preferred to hold excess reserves during the economic slump period. Furthermore, Ganley (2004) established that a significant hike in liquidity can trigger a surge in domestic consumption activity, which, when not control, can fuel inflation and reduce bank credit when the central bank intervenes to control price escalation. Further, Agenor, Aizenman and Hoffmaister (2004), Agenor *et al.* (2004) concludes that when excessive accumulation of reserves is not properly managed, it can potentially undermine monetary policy's credibility of controlling inflation.

Recent studies provide two approaches for determining thresholds the nonlinear approach and the quadratic function (see Hansen, 2000. Khan and Senhadji, 2001; Mubarik, 2005; Li, 2005; Hussain, 2005; Sergii, 2009; Mehrara and Karsalari (2011), Younus and Akhteruzzaman, 2012; Tule *et al*. (2015) and Olade, 2015). Khan and Senhadji (2001) and Mehrara and Karsalari (2011) used the nonlinear approach to assess thresholds of interest rates on private investment in developing economies. This study is motivated by Younus and Akhteruzzaman, 2012; Tule *et al.* (2015) and Olade (2015); hence the quadratic function is used to simulate the optimal thresholds for discount rate/bank rate, reserve requirement, and liquidity requirement.

2.1.6.3 Determinants of bank lending behaviour to the private sector

Theory and empirical studies provide four categories on the supply side of bank lending determinants, namely (i) individual bank-specific factors such as deposits, bank liquidity, investment portfolio, among others; (ii) factors specific to the banking sector/industry such as market structure, i.e. degree of competition or market concentration; (iii) macroeconomic indicators such as real gross domestic product (GDP) growth rate, exchange rate and inflation; and (iv) regulation-specific factors as such prudential regulation (on-site and off-site) and monetary policy instruments.

Commercial bank-specific factors

(i) Deposit

Laidroo (2012) asserts that commercial banks should mobilise deposits with caution since excess deposits may yield negative results during bank runs. Contrary to Laidroo's view, Akinyomi (2014) suggests that the main activity that leads to bank lending in commercial banks is to attract deposits. Commercial banks' deposits comprise saving accounts, checking accounts, and a broad spectrum of time deposits. Holding other factors constant, commercial banks that attract more deposits tend to expand credit supply compared to banks with lower deposits.

Amino (2014), John (2014), and Sharma and Grounder (2012) claim that the volume of deposits positively influences bank lending. Contrary, Mitiku (2014) and Laidroo (2012) for Ethiopia provide evidence of a negative relationship between deposits and bank lending to the private sector.

(ii) Capital adequacy

Laidroo (2012) provides evidence in Central and Eastern European countries of a positive and significant relationship between capital ratio and loan growth. Laidroo (2012) also provides evidence that banks' capital has a positive and significant effect on bank lending. Hernando and Villanueva (2014) examined the effect of capital on bank lending in Spain and established a positive relationship between capital growth and bank lending. Martynova (2015) also demonstrates that when the capital requirement is high, it reduces bank lending to the private sector. A higher capital requirement induces commercial banks to reduce credit supply and demand by raising lending rates, thus slowing down economic growth. However, a well-capitalised banking industry improves financial stability by reducing bank risk-taking incentives and raise banks' buffers against crises. In addition, Olweny and Shipho (2011) used the CAMEL model to assess the impact of prudential regulation from 2002 to 2008. They established that all CAMEL components causing variations on bank lending and profitability, but the main driver was capital

adequacy followed by operational efficiency, asset quality and liquidity. Furthermore, Beckmann (2007) provides that an increase in capital tend to reduce bank lending and profits because banks with a high capital ratio are usually risk-averse.

(iii) Investment portfolio

Investment in securities such as treasury bills tends to affect the supply side of bank credit negatively. Literature provides that there is a trade-off between investments in securities and extending loans to the private sector. A study by Yetbarek (2013) in Ethiopia provides evidence that the existing relationship between treasury bills and commercial bank lending is negative.

(iv) Bank liquidity position

According to the Bank of International Settlement (2008), liquidity is defined as the ability of a bank to meet short term obligations without incurring unacceptable losses. Aisen and Franken (2010) assert that illiquid banks tend to restrict their lending in fear that they might not meet their short term obligations. Therefore, proper liquidity management is essential for banks to create a base for lending.

Literature provides conflicting views on the relationship between liquidity and bank lending. Gambacorta and Marques-Ibanez (2011) assert that in the short run, financial sector performance tends to minimise the need for liquid assets; therefore, the positive relationship may not hold in the long-run. Therefore, they concluded that banks must properly monitor their liquidity to balance liquidity risk management and optimal lending. Contrarily, Laidroo (2012), in the case of the Central and Eastern European countries, concluded that banks need to have higher liquidity ratios to protect themselves from external shocks that may erode their deposit size, especially during bank runs. Studies such as Olkoyo (2011) and Olumuyiwa, Oluwatosin and Chukwuemeka (2012) for Nigeria prove a positive relationship between liquidity and credit supply. Similar results were obtained by Malede (2014) in the case of Ethiopia.

(v) Credit risk

Credit risk is the potential to reduce the quality of assets which in turn may increase NPLs. For example, Tomak (2013) found that banks with loans to assets have larger non-performing loans (NPLs) than total loans. Contrary to this notion, a study by Malede (2014) suggests a positive relationship between credit risk and bank lending in Ethiopia.

(vi) Net interest margin/interest rate spread

The net interest margin captures the profitability of banks' investment and lending activities over some time. The net interest margin is the ratio of net interest income to total interest-earning assets. It is not a measure of overall profitability because it excludes non-interest income such as charges and

commission.Instead it shows each bank's unique profile or the nature of its activities, entailing its customer base, and funding approaches. The formula for computing net interest margin is provided below:

$$NIM = \frac{Net\ Interest\ Income}{\left(\frac{Interest\ earning\ assets_{t-1} + Interest\ earning\ assets_{t}}{2}\right)} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(2.10)$$

Ladime, Sarpong-Kumankoma and Osei (2013) suggest that interest rate spread depicts the amount charged by the banks as an added cost to borrowers that reflects the different risks levels faced by the bank. The wider the interest spread, the higher the risk that the banks may attract from its customers. Thus, banks respond by restricting loans.

Studies such as Hussain and Junaid (2012) for Pakistan and Moussa and Chedia (2016) for Tunisia found a positive relationship between the high cost of financial intermediation and bank lending. They conclude that a moderate interest margin provides an incentive for banks to increase lending to the private sector.

(a) The market structure as a determinant of bank lending

Market structure refers to interconnected characteristics of a market, such as a number and relative strength of buyers and sellers and the degree of collusion among them, level and forms of competition, the extent of product differentiation, and ease of entry into and exit from the market.

Beck and Maksimovic (2004) established that bank concentration increases financing obstacles, but this holds for developing economies with low economic and institutional development levels. The study concludes that a larger share of foreign-owned banks tends to minimise the effect of concentration on financing obstacles. In contrast, the effect may increase restrictions on banks' activities and induce government interference in the banking sector. A larger share of government-owned banks also provides evidence that concentration significantly and negatively affects bank lending to the private sector in the Sub-Saharan African countries. The same conclusion was reached by Laidroo (2012) in the case of Central and Eastern Europe. Contrary to the above findings, Jiménez *et al*. (2012) conclude that once borrowers attain a state whereby they can use the assets as collateral, a parallel surge in credit market competition will not reduce access to credit since lenders can substitute market power by collateral.

(b) Macroeconomic factors

According to Karl, Ray and Shannon (2009), macroeconomic factors that affect bank lending vary from country to country. These factors include income, interest rates, inflation, employment levels, the interrelationship among diverse economic sectors, current account, real GDP, exchange rates, and the

Consumer Price Index. Findings by Herrero and Santabárbara (2004) suggest that deteriorating domestic economic conditions such as low GDP, increase in inflation, exchange rate, and low interest rate tend to cause bank failure. Herrero and Santabárbara (2004) also suggest that the effect of macroeconomic factors on bank lending is negative if the monetary policy stance is contractionary. Generally, changes that affect macroeconomic factors affect bank lending, and the reverse is true with any development that affects the banking sector.

Lucas and Anne (2010) investigated the effect of macroeconomic indicators on the performance, credit quality and lending behaviour of banks in Kenya. Lucas and Anne used a dynamic generalised method of moments on panel data. The study concludes that banks should continue pursuing risk-sensitive loan pricing policies to ease the extent of procyclical/countercyclical behaviour during economic upswings/downswings, respectively, which reduces the chances of supply-driven credit crunch effects.

The following macroeconomic variables were used by past researchers to evaluate banks' lending behaviour: exchange rate, Consumer Price Index, real GDP, and uncertainty.

(i) Effects of exchange rate on bank lending

According to Mbutor (2010), exchange rate depreciation affects bank lending in two ways. First, when depreciation worsens borrowers' balance sheets, the risk of defaulting on loan repayments tends to increase, and the appetite for acquiring loans fades away. Fofack (2005) and Mbutor (2010) suggest that NPLs lead to a decline in banks' liquidity and overall lending of the commercial banks. Secondly, in a situation whereby banks are uncovered to short term liabilities in foreign currencies, those liabilities are likely to be amplified to the extent of depreciation of the local currency, thus, weakening banks' potential to offer credit to the private sector. In addition, literature provides evidence that an appreciation of the local currency tends to pressure the cost of borrowing. Thus, the lending behaviour of commercial banks is negatively affected by episodes of currency appreciation.

(ii) Effect of inflation on bank lending

According to Olumuyiwa *et al*. (2012), inflation affects lending behaviour from the demand and supply sides. Olumuyiwa *et al*. (2012) assert that when inflation increases, the purchasing power of money in deposit accounts decreases to the extent that savers are compelled to pay an inflation tax. In addition, when inflation is high that creates the need for central banks to intervene through monetary policy tightening, and reducing bank lending.

Assefa (2014) and Imaran and Nishatm (2013) posit that when inflation increases, the purchasing power of money in deposit accounts decreases to the extent that savers perforce pay an inflation tax, thus leading to a reduction in loans to the private sector. On the other side, the private sector fears that if

there is a surge in interest rates due to an increase in the rate of inflation, servicing their loan might be very difficult. Furthermore, Assefa (2014), Imaran and Nishatm (2013), and Sharma and Gounder (2012) show that the inflation rate has a negative impact on the rate of credit growth. An increase usually follows high inflation rates in the nominal interest rates on loans, which cause a decline in the demand for loans. Therefore, i is expected that this variable has a negative effect on the proportion of the credit facilities granted by banks. Contrary to the findings above, studies such as Tomak (2013) for Turkey, Moussa (2016) for Tunisia, and Amino (2014) for Ethiopia established a positive effect of a surge in inflation on bank lending to the private sector. Therefore, in this research, inflation is expected to negatively affect bank credit to the private sector.

(iii) Macroeconomic uncertainty on bank lending

Baum, Stephan and Talavera (2009) assert that understanding how commercial banks respond to the business cycle is crucial in making informed decisions aimed at building the financial system's resilience, of which banks are an integral component. Baum *et al*. (2009) claim that macroeconomic uncertainty affects the ability of banks to project returns from lending opportunities. Baum *et al*. (2009) further state that episodes of high macroeconomic uncertainty are characterised by homogeneous behaviour of their portfolio decisions while periods of low macroeconomic uncertainty are depicted by heterogeneous behaviour. Most studies that used macroeconomic uncertainty to estimate its effect on commercial bank portfolio holdings conclude a statistically significant negative relationship between bank lending and macroeconomic uncertainty.

The literature further provides evidence that bank lending to the private sector may be affected by monetary policy stance and fluctuations of macroeconomic aggregates and dynamically respond to uncertainty that emanates from expected variation in monetary policies (Beaudry, Caglayan, and Schiantarelli, 2001). High uncertainty about future economic conditions that emanates from a change in monetary policies due to global markets tends to have a significant negative effect on banks' lending strategies. Generally, there is a high likelihood that variations in macroeconomic uncertainty over the business cycle will negatively affect the banking sector's asset allocation between loans and securities (Kashyap, Jeremy, Stein and David, 2006).

Kashyap *et al*. (2006) posit that monetary policy changes and exchange rate fluctuation may reduce bank lending. If commercial banks are not certain of the changes in the monetary policies, they may prefer to withhold credit in fear of increasing the level of non-performing loans. Chang, Cheng and Khorana (2000) state that uncertainty may result in the herding behaviour of commercial banks. If banks are uncertain about the future, they mimic the behaviour of the leading bank. Stever and Wilcox (2007) state that commercial banks are also likely to reduce credit due to herding. Herding refers to a situation in which banks adopt similar risk-taking, management, and asset holding decisions in fear of future

monetary policy. Herding may also occur either when banks can share information or due to similar circumstances; they coherently make similar decisions. The second-round effects of herding are weakening of lending standards, misappropriation of lending resources, asset price bubbles, and high systemic risks which affect the business cycle (Barron and Valev, 2000; Stever and Wilcox. 2000). Since the Kingdom of eSwatini is a country open to international trade, it is indirectly affected by the uncertainty of international markets.

(iv) Real gross domestic product (GDP)

Tecles and Tabak (2010) used GDP to demonstrate economic growth impact on bank credit to the private sector in Brazil. The results show a significant impact of credit supply on future income, substantiating the credit view hypothesis that financial development has a pivotal role in economic growth. Therefore, high production expectations, measured by GDP, are associated with higher individual income predictions and, consequently, a surge in demand for credit. Therefore we expect a positive relationship between GDP and bank lending to the private sector.

(c) Central Bank regulation-specific factors

Central bank regulation factors can be divided into two, namely prudential and monetary policy factors. Prudential regulation factors were discussed in detail under subsection 2.1.4 above. Therefore, in this subsection, only monetary policy factors are discussed.

(i) Effects of cash reserve requirement on bank lending

Central banks use the reserve requirement to compel commercial banks to hold a proportion of their deposit liabilities (reserves) as vault cash and/or deposits with the central bank. Therefore, the amount of money that banks use to afford loans to the domestic economy is depicted by fractional-reserve limits (Chodechai, 2004). It is assumed that deposit money banks generally maintain a stable relationship between their reserve holdings and the amount of credit they extend to the public. The lower the reserve requirement, the greater the volume of deposits that the commercial bank can use for lending. Studies such as those of Cargill and Mayer (2005), Olokoyo (2011), and Montoro and Moreno (2011) suggest that the cash reserve requirement is an effective instrument to control bank lending because it has a negative effect on the proportion of credit facilities. They conclude that by raising the reserve requirement, central banks impair commercial banks' profit earning capacity and granting of credit to the private sector because deposits at the disposal of banks are reduced. Contrary to this conclusion made by the authors above, Mwafag (2015) analysed on factors that are affecting bank credit in Jordan and found that the cash reserve requirement is positive but not statistically significant. This means that the legal reserve ratio does not affect the ratio of credit facilities granted by commercial banks.

The gap in the literature on studies that advocate for the use of the reserve requirement is that no study has investigated the level at which the cash reserve requirement impairs both credit extension to the private sector and profits to commercial banks. Hence this study intends to identify the optimal level of the cash reserve requirement to guide the Central Bank of eSwatini.

(ii) Liquidity requirement (ratio)

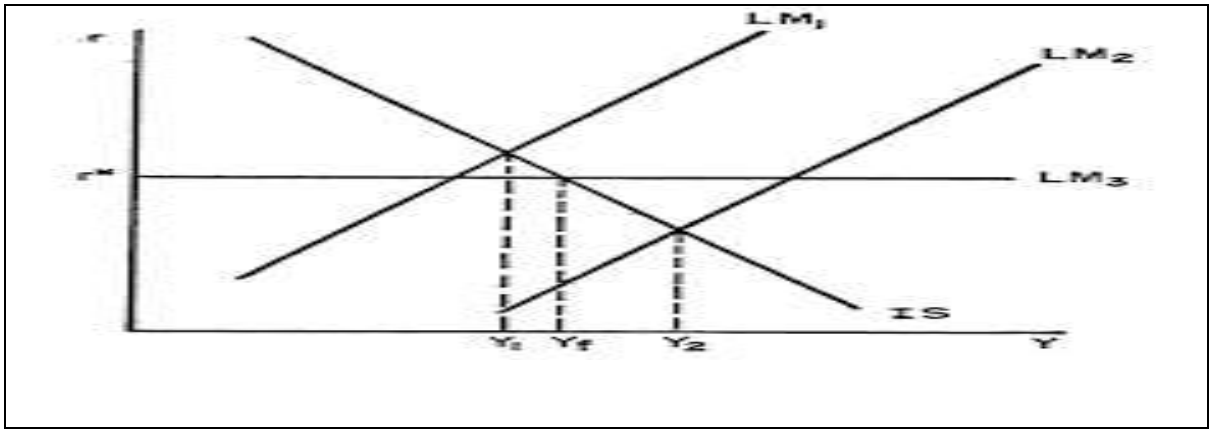
In literature, a high liquidity ratio has been criticised for its negative impact on bank lending. Mwafag (2015) provides evidence that a high liquidity ratio negatively affects bank lending, which implies that the high liquidity ratio reduces the proportion of the credit facilities granted by the commercial banks in Jordan. Mwafag (2015) findings are consistent with theory expectation, but contrary to Olokoyo (2011), who found that the proportion of liquidity does not affect bank lending. Azman-Saini and Karim (2011) study shows that the liquidity ratio is one of the major determinants of bank credit to the private sector. Worth noting is that none of these studies attempts to determine the optimal level for the liquidity ratio to inform policy decisions. This remains a grey area to be investigated even in the case of the Kingdom of eSwatini.

(iii) The bank rate (discount rate)

The central bank may influence bank lending by increasing or decreasing the discount rate. For example, if the central bank pursues an expansionary monetary policy, the discount rate is reduced, and such is recommended to counter a recession and reduce unemployment. On the other hand, contractionary monetary policy tends to increase the bank rate when the desired outcome is to counter an overheated expansion and deal with an increasing inflation rate. Karim, Azman-Saini, and Karim (2011) investigated the effect of interest rates on bank lending in Malaysia and concluded a negative relationship between the interest rate and bank lending. The gap in the literature for those who advocate for the bank rate as a tool for controlling credit and influencing economic growth is that they ignore the fact that this instrument can only influencing bank lending behaviour if commercial banks utilise the central bank rediscounting facility. Commercial banks keep large amounts of liquid assets in most cases, thus not utilising the central bank for financial assistance.

Poole (1970) utilised the IS-LM approach to illustrate that output deviates from equilibrium due to demand money. Thus, Poole asserts that the Central Bank should fix the interest rates and not the money supply to neutralise the effect of shifts in money demand. Thus, Poole further demonstrated that when the IS function is stable, and the money demand function is random, the instrument choice dynamics are demonstrated in the graph below:

Figure 3.2: Interest Rate Instrument with Monetary Shocks



Source: Adapted from (Poole, 1970: 197-216). https://www.jstor.org/stable/1883009

The diagram above assumes that the goods sector is stable, and therefore uncertainty in monetary policy arises from shifts in money demand denoted by the LM functions. If the interest rate is at r*, this ensures that the level of output is Yf. Assuming also that money stock is fixed, the output will be between Y^1 and Y^2. A positive shock in money demand will shift the LM function to the left from LM^1 to $LM^{2,,}$ increasing the interest rates to r^1, negatively affecting investment and hence output shifts to Y^2, lower than the target output Y*. A negative shock reduces interest rates to r^1 and stimulates investment; therefore, output shifts to Y^1 above*. Poole concludes that by fixing the interest rates, the central bank can neutralise money demand shifts. In this case, the interest rate is the proper instrument. The choice of instrument largely depends on the relative importance of real versus monetary instabilities (Poole, 1970).

(iv) Open market operations (OMO)/treasury bills rate

This transaction occurs when the central bank is involved in the buying and selling[6] of securities in order to influence monetary aggregates. Such transactions involve government securities (such as treasury bills) sold when the intention is to diminish the quantity of money and bought when the authorities wish to expand the quantity of money. Kimani (2011) investigated the effects of monetary policies on the lending behaviour of commercial banks in Kenya. Among other issues of concern, the study sought to establish the impact of OMO on the lending behaviour of commercial banks in Kenya. The study concludes that the OMO instrument has a significant influence on the lending behaviour of commercial banks. The results also indicate that OMO afford banks low risk investments coupled with certainty in pay off. Kimani (2011) concluded that OMO controls base money's short term market interest rate in an economy.

[6] On behalf of the government

There are two major limitations of OMO. The first is that the financial sector must have a large and well-organised securities market for it to be effective. Without a large and well-organised securities market, the central bank will not be able to buy and sell securities on a large scale and thereby influence the reserves of the commercial banks. Secondly, the success of this instrument hinges on maintaining a stable cash reserve ratio. The cash reserve requirement fluctuates[7] when the central bank sells or buys securities. Some commercial banks do not adhere to the legal minimum reserve ratio and keep a higher ratio, thus undermining the credibility of OMO in controlling the volume of credit.

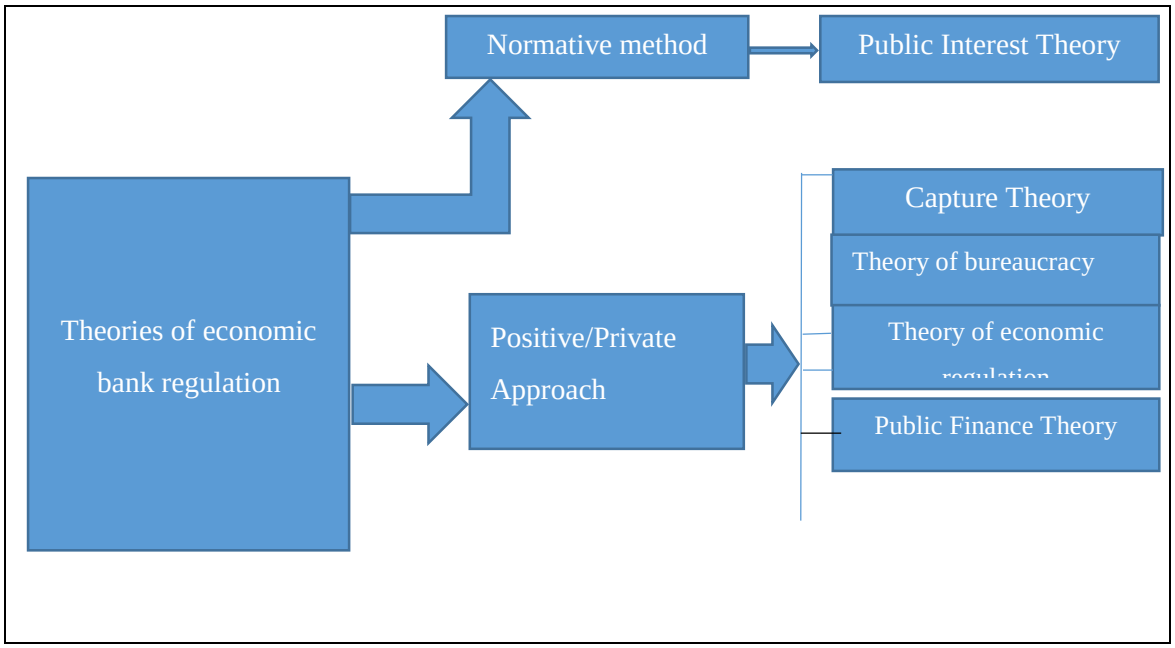
2.2 Theory of Regulation and the Lending System

The economic rationale for bank regulation is derived from the inquiry into why bank regulation is important and based on economic criteria. The objectives of bank regulation are premised on the results it seeks to achieve (Llewelyn, 1999). Theory on bank regulation can be traced from the 1970s, where the first intervention in the banking industry took place in the US (Posner, 1974 and Peltzman, 1976). The theory provides different concepts on regulation, relevant for different fields of research. Theories on central bank regulation are divided into two categories – positive and normative. The I positive theory focuses on the economic explanation of regulation, and it explores the consequences of regulation. The normative theory of regulation is concerned with introducing an efficient form of regulation. Den Hertog (1999) suggests that to a large extent, previous studies on regulation conform to the positive theories of regulation mainly because they allow for empirical analysis of the regulatory dynamics in a market.

The theory on regulation in this section is in line with Koumbarakis's (2017 approach, which is based on Posner (1974) and Peltzman (1976) theories. These concepts are summarised in figure 2.3 below.

[7] The reserves of the commercial banks increase and accordingly to maintain the fixed ratio.

Figure 4.3: Theories of economic bank regulation



Source: Adapted from Koumbarakis (2017: 32)

2.2.1 The normative approach

The normative approach was the first approach to be utilised in analysing regulatory dynamics. The approach is premised on an implicit assumption that efficient regulation is required (Hertog 2010). The normative approach justifies government intervention by pointing to failures in the banking sector that emanate from a financial crisis. A modified version of the normative approach is the public interest theory.

(a) Public interest theory of regulation

This theory postulates that government regulation can eliminate limitations of imperfect competition and unstable market operations, which lead to undesirable market outcomes (see Veljanovski, 2010). This school of thought is based on the concept of normative economics, which suggests that regulation is important to address market failures and eliminate barriers that constrain the marginal cost pricing to triumph in the market. The theory is also premised on the view that regulators have enough information and enforcement mechanisms to promote public interests (Hertog, 2010 and Veljanovski, 2010).

This theory further states that regulatory authorities serve as a neutral mediator of the "public interest" and in most instances do not pursue their vested interest. The public interest is best described as an efficient way of allocating scarce resources for individual and collective goods. Regulation serves as the primary corrective measure against numerous market failures, which largely emanates from

increasing returns of scale, natural monopolies, underprovision of collective goods, and externalities (Hantke-Domas, 2003 and Viscusi, Harrington and Vernon, 2005). According to this theory, governmental regulation is always expected to increase the public's welfare and promote the public interest.

In the context of the banking sector, the regulatory authority represents the interest of the society in which the banks operate rather than the private interests of the commercial banks (Hantke-Domas, 2003). The general theories consider regulation a government instrument for ensuring fairness and efficacy across the economy (Chortareas, Girardone, and Ventouri, 2012). On another note, Chortareas *et al*. (2012) assert that episodes of financial crises were linked to poor regulation measures, hence the shift towards regulating the banking sector.

The public interest theory evolved based on different demands, especially those that emanated from the financial crisis. Therefore, past research contributed to available literature in different weights and roles in line with the diverse circumstances of the economies.

Contrary to the positive arguments on bank regulation, Hantke-Domas (2003) believes that groups may have control of regulatory agencies to drive their interests. As such, he dismissed the view of public interest as a notion that denoted only the interests of groups. Economist Stigler argues that regulation is prone to be captured by incumbent firms whose aim is to create barriers to entry to a market to avoid competitors. This argument was criticised because it only suffices when the public demands an exaggerated allocative efficiency. This theory has also been criticised because its predictions are very difficult or impossible to verify. The public interest theory was further criticised for its failure to consider competing conceptions of the public good, unrealistic aspirations to regulators, and its weakness in capturing why regulation is often unable to deliver public interest outcomes. Furthermore, governmental regulation is criticised within a broad controversy, the role of government in the economy, as a reaction to political and macroeconomic conditions (Maudos and Fernández, 2007).

The public interest theory was criticised because government interventions are not likely to mitigate external shocks such as financial crises, which are the main drivers of market failures. Secondly, the validity of the hypothesis that government regulation is effective and efficient has been challenged. Thirdly, its completeness has been questionable: the translation of these interests into optimal welfare regulatory measures is not clear in theory, and the formation of public preferences cannot be easily established (Viscusi *et al*., 2005).

2.2.2 The positive approach

The positive approach to regulation was introduced in Chicago School in the 1970s, and the first economists to support this theory were Stigler, Posner and Peltzman, as indicated in Veljanovski (2010). The positive approach seeks to establish 'what is' and 'is, in principle, independent of any particular ethical position'. The main focus of the positive theory of regulation is how the different actors in the regulatory process, such as regulators, politicians, special interest groups, and bureaucrats, are influenced by their interest or goals in a given situation (Veljanovski, 2010). In essence, the positive approach examines economic explanations for – and provides for the effects of – regulation. It considers the political decision-making process, the design of banking regulation and the structure (see Hertog, 2010). It assumes that regulation is like a public good; therefore, it should be regulated under the law of supply and demand.

The positive approach consists of private interest theory, which comprises the capture theory, the economic theory of regulation, the public finance theory and the bureaucracy theory (see Koumbarakis, 2017).

2.2.3 The private interest theory

Private interest theory is a hybrid of public interest theory and neoclassical theory. This theory was developed due to public interest theory limitations, which brought into question the credibility of regulation. The private interest theory provides four different concepts on the regulation of the banking sector, namely capture theory, the theory of bureaucracy, the theory of economic regulation and public finance theory.

(i) The capture theory

In Carrigan (2016), Stigler claimed that regulation should be treated as a product similar to other products offered in a governmental market. As cited by Carrigan (2016), Stiglerchallenged the notion that regulation is designed to serve the public interest by demonstrating the important political advantages controlled by businesses that can significantly influence industry capture of the regulatory process. This theory asserts that the banking industry should be regulated if there is an abuse of dominance. Other economists who made significant contributions to the capture theory apart from those who contributed in the 1970s include Laffont and Martimort (2002) and Hertog (2010).

Hertog (2010) considers the capture theory as an element of private interest theory, and it is a hypothesis that lacks theoretical practicalities. Furthermore, it does not provide clear details on why the industry can 'take over' a regulatory agency and why, for example, consumer groups cannot avoid this takeover'.

In this dissertation, the argument by Hertog (2010) is taken into consideration that the capture theory is an element of the private interest theory. Therefore, regulation implies a process by which regulatory agencies strive to pursue the interests of the banking sector. This implies that regulatory agencies tend to follow the strategies of the banking industry. In essence, this suggests that the purpose of traditional regulation is thwarted by banks and regulation is improved over time until it suits the interests of the banking sector (Hertog, 2010). Laffont and Martimort (2002) view that there is less cost in organising small interest groups with limited interest compared to large interest groups with various objectives due to the free-rider problem. Banks' position of dominance is strengthened by the heterogeneous group attributes, interests of depositors and free-rider problems (see Laffont and Martimort 2002).

In a nutshell, the capture theory is associated with the increasing power of the agency, which is gained by the agency in the process of becoming knowledgeable about the firm. According to the theory, that allows the agency to drive its own goals, and the regulator can only curb this by effecting stringent administrative controls and procedures.

Criticisms of capture theory: The first critique of Stigler's capture theory is to overstate the power of business over-regulation. Stigler concluded that "as a rule, regulation is acquired by the industry and is designed and operated primarily for its benefit" (Carrigan, 2016). Secondly, Stigler's capture theory does not provide evidence that regulatory capture occurred with any regularity but based his conclusion on theoretical arguments with little empirical analysis for a few regulatory domains (Carrigan, 2016). Thirdly, capture theory is just a hypothesis that lacks theoretical backing (Carrigan, 2016).

(ii) The theory of bureaucracy

This theory is known as Niskanen's theory of bureaucracy. The theory of bureaucracy provides the rationale for the spread of regulation in the banking industry. However, it does not describe the formation of regulated areas. The main component in bureaucracy theory is the government bureaucrat. This is that role played by the central banks who are regulators of the commercial banks. Recent research on bureaucracy has emphasised the concept of transactional authority that entails formal and informal settings for the delegation of policy-making powers and to ensure compliance. The old approach of applying authority in bureaucratic politics is viewed as weak and incomplete about its exclusive emphasis on formal institutional mechanisms. The most glaring weakness is that it ignores agency power to influence the contract terms with the principal through negotiations or contributions in the formulation of legislation. Therefore, the notion on transactional authority, which is largely premised on mutual exchange and bargaining between the agency and principal, can enhance understanding of bureaucratic issues in the public policy space (Carpenter and Krause, 2014).

Criticisms of the theory of bureaucracy: The major deficiencies of the Niskanen model is that it is premised on the following assumptions:

- Budget maximisation: This assumption is premised on the notion that regulators accept higher budgets. The argument is that regulatory authorities have an enticement to employ more regulators and encourage regulators to grow. However, in practice, it is unclear whether regulatory authorities allocate huge budgets to employ more regulators.
- Asymmetric information: suggests that there is an asymmetric information problem between regulatory agencies and politicians. Thus, politicians are unable to assess and influence regulatory stances.
- Natural monopoly: This assumption states that the supervisory authorities are a natural monopoly.

(iii) The theory of economic regulation

This is an extended version of the capture theory. The theory of economic regulation is based on the public choice theory, and it postulates that regulation is a public good whose allocation is administered by the laws of demand and supply. On the demand side, industry groups are privy to information compared to consumers and politicians, hence the need for regulation. According to Stigler (1971), regulation is largely informed by industry and is meant and operated mainly for its benefit.

Stigler (1971) states that regulation as a public good was designed and is better implemented by policymakers on the supply side. In this context, Stigler (1971) suggests that it is fundamental that the political process defines the rationale for regulation. Contrary to the public interest theory, this theory suggests that any government intervention is not directed to correct market inadequacies based on the dynamics of the capture theory, rather it claims that regulation exists to promote the interests of politically operative groups (Stigler, 1971). In the context of the banking industry, this theory suggests that banks must attain the risk-weighted capital requirements. In this case, the risk-weighted capital requirements may be viewed to be attained by the banks for their benefit because, under the risk weight approach, capital required to be held for funding propositions can be manipulated. Stigler (1971) further asserts that on the demand side, the objective is not to correct market failures but rather to endorse the interests of the politically effective group.

Criticism of the theory of economic regulation: Stigler's theory of economic regulation focused more on demand for regulation and overlooked the supply side dynamics or the rationale for regulation. Stigler highlighted that legislatures are concerned about political support, campaign, and securing jobs in terms of the supply side. However, as a result of underemphasising the supply side, Stigler came up with a general unrealistic conclusion that consumers are always worse off (Peltzman's, 1976).

(iv) The public finance theory

This theory suggests that the economic justification for bank regulation is public financing. According to this concept, the banking industry provides funds for the public sector or the government. A study by Bruni (1990) in the case of Italy provides evidence that the banking industry plays a crucial role in financing the public sector. Bruni's (1990) findings provide that a larger percentage of Italy's bank assets demand entails bank claims on government financial protectionism and governmental regulation. This implies that public finance leads to bank regulation because regulation of capital controls and financial protectionism stimulates banks to fund the public sector. Thus, if public funding is high, the government becomes less interested in deregulating the banking sector. Therefore, regulation and deregulation in the context of the public financing concept are justified (Bruni 1990). This theory did not attract much debate in recent studies, and this may be justified by the fact that its elements are contained in the other theories discussed above.

The following subsections of this chapter describe the most often-used regulation approaches: prudential regulation and monetary policy regulation.

2.3 Prudential regulation

The origin of prudential can be traced back to 1970, the minutes of a meeting of the Cooke Committee before the formation of the Basel Committee on Banking Supervision. The term during that period denoted a systemic approach to macroeconomic regulation. In 1986 the BIS considered it a policy aimed at enhancing the safety and soundness of the financial system, and payments instrument. The Basel Committee, which came into effect in 1988, formalised risk measures and accepted international as requirements for prudential regulation. This resulted in Basel I of 1988, which was later followed by other levels in line with new demands for prudential regulation.

Prudential regulation allows central banks/regulators to assess and promote the safety and soundness of individual banks and the whole banking system. In addition, central banks assess bank compliance with other statutory requirements, such as adherence to laws of lending, anti-money laundering, cybersecurity requirements, and other compliance measures, which vary from country to country.

The modern approach of prudential regulation provides two supervisory methodologies used by central banks to regulate commercial banks: on-site and off-site regulation. The on-site inspection includes routine inspections regularly conducted, targeted inspection addresses designed for specific issues of bank operation, e.g. credit, trade finance, monitoring inspection as a follow-up based on issues and directions established from previous inspections, and special inspections carried out as and when required. The issues that are established from the commercial banks during on-site inspections are

evaluated using the CAMELS framework. The bank's findings and ratings are then communicated to the commercial bank management with required corrective actions if the bank rating is poor. The CAMELS originally entailed five components, namely capital adequacy, asset quality, management quality, earnings, and liquidity. Central banks have introduced sensitivity as a sixth factor (Wirnkar and Tanko, 2008). Off-site regulation serves as an early warning system, and it uses data reported to the supervisory authority by the commercial banks or intermediaries. Its main objective is to update the financial health and risks of each of the commercial banks supervised. Off-site regulation is used to monitors compliance with provisions related to the cash reserve ratio, SLR, SBL (details are provided in subsection 2.1.4 above).

2.4 Monetary policy regulation

Four schools of thought exist concerning monetary policy credit regulation: classical theory[8], Keynesian theory[9], monetarist theory[10], and Bernanke and Gertler's theory. The four schools of thought analysed the impact of monetary policy instruments in the context of four transmission channels (interest rate, exchange rate, asset price and bank lending), as well as the expectation channel (Loayza and Schmidt-Hebbel, 2002).

2.4.1 Classical theory

This theory of Irving Fisher was warmly accepted by a number of economists known as classical economists. The theory was utilised as a part of a broader approach to micro and macro issues where money was considered to have no effect on economic aggregates except the price. The concept of the classical school evolved through developments and contributions of economists such as Jean Baptist Say, Adam Smith, David Richardo, Pigu and others who shared the same philosophies. The classical economists believed that the quantity theory of money was not only a concept about the influence of money on the economy and how a central bank should influence the economy's money supply, but it

[8] Suggest that monetary policy instruments affect the economy through the interest rate channel. The classical theory postulates that the interest rate affects the economy by increasing the cost of borrowing to reinvestment Mishkin, 2001).

[9] Postulates that the effect of monetary policy instrument is more pronounced in the exchange rate channel. The Keynesians suggest that an increase in interest rate breaks the interest rate parity between the two economies (Taylor and Goodhart, C. (2006); Krugman, Obstfeld and Melitz (2012). The Keynesian theory of exchange rate channel is also irrelevant for this study because the Kingdom of ESwatini has a floating exchange rate with South Africa.

[10] Indicates that monetary policy instruments affect the stock market, financial wealth and consumption (see Koop et al., 2008). This theory also suggests that a contractionary monetary policy reduce financial wealth of the public and automatically decreases the level of consumption. The monetarist theory of asset price channel is also irrelevant for this study because the focus is on stock market and financial wealth.

also depicted a specific outlook of the private market economy and the role of government. Onouorah *et al*. (2011) assert that the role of government through the central bank is to provide a system of laws and security to protect private property, as well as providing a stable financial and monetary framework. The theory asserts that money affects the economy in different ways; hence the central banks should adopt relevant monetary policy instruments to control the flow of money in the economy, especially through banks, which are in the business of mobilising the largest volume of money and extending credit in any economy (Solomon, 2013). After the economic depression of the 1930s, attitudes across the world changed drastically concerning money and monetary policy as an instrument of economic stabilisation. Monetary policy was then considered a futile approach to fighting depressions; therefore, the notion of a self-regulating market that reached socially desirable results ebbed away (Onyemaechi, 2005).

As stated above, the classical economists' view of monetary policy and its impact on economic growth through bank lending is premised on the quantity theory of money. Therefore, the quantity theory of money is explained in the Fisherian equation of exchange, which is expressed as MV = PY. M in the expression denotes the supply of money over which the central bank has some control; V denotes the velocity of money circulation or the average number of times currency is utilised on final goods and services over a year; P is the price level GDP, and Y is real GDP. Therefore, PY denotes the current nominal GDP. The equation suggests that the current market value of all final goods and services (nominal GDP) must equal the supply of money multiplied by the average number times the currency. The classical economist assumes that the economy is always at or near the natural level of real GDP. They also postulate that in the short run, the Y in the equation of exchange is fixed. They further assert that the velocity of circulation of money remains constant over time. This implies that V can also be held fixed. Therefore, if both Y and V are fixed, it implies that if the Central Bank of Nigeria (CBN) were to pursue expansionary (or contractionary) monetary policy, the change will increase (or decrease) money supply (M). The classical economists' claim that the only influence would be to increase (or decrease) the price level P, in direct proportion to the change in money supply (M). Therefore, the central banks use their monetary policy instruments (interest rate) to affect the economy by increasing the cost of borrowing to reinvestment (see Mishkin, 2001). This theory asserts that the terms of credit clear the market. This implies that when collateral and other restrictions are held constant, the interest rate is the price mechanism that detects the price in the market (Ewert *et al*., 2000).

2.4.2 Keynesian theory

The Keynesian theory asserts that monetary policy affects the real economy through the interest rate channel. This theory suggests that an increase in interest rate breaks the interest rate parity between the two economies (Krugman, Obstfeld, and Melitz., 2012). According to Keynesians, a change in

monetary policy decisions affects short term nominal interest rates followed by prices then rational expectations. Mukherjee and Bhattacharya (2011) assert that primary reactions to the changes in monetary policy are first evident in the interbank interest rates followed by alterations of the client interest rates, especially on loans and deposits of non-financial corporations and households. The theory postulates that since prices are sticky, this translates to an increase in real interest rates. Therefore, higher real interest rates, through the higher cost of funds, result in a deterioration in investments such as business fixed investment, residential housing investment, inventory investment and consumption, coupled with a decline in aggregate output.

Contrary to the Classical and Monetarist theories, the Keynesian theory provides a different view of the relationship between monetary policy and economic growth. The Keynesians suggest that the relationship is indirect through the rate of interest. They rejected the notion that the economy is always at or near the natural level of real GDP so that Y in the equation of exchange can be regarded as fixed. They further rejected the proposition that the velocity of circulation of money is constant over time. Instead, Keynesians claim that expansionary monetary policy increases the availability of loanable funds through the banking system, causing interest rates to decline. Therefore lower interest rates, aggregate expenditures on investment and interest-sensitive consumption goods tend to increase, causing real GDP to increase. Therefore, the Keynesians conclude that monetary policy affects real GDP indirectly.

The drawback of this theory is that the assumptions seem to be too general and may not hold for small and open economies. The response of the targeted variables to monetary policy depends largely on the structure of the real economy. The theory also emphasises the fixed exchange rate, making it irrelevant for this study because the Kingdom of eSwatini has a floating exchange rate with South Africa.

2.4.3 Asset price channel theory

This theory is called Tobin's q theory. It postulates that monetary policy affects the target variables through the asset price channel. Tobin's q theory uses q to define the market value of firms divided by the replacement cost of capital. In the case of contractionary monetary policy, an increase in interest rates signals a decline in bond prices. Lower bond prices are more attractive compared to equities, thus compels prices to plummet decline. Therefore, Tobin's theory claims that lower equity prices decrease q and the lowered *q* transmits into subdued investment spending and demand for loans, thus lowering aggregate output.

On the contrary, Snowdon and Vane (2002) believed that previous models were limited to the short term and the assumption of price stickiness. Snowdon and Vane (2002) also criticised previous models

because they focused on two channels and simplified borrowing cost to the interest rate. According to the monetarists, a decline in stock prices due to a contractionary monetary policy leads to dwindling financial wealth that transmits into shrinking lifetime resources and a fall in consumption. The monetary policy impacts the target variables by affecting lending and property prices. A contractionary monetary policy transmits into decreasing households' wealth and a subsequent decline in consumption and aggregate output (Snowdon and Vane 2002).

2.4.4 The monetarist theory

The monetarist theory is premised on the concept of Friedman (1963). This school of thought is a modified version of classical macroeconomics. Friedman emphasised that bank lending is the key determining factor that affects the activities of the economy. Friedman's notion is that to ensure a steady growth rate, money supply through the lending channel should grow at a fixed rate rather than being regulated and altered by the monetary authority. He further asserts that money supply may be required for several reasons other than anticipated transactions; thus, it might be held in various forms such as equities, physical goods and human capital, money, and bonds. This theory suggests that monetary policy instruments affect the stock market, financial wealth, and consumption (Ando and Modigliani, 1963). This theory also suggests that a contractionary monetary policy reduces the financial wealth of the public and automatically decreases the level of consumption. The monetarist theory is based on the following model:

$$M = B/[(R/D) + (C/M) - (RC/DM)] \text{ or } M = m. B, \qquad (2.11)$$

where, M represents money supply, B is the monetary base, R is the sum of reserves of commercial banks, C is the currency held by the public, (R/D) is the reserves/deposits ratio, (C/M) depicts the level of the preference for cash by the public and m is the money multiplier. Thus the monetarists believe that B and (R/D) influence central bank changes that affect legal reserves.

The monetarists assert that each form of wealth has a unique and distinctive yield in terms of the relationship between monetary policy, bank lending, and economic growth. This theory acknowledges that the economy does not always operate at the full employment level of real GDP. In the short run, the monetarists claim that expansionary monetary policies may increase the level of real GDP by increasing aggregate demand. However, in the long-run, when the economy operates at the full employment level, the quantity theory serves as a proxy for the link between price level, supply of money and real GDP. In addition, in the long-run, expansionary monetary policy tends to be inflationary and does not affect real GDP.

Critiques: The monetarist theory of the asset price channel is irrelevant for this study because the focus is on the stock market and financial wealth. The criticism of this theory hinges on the fact that money is viewed as a stock instead of a flow variable, and the central bank determines its supply. In addition, the post-Keynesians criticised the monetarists because they considered money to be partial and complete endogenous, whether central banks are vigorous or not. Another limitation is that the monetarists place little emphasis on the expectations of the public and the banking system, which are the main drivers of the money supply. Worth noting is that despite the monetary authorities having full control over the required reserve ratio, its control is not effective over the number of resources the commercial banks intend to lend and the number of resources demanded by the public. Post-Keynesians further assert that:

> *"... money appears as the result of the production process, that is, a consequence of the flow of credit created for entrepreneurs by commercial banks, then the multiplier is unacceptable since money becomes a sort of residue, which is incompatible with general equilibrium theorising. Furthermore, central banks are generally engaged in 'defensive' operations..."* (see Lavoie, 1984:779).

This implies that the monetarist equation is supposed to be reversed, such that B = (1/m), where M is the independent variable and B is the dependent variable.

2.4.5 Bank lending channel theory

The bank lending channel theory was introduced by Bernanke and Gertler (1995) and provides that there are two components of the credit channel, namely the bank lending channel and the balance sheet channel. Concerning the balance sheet channel, monetary policy changes affect the net worth of business firms and the present value of loan collateral. A contractionary monetary policy reduces firms' net worth, so the lenders have less collateral for the loans. This implies that losses associated with the adverse selection become high and the decline in firms' net worth tends to lower the owners' equity stake in their firms, motivating them to invest in risky projects. Bank lending channel theory suggests that investing in risky projects tends to increase moral hazard problems. Moral hazard problems, in turn, decrease loan supply and thus negatively affect aggregate output. Therefore, an increase in interest rates may translate to a higher debt burden, particularly for loans with floating interest rates. Therefore, a higher debt burden may result in a decline in loans to the private sector, investment, consumption, and aggregate output.

The bank lending channel theory focuses on the role of banks as financial intermediaries. The theory suggests that banks are well suited to dealing with borrowers, such as small and medium enterprises

and households, from where the problem of asymmetric information emanates. The bank lending channel theory also postulates that a contractionary monetary policy stance shrinks commercial banks' deposits and compels them to utilise managed liabilities increasing the cost of loans. This theory is relevant in developing countries such as the Kingdom of eSwatini, where the financial sector is underdeveloped, and the private sector is highly dependent on the banking system for loans.

The bank lending channel shows the credit view, where monetary policy affects bank assets (loans) and banks' liabilities (deposits). A change in monetary policy that affects the supply of deposits also triggers a change in the supply of bank loans. For instance, a contractionary monetary policy that decreases bank reserves and bank deposits will decrease the quantity of bank loans available. In a country with most borrowers that are highly dependent on bank loans to finance their activities, such a decrease will decrease money available for loans causing investment and consumption to decline. The bank lending channel implies that commercial banks cannot buffer their loan portfolios from monetary policy changes, and it is impossible for borrowers to shield their actual consumption from changes in the availability of bank credit. This theory emphasises the extent to which banks depends on deposit financing and alter their loan supply schedules in line with changes in bank reserves; it also emphasises the importance of bank loans to borrowers. Therefore, monetary policy affects smaller firms that are more dependent on bank loans than large firms that can easily access the credit market directly through bond and stock markets.

The schematic is presented below.

$$M\downarrow \Rightarrow (\text{Bank Deposits})\downarrow \Rightarrow (\text{Bank Loans})\downarrow \Rightarrow I\downarrow \Rightarrow C\downarrow \Rightarrow Y\downarrow \ldots [\text{Schematic 1}]$$

where, M= indicates a contractionary monetary policy that leads to a decrease in bank deposits and bank loans; therefore, investment spending I, consumption C, and output, Y decline.

Furthermore, bank lending theory considers other macroeconomic fundamentals that may inform the central bank monetary policy stance, such as expectations regarding current output or real GDP, inflation, exchange rates, interest rates, and money supply.

The gap in this theory is that it does not guide monetary authorities on what to aim at when setting credit regulation instruments.

2.5 Existing Gaps in Literature and Theory

Studies reviewed in this dissertation provide different theories and empirical approaches. Therefore, it is difficult to generalise the findings of the previous research studies. The gaps identified in these studies include the following:

(a) Authors of previous research studies have separately assessed the effect of compliance to regulation, monetary policy regulation and thresholds of monetary policy instruments on bank credit to the private sector. Further, these studies are limited to assess the determinant of bank credit, whereas there is a need to guide central banks on the optimal threshold that they can aim at when setting monetary policy instruments.

(b) While several studies globally, in the Sub-Saharan region and the CMA where the Kingdom of eSwatini is a member, no study has been done that document the joint effect of commercial bank's compliance to central bank regulation monetary policy instruments.

(c) No reference study in the CMA where the Kingdom of eSwatini is a member, which provides optimal thresholds of monetary instruments (discount rate, reserve requirement and liquidity requirement) can guide central bank to aim at when setting monetary policy instruments to positively influence bank credit to the private sector and economic growth.

2.6 Conceptual Framework

2.6.1 Conceptual framework and explanation of variables

This subsection provides a conceptual framework on how prudential and monetary policy regulation affect the bank lending system in the Kingdom of eSwatini. Mugenda and Mugenda (2003) assert that a conceptual framework assists the reader to quickly establish the proposed relationships between variables of concern in the study. Mugenda and Mugenda (2003) and Bryman and Bell (2007) claim that the variables of concern are the building blocks of the theoretical framework.

Theory and empirical literature reviewed in this study provide four categories on the supply side of bank lending determinants, namely (i) factors specific to the banking sector/industry such as market structure, degree of competition, or market concentration; (ii) commercial bank-specific factors such as deposit, bank liquidity, and investment portfolio among others; (iii) macroeconomic indicators such as real GDP growth rate, exchange rate and inflation; and (iv) regulation of specific factors on prudential regulation and monetary policy instruments. For this study, the researcher focuses on categories (iii) and (iv). The conceptual framework is therefore based on the classical theory, Keynesian theory,

monetarist theory, and Bank lending theory (Bernanke and Gertler's theory) and the CAMELS concept since the five are interconnected and relevant to this study.

Specifically, this study attempts to fill the existing research gaps highlighted under subsection 2.3 by:

(a) empirically assessing the combined effect of on-site prudential regulation - CAMELS framework, monetary policy instruments and macroeconomic factors on bank lending to the private sector.

(b) Determining the optimal thresholds that the Central Bank of eSwatini can aim at when setting its monetary policy instruments (discount rate, reserve requirement and liquidity requirement), to influence bank credit to the private sector and economic growth to the right direction in the Kingdom of eSwatini.

(c) Contributing to the body of knowledge by providing a perspective of an assessment of a country under a CMA. Thus, the framework results are to be explored to strengthen the lending system mix for the Central Bank of eSwatini and to be replicated to the other CMA countries if the objective is to positively influence bank credit to the private sector and economic growth to the right direction.

The CAMELS framework was used to examine the effect of compliance to prudential regulation on bank lending,. This framework follows both US regulation and American International Assurance (AIA)'s CAMELS approach. In addition, the researcher is motivated by the works of Sarker (2005), Gunsel (2007), Peterson (2006), Nimalathasan (2008), and Rozzani and Rahman (2013), who contributed to the debate of on-site prudential regulation.

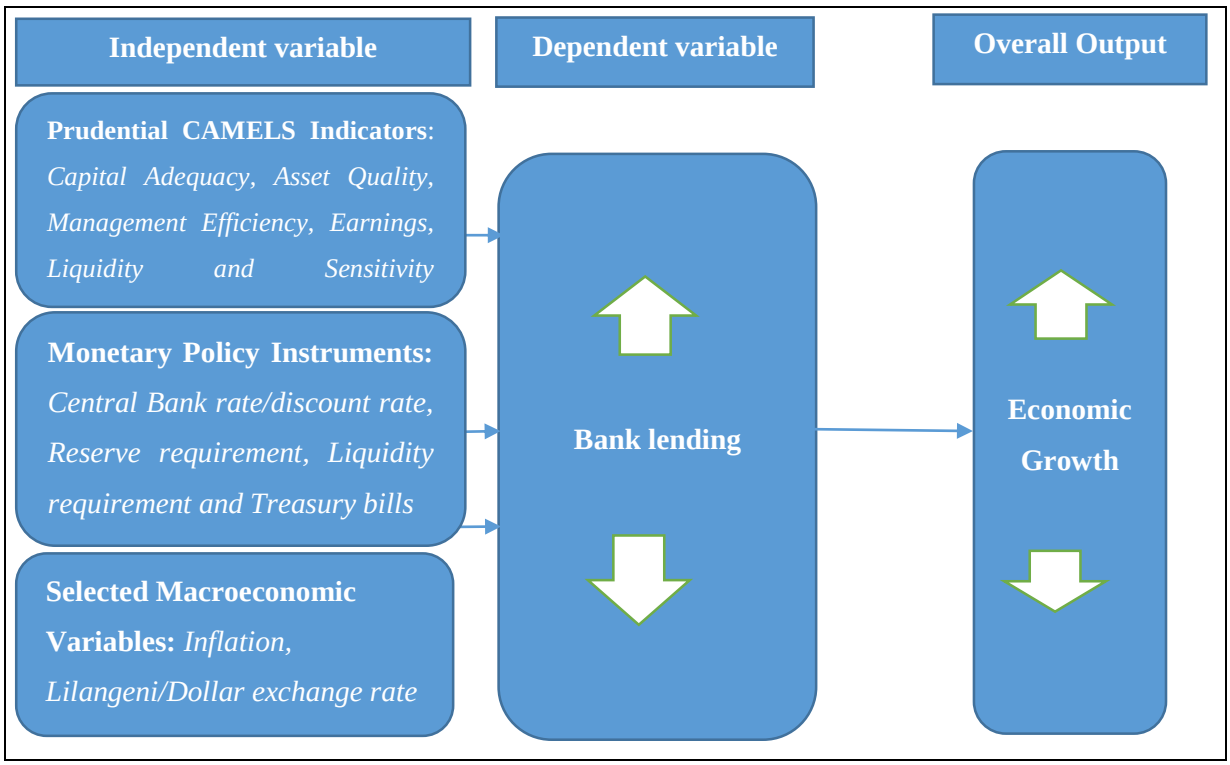
The assessment of monetary policy instruments effects on bank lending behaviour is premised on the IS-LM framework of Poole (1970), who first demonstrated that the interest rates are the most effective policy instrument to stabilise variations in the LM function. The concept emphasises that the interest rate instrument's strength is its effectiveness in influencing bank credit, investment and spending patterns. Thus, the interest rate instrument's strength is its effectiveness in influencing bank credit, investment, and spending patterns, translating to economic growth variations. The traditional conceptualisations of Poole's theory are found in Bernanke and Blinder (1988), Kashyap and Stein (1995), Bernanke and Gertler (1995), Stein (1998) and Walsh (2003). While several authors contributed to the traditional conceptualisations of Poole's theory, this study is motivated by the work of Assefa (2014), Guo and Stepanyan (2011) and Olokoyo (2011), who used the ARDL approach. Therefore, this study adopted the ARDL model to assess the effect of monetary policy instruments and selected macroeconomic variables on bank lending to the private sector. Further, this study followed Younus and Akhteruzzaman (2012), Tule *et al.* (2015) and Olade (2015) by applying the quadratic model to establish the optimal thresholds for monetary policy instruments of the Central Bank of eSwatini.

In this study, while the discount rate, cash reserve requirement, and liquidity requirement are used as variables of concern, other macroeconomic factors such as treasury bills/OMO, inflation, real GDP and exchange rate were included in the ADRL model. Thus, a qualitative and quantitative research design is used to achieve the objectives of the study.

This study adopted a conceptual framework that links the state of compliance, monetary policy and on-site prudential regulation and credit control instruments thresholds.

Topic: Strengthening central bank regulations to stimulate economic growth through commercial bank lending system: A study of central bank lending system in the kingdom of eSwatini:

Figure 5.4: Conceptual Framework



Source: Generated by Author (2019)

The explanation of the expected relationship between bank credit and independent variables is based on the literature reviewed.

CAMELS framework variables

***Capital requirement* (-)**

According to Bridges, Gregory, Nielsen, Pezzini, Radia and Spaltro (2013), the impact of capital requirements on bank lending is through a heterogeneous response in various sectors of the economy. They argue that an increase in capital requirements is followed by a reduction in bank credit, particularlyreal estate corporates and secured lending for households. Therefore, a negative relationship between capital requirement and bank lending to the private sector is expected if banks comply with the tight capital requirement.

***Asset Quality* (+)**

Literature provides that banks with higher assets have diversified portfolios which positively affects bank lending and profitability (Swamy, 2015). Further, Tehulu and Olana (2014) conclude that banks with large size have diversified loan portfolios and thes capability to absorb impaired loans since diversification reduce the risk associated with NPLs. Therefore, in this study a positive relationship between asset quality and bank lending is expected.

***Management efficiency* (+)**

Maseki (2012) in a study for commercial banks in Kenya, established that knowledge management significantly affected the performance of the commercial banks. According to the study, knowledge management augments the ability of the bank to develop new innovative financial products for its customers, turnaround time of employees, communication process in the bank and profitability of the bank.

Earnings (±)

Findings by Nier and Zicchino (2006), Laidroo (2010) and Bustamante, Cuba, and Nivin (2019) there is a positive relationship between earnings and loan growth. Contrary, a study by Rajan (2006), suggests that higher returns discourage banks from searching for yield, hence the refrain from issuing loans. Further, Adesina (2019) found a negative relationship between bank earnings and loan growth and concluded that banks may reduce loan supply while searching for a higher rate of return. Therefore, the relation can either be negative or positive.

***Liquidity management* (-)**

A research study by Mucheru, Shukla, and Kibachia (2017) on liquidity management and the financial performance for commercial banks in Rwanda, provide evidence that liquidity risk management has a significant negative effect on bank lending. Further, Mwangi (2014) and Muthoga (2019) also conclude

that high liquidity is associated with a severe decline in the bank profits, reflecting low bank credit. Thus, we expect a negative relationship to increase liquidity requirement and bank lending.

***Sensitivity* (-)**

Literature suggests that increased exposure to interest rate risk makes bank lending more sensitive to shocks in interest rates (Van den Heuvel, 2002). Furthermore, due to the environment of unpredictable adverse changes in interest rates, banks reduce lending to adhere to regulators' safety obligations (Beutler, Bichsel, Bruhin, and Danton, 2020). Therefore, an increase in exposure to interest rate risk is expected to contribute negatively to bank lending if commercial banks are compliant in the Kingdom of eSwatini.

Variables used in the Autoregressive Distributed Lag (ARDL) Model and Quadratic Model

Bank credit (±)

This is the logarithm of bank credit to the private sector (a proxy for bank lending in the Kingdom of eSwatini). Theory[11] suggests that monetary policy quantitative instruments influence this variable. Therefore, there is a need to fix credit control instruments at an optimal level to stimulate bank lending in an economy.

***Discount rate/bank rate* (-)**

This is the CBR used by the central bank to maintain price stability, which also influences bank lending either positively or negatively depending on the pursued monetary policy. For example, if the central bank pursues an expansionary monetary policy, the discount rate is reduced, and the reverse is true. On the other hand, Ajayi (2012) suggest that the discount rate does not affect bank lending, while Karim *et al.* (2011) advocate that the bank rate is an important instrument to influence credit to the private sector. Therefore, a negative relationship between the CBR and bank credit to the private sector is expected.

***Reserve requirement* (-)**

Central banks utilise the reserve requirement mainly to control the money supply in the economy. Therefore, changes in reserve requirement first affect banks´ interest rates by influencing the optimal banking behaviour in maximising profits. This serves to ensure that banks have enough reserves to meet the withdrawal demands of depositors. Malede (2004) shows a significant relationship between commercial bank lending and cash reserve requirement. Usually, an increase in the reserve requirement is followed by a decline in credit since it withdraws money from circulation. Therefore, a negative sign is expected for this variable.

[11] Keynes theory

***Liquidity requirement* (-)**

The central banks require banks to hold a sufficient level of liquid assets against short term expected net liquid outflows to ensure the resilience of the banking industry. Diamond and Kashyap (2016) views banks' excess liquidity as a negative factor of liquidity regulation. The higher the liquidity ratio, the lower loans offered by the commercial banks. This variable is expected to have a negative effect on the proportion of credit facilities (Alfon, Argimon and Bascunana-Ambros, 2004 and Karim, Azman-Saini and Karim, 2011).

Treasury bills (±)

Treasury bills are issued by governments using their central banks to deal with the temporarily insufficient budget. The 91-day treasury bill is utilised as a benchmark rate for government securities determined using auction to measure interest rates. They are also used as one of the open market operations (OMO) for monetary policy. Through treasury bills, central banks can raise short term funds for governments and absorb surplus liquidity from financial markets concurrently. Eita (2012) provides evidence that the 91-day treasury bills significantly affect bank lending to the private sector.

***Inflation* (-)**

Inflation defines the rise in the prices of most goods and services used, such as food, clothing, housing, recreation, transport, consumer staples, etc. It measures the average price change in a basket of commodities and services over time. Inflation is suggestive of the decrease in the purchasing power of a unit of a country's currency. Studies such as Assefa (2014) and Sharma and Gounder (2012) show that the inflation rate had a negative impact on the rate of credit growth. Therefore, it is expected that this variable should exert a negative effect on the proportion of the credit facilities granted by banks.

Lilangeni/dollar exchange rate (±)

The exchange rate is when the local/domestic currency can be changed into a foreign currency. Manyok (2016) empirical findings provide a negative association between exchange rates fluctuations and bank performance, including bank credit. Katusiime (2018) argues that there is a positive relationship between the exchange rate and credit to the private sector.

Real GDP (+)

Real GDP depicts a country's gross domestic product, which has been adjusted for inflation. Studies such as Hofmann (2001) and Calza *et al.* (2001) modelled the determinants of loans to the private sector and found a positive relationship between bank credit to the private sector and real GDP. Therefore, a positive relationship between bank lending and real GDP is expected in this study.

To achieve the objectives of this study, the variables were selected based on economic theory, the empirical literature, data availability and - most notably, the Kingdom of eSwatini's financial and banking industry history, which provides a clear picture of bank credit movements. The selected variables were entered into the final ARDL model.

2.7 Chapter Summary

This section of the dissertation reviews existing theory and literature of regulation (prudential and monetary policy regulation). It provides a discussion on the evolution of central bank regulation, theories and objectives of regulation, international regulation standards, prudential regulation measures and monetary policy instruments, including their impact on economic growth and determinants of bank lending to the private sector.

This research study utilises both theory and literature reviewed in this chapter as a guide to developing a relevant conceptual framework to examine the state of compliance with prudential regulation, and establish the effect of the lending system and determine the optimal monetary policy mix for the Kingdom of eSwatini.

(a) The theory reviewed in this research study provides four schools of thought concerning monetary policy credit regulation, namely classical theory, Keynesian theory, monetarist theory, and bank lending channel theory. The four schools of thought analysed the impact of monetary policy instruments in the context of five transmission channels (interest rate, exchange rate, asset price and bank lending, as well as the expectation channel) (Loayza and Schmidt-Hebbel, 2002). While the four theories are interlinked, the bank lending channel is relevant for this dissertation. The bank lending channel has a direct effect on the lending system. It provides that the effect of monetary policy on economic activity is not only through altering short term interest rates but also by modifying the availability and terms of bank loans. It also provides that monetary policy directly affects bank lending because changes in the bank rate either translate into an increase or a reduction in deposits. This increase or decline in bank assets caused by changes in interest rate affects real economic activity; therefore, it is among the main drivers of economic growth.

(b) Regarding means of collecting data, literature provides that previous researchers used both primary and secondary data. For example, questionnaires were used on targeted participants or face-to-face interviews were used to collect primary data. Arguments support the use of questionnaires to collect information that interviews allow the researcher to probe the interviewee based on the responses, which provides further clarity and generates credible qualitative information (Kvale and Brinkmann, 2009; Saunders, Lewis and Thornhill., 2012; Blumberg,

Cooper and Schindler., 2014; Kvale and Blumberg., 2009). Secondary data sources include relevant books, articles, previous research, quarterly reports, annual reports, financial statistics, central statistics office documents, and monetary policy consultative reports (Stacks, 2010).

(c) In terms of methods of assessing on-site prudential regulation, literature provides evidence that the CAMELS framework serves as a relevant framework to examine both the state of regulation and the compliance of commercial banks (Wirnkar and Tanko, 2008; Mihailović *et al*., 2009; Roman and Şargu, 2013; Rozzani and Rahman, 2013). This research also considers the CAMELS framework relevant to determining commercial banks' status and compliance in the Kingdom of eSwatini.

(d) Literature also provides different methods of examining the effect and link between the dependent variable and the explanatory variables, namely Autoregressive Distributed Lag (ARDL), Engel and Granger cointegration and Johansen cointegration methods. The research study by Assefa (2014), who used the ARDL econometric model on time series data to assess the effect of credit instruments and other macroeconomic variables on bank lending to the private sector in Ethiopia, provides a basis for this research study in developing the model to be used to confirm qualitative findings on monetary policy effects. Other studies that used a similar approach and variables were Guo and Stepanyan (2011) and Olokoyo (2011).

(e) To determine thresholds of monetary policy instruments, the nonlinear approach and quadratic function were used by different authors (Khan and Senhadji, 2001; Mubarik, 2005; Li, 2005; Hussain, 2005; 2005; Sergii, 2009; Younus and Akhteruzzaman, 2012; Tule *et al.,* 2015 and Olade, 2015). Previous studies that utilised the nonlinear approach include Khan and Senhadji (2001) and Mehrara and Karsalari (2011). They assessed the threshold of interest rates on private investment in developing economies. The researcher for this study is motivated by Younus and Akhteruzzaman (2012), Tule *et al.* (2015) and Olade (2015), who used the quadratic function to determine the threshold of monetary policy instruments.

The above literature provided the foundation for the research methodology in chapter three. The literature analysis has shown that there is no study done in the Kingdom of eSwatini with a similar approach and on this topic. Furthermore, the literature on optimal thresholds is scant in international research. These are the major gaps that have been established, which this study seeks to close. The following chapter provides the research methodology used in this study and the reason behind the choice.

CHAPTER THREE: METHODOLOGY

3. Introduction

The preceding chapter provided a review of related literature for this study in line with the topic and objectives of the study provided in chapter one. In this chapter, the overall research design is presented. Saunders *et al*. (2012) believe that research is accurate provided it employs a proper methodology. Accordingly, this chapter provides the methodology utilised for the collection and analysis of data.

Rajasekar, Philominaathan and Chinnathambi (2013) define research methodology as "…the procedures by which researchers go about their work of describing, explaining and predicting phenomena". It includes the research philosophy, research design, the target population, sample design, data collection, analysis techniques, econometrics specification, reliability, and validity. These are methods to be followed to address all the questions. The methodology also provides an overview that covers the potential risks and problems, ethical considerations, and the limitations of each method (Dawson, 2002; Cohen, Manion and Morrison., 2007). Rajasekar *et al*. (2013) assert that a methodology is a science of how to research study can be undertaken. It provides details on how the researcher has undertaken each stage of the research in the process of addressing their research problem and the judgement behind each reasoning. Walliman (2011) points out that a research methodology comprises instruments employed by researchers while they conduct any form of study or inquiry. According to Cohen *et al*. (2007) and Walliman (2011), different instruments can be utilised to conduct a study, and it is the researcher's prerogative to select the credible tool for their study (Wilkinson and Birmingham, 2003). All the instruments chosen must complement each other for the information that is established to be pertinent to the subject of the research and follow in a coherent progression (Jonker and Pennink, 2010). Economists emphasise that best results are attained when for a study. It is the best fit or suitable to the task and is superior to other methods with minimum limitation compared to others (Hofstee, 2006; Buchanan and Bryman, 2009; Tashakkori and Teddlie 2010).

Therefore, this chapter aims to provide the rationale for the selected research design, philosophy, research approaches, population, sampling method, data collection instruments, reliability and validity issues, details on how bias was eliminated, and ethical considerations.

3.1 Research Design

Sekaran and Bougie (2013) describe research design as a blueprint that a researcher uses for data collection, measurement, and analysis of data, in line with the study's research questions. Babbie (2011) provides three types of research design: descriptive research design, explanatory research design, and experimental research design.

According to Hakim (2000), a research design is predominantly concerned about the aims, determinations, intents, and plans within the real constraint of location, time, and money. Creswell (2014) states that researchers should question themselves about the knowledge claims and theoretical views that they are introducing to any research; they should consider the strategies they want to utilise in their study, which information will, in turn, form the basis of their methods, and should thoroughly consider how data collection and will be conducted. Vogt, Gardner and Haeffele (2012) suggest that this should be done to enhance the researcher's understanding of any bias they might end up bringing into the research investigation. This also explains how that might influence the chosen method and the instruments utilised to collect data. The main approaches in research are qualitative and quantitative methods. Researchers sometimes mix these methods to minimise the bias of using one method. Creswell (2014) asserts that a mixed approach minimises the bias of using one method.

Research design is known as a framework that guides the three main process of research: the methodology on data collection of the study, its measurement and analysis to ensure that all questions are accurately answered in the study (Khotari, 2004; Sekaran and Bougie, 2016).

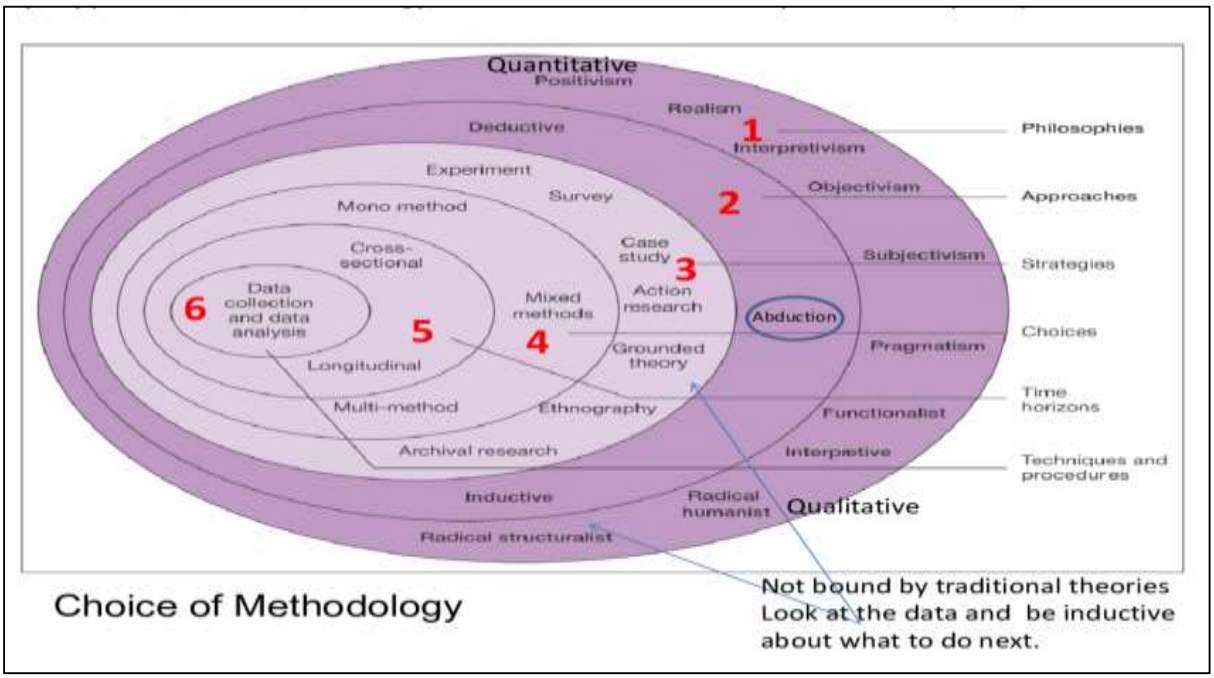
3.2 Research Philosophy

The philosophical approach provides a framework of the research study that guides how to respond to the research questions. The philosophical position of the researcher determines the approach in which the entire research process is done. It summarises the researcher’s study perspective, the variables used, the relationships established, determinants and the desired results. The philosophical choice of the researcher also justifies the position adopted in relation to the other approaches that could have been utilised. It describes a paradigm that provides a broad framework that entails beliefs, perception, theories, and practices utilised to conduct research (Saunders, Lewis and Thornhill., 2009). According to Walliman (2011), the research philosophy allows the reader to understand the fundamental and conceivable argumentative assumptions upon which research studies are premised, methods and strategies that have been used, and the validity of the results achieved.

In simpler terms, the research philosophy includes the entire research process concerning the research study. It expresses the philosophical viewpoint of the researcher concerning the nature of reality, the sufficient knowledge, and values in research. This researcher's viewpoint aligns with Saunders *et al*. (2009), who assert that no research is superior to another. Saunders *et al*. (2012) believe that selecting the most suitable philosophy or philosophies that generate credible results to the research purposes and objectives is essential.

The choice of research philosophy is influenced by the field of study and assumptions about the world – ontology and epistemology – how exactly we know that world, and the type of knowledge. This study follows a research onion (see Fig. 3.1) adapted in Saunders *et al*. (2012), based on four layers of research philosophy, namely positivism, pragmatism, realism, and interpretivism.

Figure 6.1: Research Onion



Source: Research Onion Adapted from Saunders *et al*. (2012:37)

3.2.1 Positivism

According to Bryman and Bell (2011), the positivism approach is an epistemological perspective that supports applying natural scientific methods to the study of social sciences. It involves collecting data around an observable reality and exploring for regularities and unpremeditated relationships in data to establish and build law-like overviews similar to those obtained by scientists (Myers, 2013). Positivist

research is premised on the assumption that reality is objectively given and can be described by measurable properties, different from the observer (researcher) and instruments used.

According to positivists, the theory of knowledge excludes evidence such as personal insight, emotions and opinion (Henning, Van Rensburg and Smit., 2004). In simple terms, positivism seeks to define an experience or test the theory through measurement and observation (O'Leary, 2004). Furthermore, the positivist philosophy acknowledges that accumulating knowledge is a process in which new insight is gained to the available knowledge. Positivist research is commonly used for quantitative data collection and analysis methods (Mackenzie and Knipe, 2006). According to Gill and Johnson (2010), a researcher who opts for a positivism approach adopts the philosophical approach of the natural scientist to collect data through an observable reality and explores regularities and causal effects in data to create law-like generalisations as those produced by scientists.

3.2.2 Realism

Realism philosophy's viewpoint suggests that objects exist self-sufficiently of our knowledge of their existence. Similar to positivism, realism is linked to scientific inquiry (Saunders *et al*., 2012). Scientific experiments are premised on the open character of the world where events are subject to several causal fluctuations. In the case of natural sciences, experiments are conducted to create closed systems by generating the suitable intrinsic and extrinsic conditions so that sequences of events may occur in the empirical space (Saunders *et al*., 2012).

Like positivism, realism's emphasis is on experimentation, but it does not agree with the possibility of generalising experimental findings because of the nature of reality that is stratified and dynamic consisting of underlying contingent structures (Bechara and Van de Ven, 2007). Instead, realism considers experiments in view of providing perfect conditions for the research study of mechanisms (Tsang, 2014). It provides a methodology that measures causality relationships in the object of study in harmony with processes and mechanisms. The strength of this philosophical notion is its ability to deal with complexity and causality in context (Smyth and Morris, 2007).

3.2.3 Interpretivism

Interpretivism seeks to explore the world of human experience, and it underscores that reality is socially constructed (Mertens, 2005). It examines the phenomena through the context that people give to these phenomena (Trauth, 2001). Interpretivism postulate that individuals have personal competencies that inspire agency. It asserts that cause and effect are equally interdependent, and attaining complete objectivity is hard. Interpretivism also suggests that the world entails multifaceted realities that are

properly examined from the viewpoint of different individuals. Naidoo (2011) believes that the researcher's values influence an inquiry. To a large extent, Interpretivism is subject to qualitative approaches of data collection and analysis; however, some researchers combine qualitative and quantitative methods (Mackenzie and Knipe, 2006).

3.2.4 Pragmatism

All the philosophies of science discussed above provide a unique ontology and understanding the problem (epistemology). Consequent on these different outcomes, the dilemma exists regarding which direction researchers should pursue. Some researchers adopt a philosophy that is not specific to a specific paradigm or reality but at the same time achieves all. The pragmatic paradigm or philosophy utilises common or convergent outcomes from each perspective (Bechara and Van de Ven, 2011).

Pragmatists consider triangulation which involves the use of numerous data sources, theories and methodologies. They are concerned with the "what" and "how" of the research problem (Mackenzie and Knipe, 2006; Creswell, 2009). The initial pragmatist notion was that social inquiry does not only provide the truth about real-world circumstances by relying on a single scientific method (Mertens, 2005). According to Bechara and Van de Ven (2015), pragmatism pivots on the procedure for uncovering the convergent and discriminant validity of measures. The triangulation of philosophies postulates that the bias inherent when using any method, theory, or data source is removed or minimised by the convergent information obtained from the different approaches (Sinclair, 2005). Thus, pragmatism is considered an approach that provides the fundamental philosophical framework for research by mixing qualitative and quantitative methods (Somekh and Lewin, 2005; Mackenzie and Knipe, 2006). However, although mixed approaches can be utilised in any paradigm, "the research problem" is basic in the pragmatic paradigm, and it utilises all methods to examine the problem (Creswell and Plano-Clerk, 2011). The advantage of using the pragmatic approach is that it utilises different data collection methods to establish facts to answer the research question. In addition, the pragmatic approach allows researchers to collect both qualitative and quantitative data from different sources. Creswell (2015) suggests that the pragmatic approach provides a unique approach to research that best addresses the research problem.

3.2.5 Adopted research philosophy

In this research study, the philosophy which is used is the pragmatism approach. This research study employs pragmatism because of its flexibility and ability to ensure the triangulation of ideas, data collection sources, and analysis methods. The strength of this approach in research is that it is problem-centred. It ensures that data collected and methods of analysis are specifically selected to achieve the

aims and objectives of the study. Furthermore, it utilises different data collection methods to establish facts to answer the research question. In this study, the pragmatic approach is the best since qualitative and quantitative data were collected from different sources.

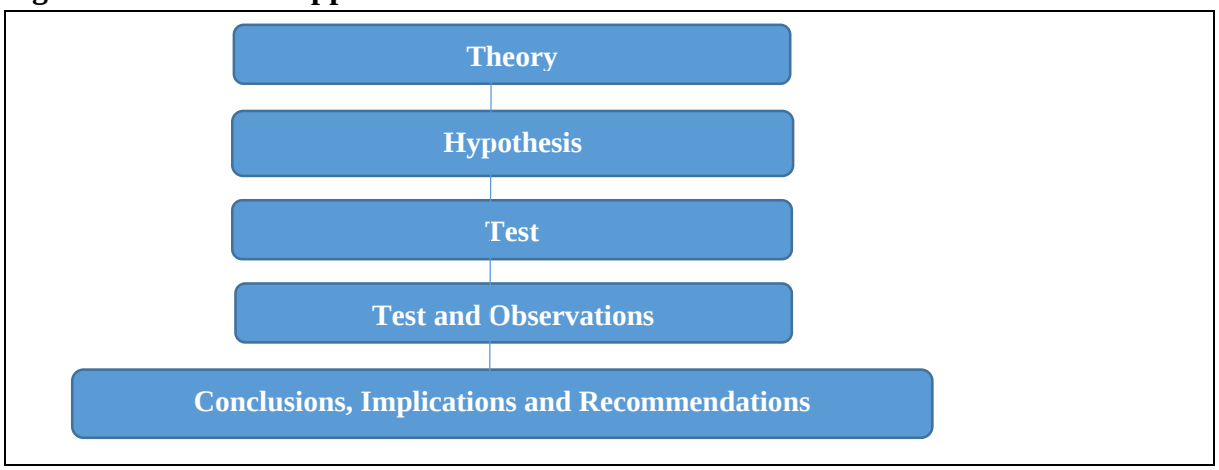
3.3 Research Approach

According to Saunders *et al*. (2012), the research approach can be classified into two groups: inductive and deductive. The third research approach is a hybrid of deduction and induction called the abduction approach (Saunders *et al*., 2012; Bryman and Bell, 2015). In the research onion above, the second layer provides the different tactics available when undertaking research. For this research study, the adopted approach is abductive because there is theory and literature which the researcher will use when conducting data analysis for collected data. Thus, both qualitative and quantitative methods were used.

3.3.1 Deductive approach

The deductive approach is commonly used for theory testing. It involves developing theory and designing a research plan to assess or test the credibility of the theory (Saunders *et al*., 2012). Leung (2015) asserts that the deduction approach is theoretical; it begins by assessing the relationship between notions based on theories. These theories are further narrowed down to explicit hypotheses, which are tested utilising data. The results of the test then provide evidence of whether the designed hypotheses hold or not. The results of the test are then used to draw conclusions, implications, and recommendations. In this research study, the deductive approach is presented as follows:

Figure 7.2 Deductive approach

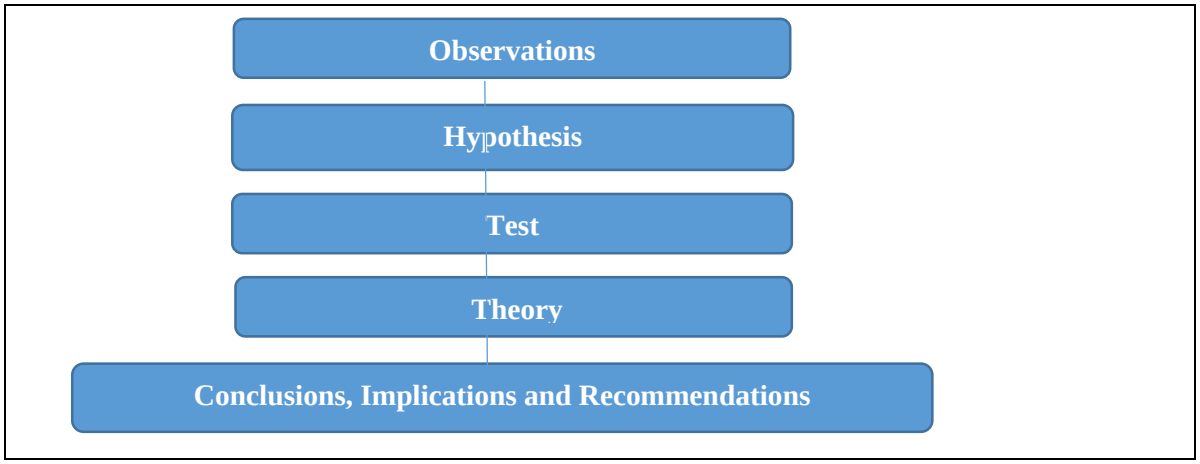


Source: Generated by the Author (2018)

3.3.2 Inductive approach

Saunders *et al*. (2012) state that the inductive approach is a building procedure, which involves data collection and analysis to understand better the research phenomenon with a view to developing a theory. The inductive approach is premised on observations that seek to describe what was observed. Researchers who utilise the inductive approach use observations in order to uncover trends and patterns. Therefore, hypotheses and propositions are formulated to support, guide and in the process, describe what was observed. Based on the outcome of the test of the formulated hypotheses, conclusions, implications and theory are established. The strength of the inductive approach is that it allows researchers to generalise on the period coverage of the observations and the number of observations included in the sample. Leung (2015) opines that the validity of the inductive approach is strengthened as the number, scope, and diversity of observations increase. The diagram below provides a summarised version of the inductive approach.

Figure 8.3: Inductive approach



Source: Generated by the Author (2018)

3.3.3 Abductive approach

The deductive and inductive approaches are sometimes combined by researchers in both business and social science disciplines. A combination of deductive and inductive is called the abductive (abduction) approach. Like the deductive and inductive approaches, the abduction approach is used to create logical inferences and build theories. It allows researchers to navigate the shortcomings that emanate from using either deductive or inductive approach. Those who advocate for the use of the abduction approach (Bryman and Bell, 2015) assert that the deductive approach is limited to a strict logic of theory testing and the construction of hypotheses, while other issues may emerge in the process of selecting theories to be tested, which are well captured using the abductive approach. The limitations of the inductive approach arise from the fact that it is not based on empirical data that justifies theory building. Thus,

the abduction approach is viewed as superior in overcoming the shortcomings that arise from using either the deduction or induction approach (Bryman and Bell, 2015).

The abductive approach was introduced by Pierce (1914) and further developed by Fann (1970). Both thought that abduction is centred on the pragmatist philosophy. They argued that the pragmatic approach depends on abductive reasoning oscillating between induction and deduction by transforming observations into theories and finally assessing the theories through action (Onwuegbuzie *et al*., 2012).

In this case, the process begins with a shock or dilemma, and then abduction seeks to define and explain it. Dilemmas may emanate when researchers deal with some empirical phenomena that the available theory does not account for. Therefore, the abduction approach seeks to establish the facts that would make the phenomenon less of a secret while also converting the surprising perceptions into a matter of course. This process involves a back and forth review of the current status, theoretical ideas, and literature in a move to get evidence and improve analytic triangulation. In a nutshell, the abduction approach entails choosing the most appropriate explanation from a range of competing views or interpretations to provide a clear picture of the issue at hand (Mantere and Ketokivi, 2013; Bryman and Bell, 2015).

3.3.4 Adopted research approach

In line with the pragmatic philosophy adopted in this study, the research seesaws between deduction and induction to address the research questions of this study. Specifically, the abductive approach was utilised, which includes elements of both the deductive and inductive approaches.

3.4 Research Strategies

Wisker (2008) suggests that a research strategy can be action research, case study, survey, laboratory experiments or content analysis. The suitability of these strategies depends on what the researcher seeks to achieve. Therefore, a research strategy should be efficient in achieving the research objectives n line with the research philosophy.

Table 2.1: Relevance of research strategies

Research strategy	**Relevance to this research study**
Action research	Saunders *et al*. (2012) assert that action research includes experiments conducted outside the laboratory or any controlled environment. This approach is subjective or idealism or value-laden in nature. Much of the work is fieldwork. This method is not relevant for any of the objectives of this research study.
Survey	Surveys involve the used of questionnaires and in-depth interviews to generate data (De Vaus, 2002). Surveys can either follow positivism or realism value-free philosophy. This includes research strategies, such as observations and analysis of recordings. This strategy is relevant for this study. The researcher utilises a questionnaire with open and close-ended questions. The questionnaire also provides a Likert scale to establish how some statements have rated the views of senior officials at the Central Bank of eSwatini.
Case study	According to Yin (2009), a case study research can follow a quantitative or qualitative method. The main aim is to answer questions such as 'what', 'why' and 'how'. This research strategy is relevant for study since the focus is the Central Bank of eSwatini lending system. Therefore, it allows the research to answer almost all the research questions. As indicated above, the researcher also make used of questionnaires and interviews to collect data.
Experiments	Experiments commonly used by scientists. It follows either positivism or realism or value-free philosophy. Ideally, it should be conducted in a controlled environment using a traceable group (Hakim 2000). This method is not relevant for this study as it seeks to explore the state of compliance, effect, and threshold of control variables.
Content analysis	Content analysis is a research method involving subjective interpretation of text data content (Hsieh and Shannon, 2005). This method is ideal for analysing written, verbal or visual communication messages. Harwood and Garry (2003) suggest that content analysis may be used to analyse information from newspaper articles, magazines, hymns, advertisements and other political speeches. To substantiate some of the descriptive analysis findings on the state of regulation, the content of the literature review will be used, such as Monetary Policy Consultative Reports, annual reports, quarterly bulletin and different central bank frameworks.

Source: Generated by Author based on literature (2018)

3.4.1 Adopted research strategy (s)

In order to achieve all objectives for this study, the survey and case study strategies are more relevant for this research, and it includes qualitative and quantitative data collection techniques. The choice of survey and case study strategies is based on the simplicity, targeted sample population and methods of analysing data. Furthermore, qualitative analysis findings on the state of regulation were complimented by using the content of the literature review, such as Monetary Policy Consultative Reports, annual reports, quarterly bulletin and different central bank frameworks.

3.5 Choice of Research Method

A research approach can either be quantitative, qualitative or a combination is known as a mixed method (see Silverman, 2010; Neuman, 2011and; Bryman, 2012). Depending on the research objectives and questions, these three methods can either follow a deductive or inductive or abductive approach (Dainty, 2008, Saunders *et al*., 2012). The mixed method combines both quantitative and qualitative research approaches to address weaknesses that emanate from using one of these methods (Amaratunga, Baldry, Sarshar and Newton, 2002 and Bryman, 2012).

3.5.1 Qualitative research

According to Cooper and Schindler (2008), qualitative research provides an in-depth understanding of how and why certain things happen in the proposed field of research. It focuses mainly on the subjective assessment of behaviour and opinion through examining. Cooper and Schindler (2008) also assert that qualitative research seeks to establish the phenomena through a realistic inquiry, which contrasts with the quantitative approach, which utilises statistical inference. The qualitative design focuses on textual and non-numerical data rather than determining measurements (Bryman and Bell, 2015). According to Wilmot (2011), qualitative research methods are useful to present information that provides a clear picture of the matter investigated. Bryman and Bell (2011) further suggest that a qualitative research design allows the researcher to get information on the prevailing spectacle by questioning interviewees' discernments and attitudes.

The quantitative research approach identifies a sample and population, in which the researcher collects data using a survey questionnaire or experimental studies, whereas the qualitative approach uses a non-probability sampling technique to collect data through interviews, utilising open-ended questions complemented by a guide to ensure an all-inclusive data collection methodology (Creswell, 2014). Bryman and Bell (2015) assert that a qualitative method utilises non-numerical data that entail words,

actions and pictures. They further state that this methodology is ideal when analysing various factors that motivate a unique behaviour in an organisation. Creswell (2013) provides four types of data collection techniques, namely qualitative observation, qualitative interviews, qualitative documents, and qualitative visual and audio material.

Ravitch and Carl (2016) opine that qualitative research seeks to understand individuals, groups and phenomena in a way that comprehends and illustrates what people make out of their experiences. Ravitch and Carl (2016) further assert that qualitative research is used to identify and describe in a story reporting what certain people do in their day-t- day lives and what their behaviour implies to them. The qualitative epistemological research is interpretive since it puts more weight on understanding the social world using population interpretation (Byrman and Bell 2014).

This approach to research entails questions that are prompted before and during the interview, visiting certain groups identified for the research, an inductive process of data analysis based on particulars to general themes, and the researcher developing interpretations of the data to come up with conclusions and recommendations. The structure of qualitative research tends to be flexible. Therefore, researchers who adopt this type of research support an inductive style, which mainly focuses on individual meaning and seeks to interpret the complexity of a situation (Bryman and Bell, 2015; Creswell, 2007 and Ravitch and Carl, 2016). The underlying assumptions in qualitative research are that reality is a social construct, variables are not easy to measure, the pre-eminence of subject matter and collected data is largely influenced by an insider's viewpoint (Rovai, Baker and Ponton., 2014). Furthermore, Rovai *et al*. (2014) suggest that this approach in research: "… values individuality, culture, and social justice and it improves the content and context information of the whole analysis" (see Rovai *et al*., 2014:4).

In addition, the qualitative approach methods do not prevent the administration of a critical, disciplined and balanced study into any educational issue (Thomas, 2009; Silverman, 2009; Bell, 2010)

The following are research designs that are commonly used for qualitative research:

- *Narrative research* –assists in gathering information, such as stories or events from individuals, to improve or come up with a solid story. This involves collecting data from documents and in-depth interviews with targeted individuals over time to help reconciling stories to make your own conclusions, thus presenting a consolidated thematic narrative (Davis, 2009).
- *Phenomenology* – this approach is utilised to describe events or activities. Data was collected using different ways, such as interviews, review of related literature, attending events, and visiting different forums to gain insight from respondents on what is being studied (Creswell, 2009).

- *Grounded theory* – this procedure focuses more on establishing an explanation or theory behind any activity or event that is investigated. It uses both interviews and related literature to develop a concept on the data presented. Usually, when using this approach, the sample size improves understanding and better informs strategic decisions (see Creswell, 2009, and Gambetti, Graffigna and Biraghi, 2012).
- *Ethnography* – this method is commonly used for cultural group studies. The process of data collection entails observation where the researcher intermingles with the group as a spectator to obtain detailed first-hand experience (Creswell, 2009).
- *Case studies* – this approach is utilised to investigate a group or organisation in-depth to establish insight on the subject under study. It allows a researcher to provide a detailed explanatory description of the prevailing situation. Case studies are conducted to provide a clear picture of what is being assessed from different perspectives through different data collection methods appropriate for each study (see Creswell, 2009; Dowlatshahi, 2010; Sekeran and Bougie, 2016).

3.5.2 Quantitative research

Quantitative research is a numerical research method that entails collecting numerical data (Aliaga and Gunderson, 2006 and Bryman and Bell, 2015). Furthermore, a deductive approach is used concerning the theory and research, which means that the research is conducted based on what is known, and some suggestions may require practical inquiry (Bryman and Bell, 2015). In this case, the researcher differentiates the research problem based on the developments around the study area by establishing the trend from the study sample and concludes how they vary (Creswell, 2002). Creswell (2014) asserts that this method entails data collection, analysis, interpretation, and report writing based on the results. Furthermore, Creswell considers this methodology an ideal approach to testing objective theories by investigating the relationship among variables.

Rovai *et al*. (2014) consider quantitative research as a deductive method towards research. They view the world as exogenous and that there is always an objective reality independent of any observations (Rovai *et al*., 2014). They further state that by breaking down this reality into smaller, reasonable piecesthis reality can be well comprehended for research. Rovai *et al*. (2014) contend that within the smaller subdivisions, hypotheses and observations are drawn and tested, which provide evidence regarding the existing relationships among variables. This approach allows the researcher to review related theory first in line with a specific hypothesis, then tested. Based on the results, a series of observations, and analysis, conclusions are drawn concerning the hypothesis (Rovai *et al*. 2014). According to Muijs (2011), when using a quantitative approach, data collection and analysis is conducted using mathematical methods. Creswell (2014) also states that the researcher utilises

investigative tools such as experiment and surveys to collect data in quantitative research. Data is then analysed in a programmed instrument that processes statistical data. Contrarily, qualitative research uses investigation based on constructivist viewpoints to develop a theory by adopting tools such as ethnographies, narratives, and case studies.

Saunders *et al*. (2007) assert that raw data provide little meaning to people; therefore, it must be analysed to provide a simple message to the reader or policymaker on the issue being investigated. Saunders *et al*. (2007) further state that quantitative techniques such as charts, graphs, and statistics are useful to examine, illustrate, describe, and explore the relationships and trends within data. Quantitative data can range from simple computations such as tallies to more multifaceted data. Quantitative analysis entails transforming raw data through analysing, which leads to the development of easily understood interpretations. This can be achieved by establishing simple diagrams and tables that depict the frequency of occurrence and using statistics to enable comparisons by creating statistical relationships between variables to refined econometric modelling (Saunders, Lewis, and Thornhill, 2007).

Khotari (2003) suggests that quantitative research is descriptive and seeks to define the conditions at a particular time. Greener (2008) also states that quantitative research is an inductive method utilised for theory testing, which, through the utilisation of facts, focuses more on the objectivists' view on the study.

3.5.3 Mixed research methods

The mixed research methods consist of empirical research that entails collecting and analysing both quantitative and qualitative data (Burke and Onwuegbuzie, 2007). According to Greene (2007), a mixed approach allows the researcher to deal with the inherent weaknesses of the two methods, increase the credibility of the results and eliminate any bias associated with each method. Creswell and Plano Clark (2011) suggest that this approach improves the results compared to a single method. They further assert that using qualitative and quantitative data sequentially and rigorously integrates the two forms of data. McKim (2017) states that the mixed research method provides an in-depth knowledge of both quantitative and qualitative methodology to add value to the research study. As stated above, both research methodologies entail data collection, analysis, interpretation and report writing using various tactics. Creswell (2014) maintains that the strength of using both methods is beyond collecting and analysing the two types of data but entails using both methods in tandem so that the overall strength of the research study is greater than either quantitative or qualitative research.

Furthermore, literature provides evidence that the mixed method is the only method that allows researchers to compare qualitative and quantitative research methodology findings to improve and

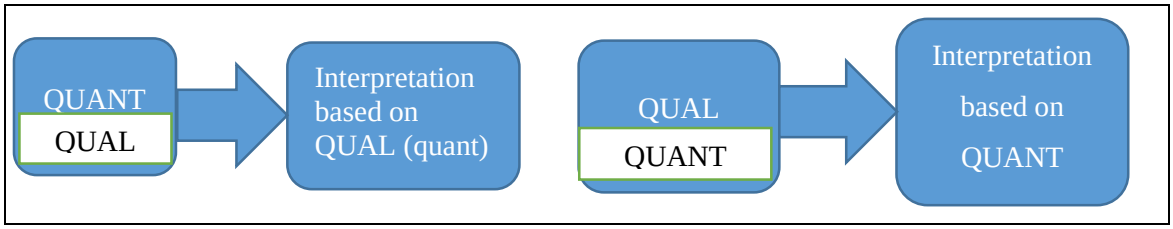
ascertain the credibility of the research results (Creswell, 2014 and Sekaran and Bougie, 2016). According to Tashakkori and Teddlie (2003), the traditional design of a mixed method is divided into five categories: triangulation, complementarity, initiation, expansion, and development. They assert that researchers utilise triangulation to establish the existing corroboration, convergence, and correspondence of results when compared to other methods and attain a complementarity that employs various methods to capture overlapping but different aspects of a phenomenon, yielding an improved, clear understanding of that particular phenomenon. Development refers to the purpose which uses sequentially quantitative and qualitative methods in which the first method helps inform the development of the second one. Initiation entails the identification of paradoxes and new perspectives rather than planned intent. Finally, expansion refers to the opportunity that extends the scope and range of the study by using different approaches for several inquiry components (Tashakkori and Teddlie, 2003).

Creswell and Plano Clark (2007) provide four synthesised typologies that explain the mixed approach: the embedded design, the explanatory design, the exploratory design, and the triangulation design.

3.5.3.1 The embedded design

The embedded design utilises one approach of inquiry in a supportive secondary role which allows the researchers to make sense of research in its entirety. This method generates data with which the researcher is easily able to deal. It is ideal for quantitative experimental designs where there is less qualitative data. The disadvantage in using this approach is that it is difficult to integrate results and is very complicated to apply in qualitative research (Creswell and Plano Clark, 2007).

Figure 9.4: The Embedded Design



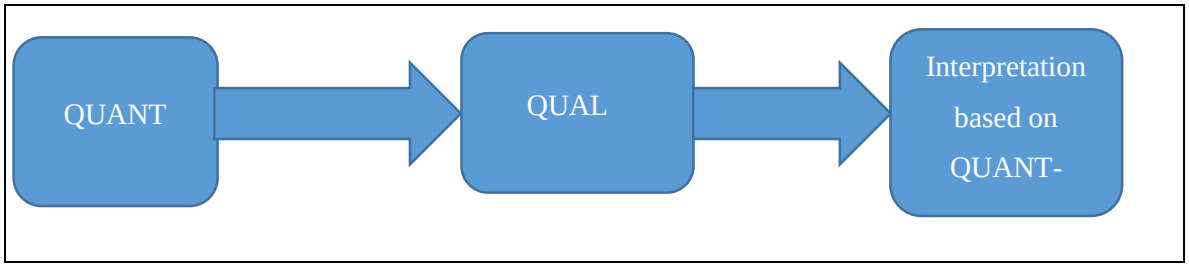
Source: Adapted from Creswell and Plano Clark (2007:13)

Notes: QUANT – quantitative and QUAL – qualitative

3.5.3.2 The explanatory design

Explanatory design is a two-stage design that examines quantitative data being utilised to build and explain qualitative data. This involves the collection and analysis of quantitative data. The second stage is the collection and analysis of qualitative data. In this design, the researcher identifies quantitative findings that require further investigation, which is done by employing a qualitative approach. Therefore, quantitative data provides the basis for the qualitative data selection process. In addition, it allows the researchers to collect relevant data for specific research studies. This design is easy to implement and allows the researcher to pay much attention throughout the research. The problem with this design is in sampling participants who are informed about the information required, and it turns to be time-consuming (Creswell and Plano Clark, 2007).

Figure 10.5: The Explanatory Designs

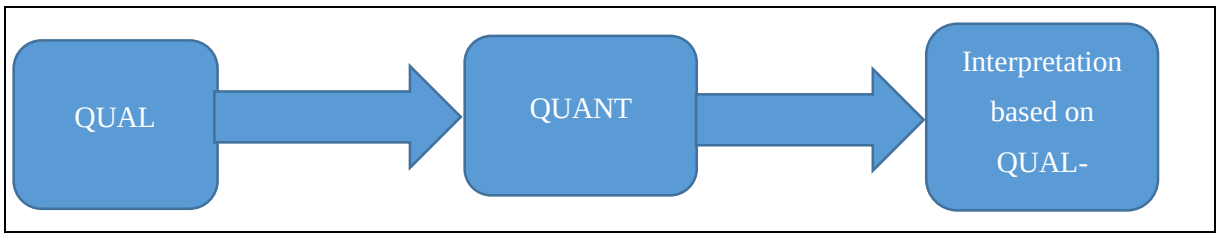


Source: Adapted from Creswell and Plano Clark (2007:14)

3.5.3.3 The exploratory design

The exploratory design is the opposite of the explanatory design. The qualitative data inform the quantitative data collection gathering process. Data is gathered through a two-stage process, qualitative and quantitative. This approach is easy to implement, and qualitative data complements quantitative research. Despite the positive about this design, it is time-consuming, and participants might not be in a position to respond in both stages (Creswell and Plano Clark, 2007).

Figure 11.6: The exploratory design

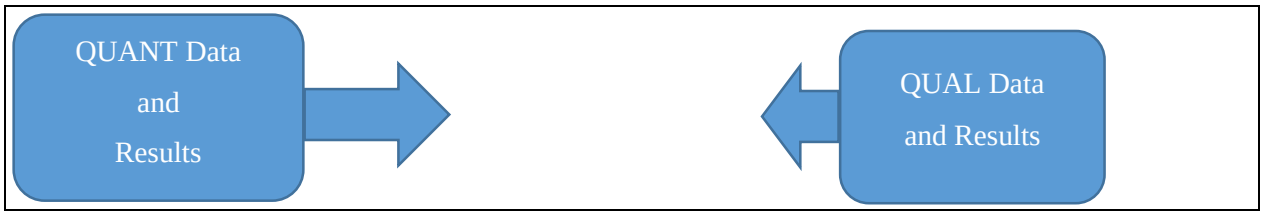


Source: Adapted from Creswell and Plano Clark (2007:14)

3.5.3.4 The triangulation design

The triangulation design seeks to provide complementary and different data on the same matter investigated which may be used for analysis and interpretation. It allows the researcher to collect information from various sources using different methods, thus increasing the credibility of the results. This approach requires the researcher to have a vast knowledge of the analysed data and sound interpretations of the results (Creswell and Plano Clark, 2007).

Figure 12.7: Triangulation Design



Source: Adapted from Creswell and Plano Clark (2007:15)

3.5.4 Adopted research strategy

In line with the theory reviewed above, a mixed method is adopted for this study which entails a combination of deductive and inductive called abductive approach. The mixed method involves the triangulation of qualitative and quantitative methods of data collection and analysis. This study allows for examining the relationships between monetary policy variables of concern and bank loans to the private sector to establish the lending behaviour of commercial banks in the Kingdom of eSwatini. The mixed method is considered ideal for this study because it allows the researcher to compare findings attained through different techniques and conduct cross-check examinations. Therefore, results obtained from the quantitative approach were utilised to enhance the subjective descriptions and explanations obtained from the qualitative data generated from interviews with participants. Thus, the researcher made conclusions with confidence, as suggested by Jogulu and Pansiri (2011).

This design is used to exploit the opportunity of complementarity in measuring, modelling, analysis and interpretation, and reporting. Therefore, this approach bridges the gap that exists when using one method; for example, a series utilised for quantitative analysis might not detect or capture/measure all the dynamics under review, but the qualitative methods complement the quantitative analysis by exploring and proving a different perspective to the matter being investigated. For example, quantitative results reveal the problems with insubstantial disclosure in the public domain, while the qualitative interviews allow the researcher to explore further why such problems exist. Thus, the qualitative

approach provides in-depth insights and complements quantitative research in hypothesis development and model development.

The mixed method strategy allows the researcher to incorporate both qualitative and quantitative methods of investigation in a single dissertation (Ang, 2014; Bryman and Bell, 2015). In a qualitative method, the strategy involves organising both numeric data and narrative information in order for the final database, analysis and interpretation to represent both quantitative and qualitative information (Creswell, 2015). Qualitative data analysis entails describing phenomena and information, while quantitative data involves numeric and category analysis, where statistical and econometric methods are used to describe phenomena.

Previous researchers have well covered literature on mixed research methods. Previous studies provide several advantages of the mixed research method. Hesse-Biber (2010a) suggests that the triangulation of the methods is important and minimises the bias inherent in any data source. Hesse-Biber (2010a) also opines that using both methods eliminate the problems that are associated with using various data sources and methods. Hesse-Biber and Johnson (2015) assert that triangulation allows researchers to obtain consistent and credible results. In line with those who advocate for the use of a mixed method, the following justifications hold:

(a) triangulation – helps to establish convergence and validate results from various methods used to examine the same phenomenon
(b) complementarity – seeks to provide clarity, enhancement and illustration of the results from one method to improve the results of the other method
(c) development – involves using findings from one method to inform the other method
(d) initiation – developing paradoxes and inconsistencies that result in the restructuring of the research question
(e) expansion – attempts to expand the scope and range of study by adopting different research study components

The above literature provides the advantages of the mixed research method, which strengthens the researcher's choice to employ it for this study. However, despite several advantages of the mixed research methods, there are some disadvantages. First, mixed methods research is complicated and may require huge financial resources. Second, the mixed approach combines strategies, therefore, extends the time frame for finalising the study (Denscombe, 2010). Third, the researcher should have enough skills to apply the different methods for both qualitative and quantitative research. This increases the likelihood of missing the mark on both methods (Cameron and Miller, 2010). Fourth, the underlying philosophy of mixed methods research – pragmatism – may be complicated, resulting in

misinterpretation of results. Finally, results from the two methods might not substantiate each other, which may compel the researcher to extend the study to ensure consistency (Denscombe, 2010).

The advantages of using both qualitative and quantitative methods outweigh the disadvantages of utilising both methods. Denscombe (2014) summarises the advantages of using a mixed approach as follow:

- Mixed method improves the accuracy of data
- Mixed method is utilised to produce a more in-depth analysis by combining information from other sources of data
- Mixed method is also used as a means of avoiding bias inherent when using a single method strategy, as a way of minimising weaknesses related to individual methods
- Mixed method is used for developing the analysis process based on the preliminary results by utilising various types of methods or data

Therefore, in line with Myers (2003) and Saunders *et al*. (2012), this study adopts the triangulation of qualitative and quantitative methods to overcome the bias associated with using one method. This also increases the scope of data collection, analysis, and interpretation.

Finally, given the distinctiveness of this study, the mixed methods approach is employed to obtain primary information from the senior staff of the Central Bank of eSwatini. In addition, the period covered includes episodes of global financial crisis periods; thus, information was collected from officers who were part of the Central Bank of eSwatini during the data collection period.

This study utilises statistical and econometric models to eliminate the bias associated with qualitative interview data, which emanates from the high level of human involvement. In order to achieve the objectives of this study, the researcher has to evaluate the different approaches used. Therefore, the next subsection provides methods of data collection.

3.6 Methods of Data Collection

3.6.1 Sample design

According to Wilmot (2011), the sampled population is a representative sample of the total population. In total, the study population has twenty-five participants who are within the financial regulation

department and financial markets department[12] of the Central Bank of eSwatini. In addition, there are other departments at the Central Bank of eSwatini. This selection of the participants is premised on Khotari (2009), who recommended that a non-probability sampling method can be applied by a researcher to purposively select the sample that will represent the entire population, thus creating a basis of estimation. In this study, the sampling strategy utilised was purposive sampling as it allowed the researcher to select the population based on their expertise (Khotari, 2004; Saunders *et al*., 2009 and Hair *et al*., 2011). The choice of the participants is neither gender- nor age-sensitive.

3.6.2 Sampling procedure

Sampling is defined as the process of selecting suitable individuals, objects or events to have a correct representative population to be sampled for research (Sekaram and Bougie, 2016). Sampling design has two categories, namely probability and non-probability sampling.

3.6.2.1 Probability sampling

According to Sekaram and Bougie (2016) in probability sampling, each population or sample is known. It has a high probability of being included in the sample, while in non-probability sampling, not every unit is recognised. Therefore, it is impossible to make a known elucidation about the population. Ghauri and Gronhaug (2010) assert that the limitation of this sampling method compared to non-probability sampling is that it does not allow for specific elements of the population to be sampled. Those who advocate the use of the probability sampling approach consider it an ideal technique where the researcher intentionally selects the relevant population for intense assessment that will represent the whole and allow the results to be generalised. Below is a summary of the five probability sampling techniques is provided, namely simple random sampling, stratified random sampling, cluster sampling, multi-stage sampling, and systematic sampling (see, Ghauri and Gronhaug, 2010; Sekaram and Bougie, 2016 and Sharma, 2017).

(a) *Simple Random Sampling***:** This sampling procedure provides an equal chance or probability that any unit in the population can be selected for inclusion in the sample. The whole sampling process is conducted using a single step with each subject chosen independently of the other members of the population (Sharma, 2017).

[12] Officers responsible for commercial banks credit and monetary policy instruments, regulation of commercial banks and risk.

The main advantage of this sampling procedure is the ease of gathering the sample. It is viewed as a fair approach of selecting a sample from a population because each member has an equal chance of being selected. This procedure is also ideal for a quantitative research study because it ensures the representativeness of the population. Since the entire population is represented, that justifies the generalisation of the findings (Sharma, 2017).

The limitation of the simple random sampling method is that the researcher should have the entire list of members of the population and the list must be the latest. Sharma (2017) suggests that getting a detailed and up-to-date list of a large population sometimes is difficult hence, the need to adopt other sampling techniques suggests that getting a detailed and up-to-date list of a large population sometimes is difficult, hence the need to adopt other sampling techniques.

(b) *Stratified Sampling:* This is a transformed simple random sampling where the population is divided into different segments or categories called strata based on their features and attributes to ensure true representation. This procedure entails taking a random sample from each stratum in a number proportionate to the stratum's size when matched with the population. The subsets of the strata are then selected to form a random sample (Sharma, 2017).

This procedure allows researchers to reduce human bias in identifying cases to be included in the sample. The stratified random sample provides a highly representative sample of the population, and it assumes that there is insignificant limited missing data. Thus, stratified random sampling allows researchers to make statistical inferences from the sample to the population (Sharma, 2017).

To use stratified sampling without getting the complete list of the population may lead to inconsistencies of sampling, analysis, and conclusions. It is also difficult to partition sampling resources among groups that differ in their means and variances (Sharma, 2017).

(c) *Cluster Sampling:* In this case, naturally occurring groups are considered as samples. Unlike the other probabilistic sampling procedures (stratified sampling and simple random sampling) where there is a need to have a sampling list of all the units involved, it is not the case in cluster sampling. It is only when the clusters are chosen that frames are compiled (Sharma, 2017).

Cluster sampling reduces the costs of travelling and listing the population to come up with a sample. The other probability sampling procedure reduces the variability of results, which may not be proper in some instances. This approach tends to increase variability in results. Cluster sampling is convenient when a researcher deals with large populations (Sharma, 2017).

The limitation of the cluster sampling procedure is that it requires the researcher to be well-skilled to use it; otherwise, some stages may be wrongly interpreted such that unsubstantiated conclusions can be made. However, worth noting is that with the other sampling procedures, the risk of making errors is minimised compared to cluster sampling (Sharma, 2017).

(d) *Multi-Stage Sampling:* Multi-stage sampling is also known as multi-stage cluster sampling. The difference between this sampling procedure and cluster sampling is that it is multi-layered, meaning there are two or more stages. In a multi-stage sampling, large population clusters are grouped into smaller clusters in different stages for primary data collection to be easier and more manageable. This procedure addresses some disadvantages of the simple random sampling method because it is not costly and time-consuming (Sharma, 2017).

(e) *Systematic Sampling:* This sampling procedure assumes that the N units in the populations that the N units are coded 1 to N in some order. Therefore, to choose a sample on N units, the researcher takes a unit at random from the initial K units and every k_{ith} unit. The first unit sets the trend of determining the entire sample. This procedure is also known as the k_{ith} systematic sample. The advantages of the systematic sampling procedure are that it spreads the sample evenly over the population, and it is easier to use than the other sampling procedures (Sharma, 2017).

The limitation of this process of selection is that it is likely to be affected by unforeseen periodic traits within the population. If the sampling technique coincides with such traits, the sampling technique is negatively affected such that the sample is no longer random and credible since its representativeness is significantly compromised.

3.6.2.2 Non-probability sampling techniques

(a) *Convenience sampling approach*: This approach is premised on the assumption that the population has an even distribution of characteristics. It is assumed that any sample represents the whole population, and hence the results will be accurate. In non-probability sampling, the element being selected arbitrarily makes it impossible to estimate the probability of each element being included in the sample. In convenience sampling, subjects are selected based on their convenient proximity and accessibility to the researcher. The researcher identifies participants who are easily available or convenient to be interviewed. In most cases, researchers use people identified on the street, colleagues at work, Facebook friends, online panels, and commonly used mailing list members. The online panel can utilise a stratified random sample of panel members. The subjects are considered because they are relevant to provide relevant information that answers the research questions. Some researchers select this sampling approach because it saves time, is less costly, and is easy to conduct. The respondents are readily available to participate. Those who participate are likely to provide reliable information since they are specialists in that field (Sharma, 2017).

(b) *Quota Sampling*: This is one of the non-probability sampling methods used to identify individuals representing a population, and the selection is made based on traits or qualities. Researchers can select the participants' traits based on several sample subsets to get a sample that can be relevant in collecting data to allow for generalisation to the entire population. The final subset is selected based on the researcher's knowledge of the population (Sharma, 2017).

(i) *Proportional Quota Sampling* implies that the population of concern or interest is represented almost precisely by the percentage of each cell or demographic group in the survey results. For example, if a population is 57% male, 57 of 100 respondents would be male. Therefore, strata may be interlocking or joint – the sample might entail quotas of younger men, older men, younger women, and older women.

(ii) *Non-Proportional Quota Sampling* – this sampling technique is also called "soft quotas". Non-proportional quota sampling is used for a small number of participants in a specific group. It is typically used to identify the hard-to-reach populations, where researchers sample less than a proportional sample. It is also used for populations of special interest. Normally, if used to identify populations of special interest, it tends to oversample or identify more than in a proportional sample. In this case, the weighting of the results is paramount because the sample is not a true representation of the population of interest.

(c) *Snowball Sampling:* In sociology and statistics, researchers utilise snowball sampling or chain sampling to identify very hard-to-reach participants, such as people who suffer from a rare disease. This is sometimes due to the grouping effect, the representativeness effect, or not knowing what the population looks like or due to unknown biases. The sample group grows like a rolling snowball, and the researcher relies on respondents who recommend other respondents who might be invited to participate in the survey. As the sample increases, more data is generated. Since there is no obvious list of the population, researchers are sometimes faced with getting the appropriate list of participants. If there is no other way of getting the sample, snowball sampling becomes the viable option sampling strategy. The major disadvantage of this approach is that it is difficult to determine the possible sampling error. Therefore, snowball samples are not considered as representative of the population being studied (Sharma, 2017).

(d) *Self-Selection Sampling:* This procedure does not offer the researcher an opportunity to make follow-ups; for example, classic psychology experiments are typically self-selection sampling. It is ideal when the researcher intends to allow participants such as individuals or organisations to decide whether to participate in the research. In this technique, the research subjects volunteer to participate in the research rather than being induced by the researcher. This procedure reduces the time needed to search for suitable individuals or organisations that may participate in the study. Selected participants are usually committed throughout the interview process, which improves attendance and insight into the phenomenon being studied. On the other hand, this procedure is associated with a high degree of self-selection bias, leading to a sample which is not representative of the population being studied or overstating some particular finding from the study (Sharma, 2017).

(e) *Purposive Sampling*: The researcher or study designer select sample units who, by his/her judgement, will provide relevant information to answer the research question. Purposive sampling is also called the subjective sampling or judgemental sampling. It is also called judgemental sampling because it reflects a group of sampling techniques influenced by the researcher's judgement when conducting the selection. Purposive sampling techniques include maximum variation sampling, homogeneous sampling, extreme (deviant) case sampling, critical sampling, expert sampling and total population sampling, and expert sampling (Sharma, 2017).

(i) *Maximum variation sampling:* This procedure is also known as heterogeneous sampling. It is largely used to establish a wide range of views relating to the issues being studied. It is a search for variation in perceptions, ranging from units, such as people and organisations, which are considered through typical, to complex. These units may display

a wide range of experiences, qualities, attributes and behaviours. The main idea behind maximum variation sampling is to better understand a phenomenon by looking at it from different perspectives. In addition, it allows researchers to establish mutual themes that are patent across the sample.

(ii) *Homogenous Sampling:* The opposite of heterogeneous sampling is to deeply explore the views of a group of respondents with the same characteristics. In this case, only units (people and cases) that share the same characteristics or traits are included in the sample. This sampling procedure is usually adopted when the research question is specific to the characteristics of a unique group of interest.

(iii) *Typical Case Sampling:* Instead of understanding all viewpoints, including the extremes, typical case sampling focuses on an in-depth assessment of the typical viewpoint while not developing it. The researcher can compare the results from a study utilising typical case sampling with other similar samples. Therefore, with typical case sampling, a researcher cannot generalise to a population based on the sample, but the sample could be descriptive of other similar samples.

(iv) *Extreme Case Sampling*: This sampling procedure seeks to understand uncommon cases such as failures and successes. The extreme (or deviant) procedure is useful to provide substantial insight into a particular phenomenon.

(v) *Critical Case Sampling*: It is ideal for exploratory qualitative research, where the research project has limited resources and in instances where a single case or a small number of cases can be decisive in describing the phenomenon. The limitation of this technique is that the results cannot be used to make statistical generalisations, but they are useful in making logical generalisations**.**

(vi) *Expert Sampling*: This procedure affords the researcher or designer the leeway to collect knowledge from individuals with unique expertise. This expertise is usually required during the exploratory stage of qualitative research, where the researcher articulates possible new areas of interest. This procedure is ideal where there is no empirical evidence and there are great uncertainty. It is the basis of the expert elicitation research design.

(vii) *Total Population Sampling*: This procedure involves surveying every single member of the entire subgroup, for example, those with specific experience, knowledge, skills, and exposure in that particular field of study. For this procedure, the whole population is

considered because the population's size with targeted characteristics is too small. Failure to reach some of the participants can make it difficult to generalise, especially when the non-respondents have characteristics that differ from the whole population.

3.6.2.3 Adopted sampling methods and justifications

In order to address qualitative research questions, this study adopted purposive sampling for collecting primary data. This study's qualitative research aspect is concernedwith collecting data that enhances understanding of the problem under study. According to Sekaram and Bougie (2016), exploratory research seeks to provide a general idea about the problem's features that areinvestigated.Sekaram and Bougie (2016) assert that sampling in qualitative research is largely based on a target group, and for non-probability, there are no statistical implications.

Non-probability sampling was adopted because it allows for purposive sampling as it does not require estimation of probability (Khotari, 2004 and Saunders *et al.*, 2009). It is also known as deliberate sampling or judgement sampling. Khotari (2009) confirms that under non-probability sampling, researchers can purposively select a sample based on the basis that the sample will be representative of the entire population, thus creating the basis of estimation. Therefore, in this study, the sampling strategy utilised was purposive sampling because it assists the researcher in selecting the population. It allows the researcher to select the relevant senior officials of the Central Bank of eSwatini who are knowledgeable on the issues investigated. Thus, the researcher was able to consciously select individuals who provided the required information to address this research study's qualitative questions. Ravitch and Carl (2016) opine that purposeful sampling offers rich context and in-depth explanations of the specific population. Purposeful sampling implies that the sampling procedure of the population is bias to the targeted participate in the research for specific reasons, including that they have experience or knowledge of a specific occurrence.

As a person who has worked for the Central Bank of eSwatini, the researcher in this study is conversant with issues of regulation and the research problem identified within the organisation concerning the central bank lending system. Therefore, the researcher was able to select participants who play a critical role in regulating commercial banks in the Kingdom of eSwatini. Furthermore, the selected departments have a critical role in regulating commercial banks in the Kingdom of eSwatini; therefore, they have relevant information required by the researcher to achieve the study's objectives.

3.6.3 Data sources, collection instruments and justifications

3.6.3.1 Primary data sources and justification

According to Saunders *et al*. (2012), primary data is collected solely for the research study undertaken. Primary data in this study was collected using a questionnaire[13] that was sent to the targeted staff at the Central Bank of eSwatini, and some were self-administered (face-to-face interviews). Interviews are referred to as 'discussion with purpose' (Cameron and Price, 2009). Blumber *et al*. (2014) assert that an interview is a dialogue initiated by an interviewer to acquire information from a participant. In this case, the interviewer has total control of the subject matter. The face-to-face interview method of collecting data allowed the researcher to probe the interviewee based on their responses. Furthermore, the face-to-face interview allowed the researcher to explain and generate credible qualitative information (Cameron and Price, 2009; Kvale and Brinkmann, 2009; Blumberg *et al*., 2014).

This study utilised the interview technique to establish up-to-date information from participants to complement quantitative data, which provides only historical data. This technique was used because of its flexibility, and it provides a platform to interact with respondents. The flexibility of the procedure allowed the researcher to probe more information on the subject under investigation. The interactive platform was also useful in obtaining in-depth information bordering on regulation and bank lending, in line with previous research studies and emerging issues.

Before the data collection exercise was undertaken, approval was sought from the University of KwaZulu-Natal Research Ethics Committee. An ethical clearance letter from the university was received on 31 August 2017 and this was followed by data collection in September and October 2021. Since data collection was done using a face-to-face approach for some participants, and the researcher had to schedule meetings with senior officials of the Central Bank of eSwatini. The interview process took about two months in the Kingdom of eSwatini. In order to schedule access to the appropriate official of the Central Bank of eSwatini and obtain relevant information, letters of the request were delivered by the researcher to the general managers of the affected departments. The entire process was burdensome as some senior officials were constantly attending meetings within the Central Bank of eSwatini, and others were on business trips. Finally, all twenty-five participants were able to provide their responses, which implies that the researcher could get 100 percent responses. Unfortunately, two questionnaires were returned with some questions not properly answered; therefore, the researcher could not draw conclusions based on the two questionnaires. Furthermore, follow-up calls to ascertain further the information provided by the two inadequate questionnaires did not receive favourable

[13] Appendix 2.

feedback. Hence, the content analysis of qualitative data was dependent on the interview responses of twenty-three senior bank officials and managers. The official letter used to schedule appointments with senior officials through the general managers is annexed at the end of this dissertation.

Despite these officials working for the same central bank, they possessed different perspectives on the same phenomenon. Therefore, the accuracy of interview responses largely depends on the experience and knowledge of the participant, the desire to provide important information, and the ability of the respondent to understand the questions. Cameron and Price (2009) suggest that the questionnaire interview technique is time-consuming compared to other techniques. It involves obtaining access, scheduling interviews, the actual interview session, transcribing, recording, interpretation, and analysis. Kvale and Brinkmann (2009) assert that this process is cumbersome and time-consuming; therefore, a small sample size is preferred to a large one. Researchers are, therefore, compelled to use a large sample size to allow for the generalisation of the results (Kvale and Brinkmann, 2009).

This study's use of secondary data moderated the effect and bias associated with a small sample size for primary data. The following subsection provides details on and justification for the use of secondary data.

3.6.3.2 Secondary data sources and justification

Secondary data was used to ascertain primary data findings empirically. The period covered enabled the researcher to conduct trend analysis and develop a model relevant to the Kingdom of eSwatini economy. According to Stacks (2010), secondary sources include information found in relevant books and articles that has already been interpreted by other researchers. Secondary data on central bank regulation was obtained from previous research, quarterly reports, annual reports, financial statistics, central statistics office documents, and monetary policy consultative reports of the Central Bank of eSwatini.

Secondary data provides more information which the researcher cannot establish during primary data collection. For example, the reports of the Central Bank of eSwatini are produced annually by the research department, and they contain relevant information for this study; for example, publications of the commercial banks and those generated during on-site inspections. Morevover, the same reports are used by international agencies (such as the World Bank and IMF) when assessing the financial sector's performance. In addition, secondary data was utilised in this study to validate and supplement responses generated through interviews (primary data). This approach is supported by Adams, McClendon and Smyth (2007), who state that secondary data adds depth to primary data and it increases the scope of

data to allow for wider generalisation and articulation of findings. A detailed description of the variables used in this study is provided in the subsequent subsections of this chapter.

Similar to primary data, secondary data has some limitations that researchers must take into consideration. First, it is historical and may not be pertinent to current issues. Concerning this disadvantage, most financial indices and statistics are mostly historical. However, this study goes back in time to examine the impact of regulation through the central bank lending system to make forward-looking recommendations. This allows policymakers to appreciate past mistakes and to ensure that they are not repeated.

Furthermore, secondary data can be subject to manipulation from their original source, and such data may be plagued by inconsistencies leading to spurious results and conclusions. Similarly, secondary data can be generated from unreliable sources which have not been tested using scientific measures. Therefore, to avoid such bias, only reliable quarterly data from the Central Bank of eSwatini and central statistics office reports were used.

Thus far, the selected research philosophy, adopted research method, research strategy, and sources of data used to collect data to achieve this study's objectives have been covered in detail above. Thus, the remaining part of this chapter that focuses on the techniques and variables adopted in this study.

3.6.3.3 *D*ata collection instruments

(a) Primary data collection methods and instruments

According to Jackson (2009), data collection methods refer to the instruments adopted to gather the required data or information in line with the objectives of the research study. Previous studies have applied observation, questionnaires, case studies, surveys, focus groups, and documentary reviews. For primary data collection, a survey questionnaire instrument was developed and used to collect data.

(b) The rationale for using a survey questionnaire

According to Cooper and Schindler (2014), a questionnaire entails a list of research questions used by the researcher to probe respondents to extract the required information in line with the main research questions. Cooper and Schindler further assert that questionnaires serve as an instrument to collect relevant data, make data similar and amenable to analysis, reduce bias in framing and expressing questions, and to make questions enticing and diverse.

The researcher is cognisant that the questionnaire should be systematic and allow respondents to provide straightforward and detailed answers; thus, both open-ended and closed questions are used. In addition,

a standardised self-administered method was utilised to speed up the data collection process in an unswerving way and concerning the study topic. Therefore, questionnaires were circulated before the actual interview date to allow respondents to familiarise themselves with the issues being studied.

The questionnaire was found to be suitable for this study because it minimises the cost of data collection. Soobramoney (2008) states that using a questionnaire minimises the variability of responses and is cheap and easy to administer and analyse. Furthermore, the use of a survey instrument was considered most relevant for this type of study because it allows for responses to be collected in an orderly way and increases the probability of getting responses. In addition, questions in a survey questionnaire are usually easy to understand and be interpreted similarly by most respondents (Robson, 2011). The researcher is cognisant that other methods are used for data collection, such as observation and in-depth interview, but they are ideal for exploratory studies such as examining customers' attitudes. Unlike other approaches, questionnaires can be utilised for explanatory and descriptive research where, for example, the objective is to rigorously describe the inconsistency in different phenomena or establish the existing relationship between variables, in particular, causal relationships (Saunders *et al*. 2007). The survey method allows the researcher to gather quantitative data, which can be processed quantitatively utilising descriptive and inferential statistics. Data collected using a survey questionnaire can also be utilised to examine relationships between variables of concern and develop models based on existing relationships. Questionnaires are more objective than other data collection strategies because of their standardised arrangement (Robson, 2011). Jankowicz (2005) asserts that collecting data using a questionnaire is relatively swift if the questions are correctly worded. Furthermore, a survey instrument affords the researcher more control over the research process and increases the likelihood of generating findings that are representative of the population at a minimum cost to collecting the data for the whole population.

Similar to other instruments, there are some disadvantages of using questionnaires. Kothari and Garg (2014) assert that dishonesty compromises the quality of data collected using questionnaires. Kothari and Garg (2014) point out that other factors that undermine the use of questionnaires include means to protect the privacy and social desirability bias. In this study, dishonesty was minimised by promising respondents that their privacy was of paramount importance and that the approach used prevents personal identification. In addition, questionnaires tend to compromise the information asked if the person who is not the target happens to be the one who completes the questionnaires. This may result in a threat of misinterpreting, as the explanation is better understood by the targeted respondent (Saunders *et al*., 2009).

Notwithstanding the limitations/disadvantages of using this method (limited questions that can be asked, time taken to design the questionnaire, unpredictable response rate, and time taken during the

analysing process), the questionnaire survey remains an ideal strategy for this type of research. The use of questionnaires is supported by many recognised researchers in journal articles (such as Ayyagari, Thorsten and Asli, 2007; Cole *et al*., 2004; Bruns and Fletcher, 2008; Calice, Chando and Sekioua, 2012; and Berg and Fuchs, 2013). In addition to the data collected using questionnaires, data was also gathered from secondary sources such as banks' annual reports, previous survey research, and statistical publications in the Kingdom of eSwatini. The secondary data helps to provide more evidence to support and validate some findings obtained from primary data.

(c) Questionnaire design

Saunders *et al*. (2007) assert that it is crucial to have a research design that will explain the general plan of how the researcher intends to answer the research questions. A research design should have clear objectives developed based on the research questions, which detail the sources of data collection, ethical issues and specify the constraints that will inevitably affect the data collection process, such as money, time to be taken, and access to data.

The objectives of the survey instrument in this study were clearly articulated at the beginning of the questionnaire. These are to (i) establish the state of commercial bank regulation in the Kingdom of eSwatini; (ii) establish factors that stimulate bank lending and those that impede lending to the private sector – the core sector of the economy; (iii) determine the link and its impact between regulation compliance and low credit to the private sector in the Kingdom of eSwatini; and (iv) establish the optimal range for the monetary policy instrument(s) that the Central Bank of eSwatini should aim at to stimulate commercial bank lending to the private sector in the Kingdom of eSwatini, in line with the economic growth strategy. The survey was administered to selected managers and senior officers at the Central Bank of eSwatini. The survey instrument also summarised the significance of the study to the policymakers and commercial banks in the Kingdom of eSwatini.

As part of the principles for undertaking fieldwork, the survey instrument comprised a consent[14] form and guidance notes to participants of the survey written in plain language detailing the purpose of the study, how and why respondents have been chosen, the structure of questions, and the projected time for completing the questionnaire. The notes also included dissemination strategies and assurance of the highest level of confidentiality and anonymity for each respondent and the bank.

This research made use of a structured questionnaire. Each question provided a set of answers with one that best describes the situation to be selected by the respondent, the perceived response. The advantage

[14] Appendix 1

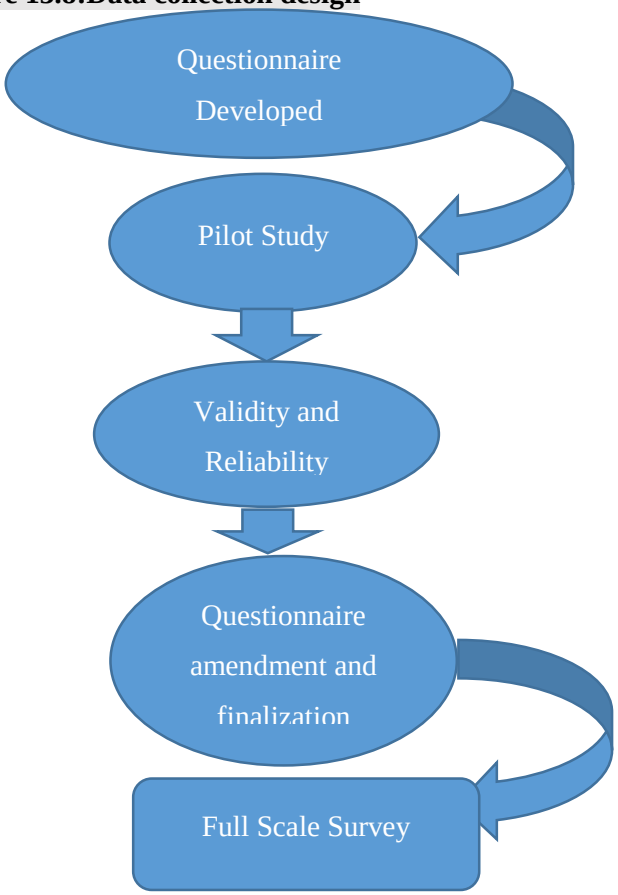
of using structured questions is that it simplifies the interview and allows the respondent to make a quick decision (Struwig and Stead, 2013).

The questionnaire was designed such that questions were arranged based on the objectives of the study. The type of questions used were both dichotomous and Likert scale responses. Cooper and Schindler (2014) state that dichotomous questions are preferred because they are utilised to clearly distinguish qualities, experiences or respondent's views. The Likert scale was used as a psychometric response scale in finding the participant's interval of agreeing with a set of statements. In this study, Likert scales were utilised because they are not complicated to interpret since they do not require a comparative scaling technique but only measure a certain trait in nature (Saunders *et al*., 2012).

(d) Data collection design

Figure 3.8 summarises the data collection design used to collect primary data from the senior officials and managers at the Central Bank of eSwatini. Before the researcher undertook the full-scale survey, a pilot study was undertaken, and the results were used in finalising the questionnaire.

Figure 13.8:Data collection design



According to Arthur and Nazroo (2003), prior preparation for fieldwork is crucial to review whether the questionnaire allows participants to give full and coherent feedback of the study'scentral issues and take into consideration issues they think are necessary. In other words, the research questions in the survey instrument should not limit the participants' views. Yin (2009) also asserts that a pilot test assists the researcher to revise the data collection plans and questionnaire in terms of the content of the data and the procedures to be adopted.

Dross (2015) posits that a mini-research pilot study should be undertaken before the actual full-scale study. A pilot study serves as preview assimilation of the full-scale research to be done. A pilot study assists in establishing whether any imaginable logistical problems should be addressed from the onset

(Dross, 2015). Therefore, before the actual data collection survey, the questionnaire used to collect data was pilot tested to establish the questions' validity and reliability of the instrument. During the pre-test exercise, the researcher verified the clarity of the instrument and the simplicity of use of the instrument.

(e) Administration of the questionnaire

The approach used to administer interviews was twofold: questionnaires were self-administered by the respondents, and for some, it was a face-to-face interview. Those who self-administered the questionnaire were around 70 percent. This approach was chosen because it was assumed that the respondents were knowledgeable about the research subject, hence would be able to complete the questionnaire without assistance. This method also minimised the costs of the data collection exercise (Kumar, 2011). The other 30 percent was administered using face-to-face interviews, where the researcher found it difficult to get responses, especially for the managers and few senior experts who were very busy, attending meetings and had no time to complete the questionnaire. Questionnaires were hand-delivered to respondents. To ensure that all experts would be able to provide relevant information, the researcher explained the study during hand-delivering the questionnaires. In line with what Kothari and Garg (2014) suggested, Kumar emphasised independence to establish rapport and motivate respondents. This contributed significantly to getting a high feedback rate. Furthermore, Kumar (2014) examined the stability of demand for money in India by applying the ECM, Johansen cointegration and CUSUM for India. Secondary monthly data was used for the period 2000 January to December 2019.

According to Creswell (2015), every researcher hopes for perfect responses when conducting a survey, but it is difficult to establish if the respondent seriously considered all factors before answering a question. The researcher is aware that, sometimes, answers will be chosen without paying much attention to the possible answers. Alvesson and Sandberg (2011) assert that in some cases, respondents will avoid answering some questions, or split-second picks may be made, negatively affecting the validity of the data obtained. This challenge was addressed by simplifying the survey questions and making questions and the survey short to get optimal and accurate responses.

(f) Collection of questionnaires

The collection of questionnaires from the experts was done after five (5) days from the distribution date. To save time and cut costs, the researcher collected the questionnaires from the targeted respondents. After the collection, the questionnaires were kept in a cabinet for safekeeping before and after analysis. This supports the recommendation by Sekaran and Bougie (2013), who advises that raw data must always be kept under lock and key to avoid accessibility to unintended users. This was done to adhere to ethical research requirements.

3.6.4 Primary data analysis

Data collected from primary sources were analysed using qualitative and descriptive statistics approaches. These two analytical approaches were used to evaluate two types of data or information.

(i) Qualitative analysis was partly used to examine compliance with prudential regulation based on domestic legislation aligned to international requirements (Basel I and II). Qualitative analysis results were confirmed/supplemented by descriptive results of the CAMELS rating analysis and descriptive statistical analysis.

(ii) In terms of the state of monetary policy regulation narrative, analyses were done based on the Central Bank reports and legislation, graphical plots and descriptive analyses were conducted to ascertain the behaviour of commercial banks to monetary policy for the period under review. Monetary policy regulation variables and macroeconomic variables were used, namely discount rate, cash reserve requirement, liquidity requirement, TBR, inflation, real GDP and lilangeni/dollar exchange rate.

This subsection on qualitative and descriptive statistics approaches guided the following objective, questions, and hypotheses.

Box 1

Objective 1: To establish the state of commercial bank compliance in the Kingdom of eSwatini.

Question 1: What is the state of commercial bank compliance in the Kingdom of eSwatini?

Hypotheses

H_o: The commercial banks are not compliant with central bank regulation measures.

H_1: The commercial banks are compliant with central bank regulation measures.

3.6.5 Secondary data analysis and model specification

Secondary data for the period 2000 to 2019 was used to achieve objectives two to four. This subsection is divided into four quantitative analyses based on the descriptive statistics analysis of monetary policy instruments and macroeconomic factors, F-Bound to ascertain if there is a long-run relationship between the dependent variable and explanatory variables, and the ARDL to diagnose the effect of the explanatory variables on the bank credit to the private sector, and the quadratic approach to determine the optimal thresholds.

In order to achieve objective 2, this study adopted Kimani's (2013) descriptive research design. This approach was found relevant to establish factors that stimulate bank lending and those that impede lending to the private sector – the core sector of the economy in the Kingdom of eSwatini.

3.6.5.1 Descriptive analysis

(a) Correlation matrix

A pairwise correlation matrix was performed to guide selecting variables to be included in the model (Gujarati, 2003). Narayan and Smyth (2005) view that the correlation matrix is not capable of capturing the long-run dynamics between the dependent variable and its determinants but based on the level of the relationship, a researcher can detect variables that are negative positively affecting the dependent variable. The analysis of the pairwise correlation matrix was guided by the following:

This analysis was conducted guided by the following objective, question and hypotheses (Box 2).

Box 2

Objective 2: To establish monetary policy factors that stimulate bank lending and those that impede lending to the private sector - the core sector of the economy.

Question 2: What are the monetary policy factors that stimulate and impede bank lending to the private sector- the core sector of the economy?

Hypotheses

H_0: The monetary policy instruments do not impede bank lending in the Kingdom of eSwatini.

H_1: The monetary policy instruments impede bank lending in the Kingdom of eSwatini.

Objective 3 of this study was achieved by applying the ARDL cointegration method, which involves five steps testing for unit root/stationary, lag length selection, F-Bound long-run test, and short run and long-run estimations. The hypothesis guided the researcher in Box 3 for this analysis.

Box 3

Objective 3: To determine the link and impact of monetary policy instruments on bank credit to the private sector in the Kingdom of eSwatini

Question 3: What are the links/impact of monetary policy instruments on bank credit to the private sector in the Kingdom of eSwatini?

H_0: There is no link/impact between monetary policy instruments and bank lending to the private sector in the Kingdom of eSwatini.

H_1: There is a link/impact between monetary policy instruments and bank lending to the private sector in the Kingdom of eSwatini.

All cointegration techniques require pre-testing; for example, the ARDL/Bound testing, two-step Granger approach, Johanson cointegration (Hasan and Nasir, 2008; Tian and Ma, 2010; and Pesaran, Shin, and Smith., 2001). This is because they are associated with uncertainty making it imperative to determine the unit root properties of the variables involved in the equation before moving ahead with the estimation (Pesaran *et al.*, 2001). If the series and stationary shocks are temporary, their effects are eliminated as the series reverts to their long-run mean values, whereas in the case of a nonstationary time series, the effect remains as a permanent component.

3.6.5.2 Cointegration

(a) Testing for unit root/stationary

Gujarati (2003) suggests that the results are more likely to be spurious when a model is estimated using nonstationary data series. Hence, before determining the presence of a long-run relationship, it is of paramount importance to determine the stationarity of the series or the order of integration. All variables included in the model must be stationary at the level or first difference. Literature provides several means of testing for stationarity, including the unit root test, the visual plots of data, and the autocorrelation function. The Augmented Dickey-Fuller and Philips-Perron (PP) unit root test was used to establish the order of integration for the time series variables. This was necessary because the presence of an order of integration higher than I(1) such as I(2) invalidates the use of Pesaran and Shin-computed F-statistics, which assume that the underlying variables must be either I(0) or I(1) or mutually integrated (Hasan and Nasir, 2008; Tian and Ma, 2010 and Pesaran *et al.*, 2001).

(b) Lag length selection

The Schwarz information criterion (SIC) was utilised in this study to establish the lag length selection. Literature suggests that the SIC criteria provide a more efficient estimate than the Akaike information criterion (AIC) criteria in small samples in the ARDL framework (Hasan and Nasir, 2008 and Pesaran *et al.,* 2001). The rationale to use SIC over AIC criteria is that the AIC is criticised. It tends to overestimate the number of lags to be included, which is not ideal in small samples because by increasing the lag the number of observations decline. Therefore, SIC criteria were utilised to attain a coherent approach to detect the optimal lag length for the ARDL model.

(c) F-Bounds test for cointegration

Before the ARDL model is applied, it is vital to test the long-run relationship between the dependent and explanatory variables. In order to assess if there was a long-run relationship among selected variables in the model, the bounds test approach was employed as suggested by Pesaran *et al*. (2001). The bounds test is premised on the following assumptions:

(i) It follows the Wald or F-statistic and aligns itself to a non-standard distribution
(ii) It uses the ARDL model after establishing the order of integration of variables in line with Pesaran *et al*. (2001)
(iii) To estimate the model, selected variables do not need to possess the same order of integration; they can either be I(0) or I(1)
(iv) It is efficient to estimate credible results even if the sample size is small

The F-Bounds approach of Pesaran *et al*. (2001) provides two critical values, the lower critical and upper critical bound. The lower bound depicts that all the variables in the ARDL model are I(0), while the upper bound adopts I(1) order of integration. The null hypothesis of the F-Bound test is that there is no long-run relationship between bank credit to the private sector and its explanatory variables. Therefore, the null hypothesis that the betas were all equal to zero was explored. If the calculated *F*-value was below the *F*-value for the lower bound, then the null hypothesis is not rejected. If the calculated *F*-value was above the *F*-value for the upper bound, then the null hypothesis of no cointegration was rejected. In summary, the test is based on the following hypotheses:

$H_0 : \eta j = 0 \ \forall j$: A long-run relationship does not exist

H_1: $\eta j \neq 0$ for some j: A long-run relationship exists

The critical values tabulated in Pesaran *et al*. (2001) were used to reject or fail to reject the null hypothesis.

(d) ARDL cointegration estimation

As stated earlier, an Autoregressive Distributed Lag Model (ARDL) was used to establish the effect of the selected variables on bank credit to the private sector. The researcher is that there are other cointegration models used to examine the relationship between dependent and independent variables, but the ARDL model was appropriate for this study. Furthermore, unlike the other cointegration methods, the ARDL bounds model is relevant to this study because it can capture the long-run relationship dynamics between variables in a model irrespective of the order of integration I(0) or I(1) and its ECM is efficient in detecting short run effects of central bank instruments on lending, which allows for simulation to determine the optimal range(s) (Pesaran *et al.*, 2001).

Bank credit to the private sector was estimated as a function of bank rate, reserve requirement, liquidity ratio, treasury bills as a proxy for OMO, lilangeni/dollar exchange rate, Consumer Price Index and real GDP.

The ARDL cointegration estimation was conducted both for the long and short run. The Error Correction Model (ECM) framework was used to determine the speed of adjustment from any deviation from the equilibrium. The advantage of using ECM to estimate the short run relationship is that spurious regression is avoided since the first differences of the variables are used where level relationships exist.

(e) ARDL cointegration model specification

In our extended version of the ARDL model, bank credit to the private sector was modelled as a function of the discount rate, cash reserve requirement, liquidity ratio, TBR, inflation, real GDP, and lilangeni/dollar exchange rate. The functional form of the model specification is:

$$lnBCR=f(DR, CRR, LQR, TBR, INFL, RGDP, LEDOLLAR) \quad (3.1)$$

Explicitly, the equation is log-linearising and presented as:

$$lnBCR= DR + CRR + LQR+ TBR+ LINFL+ LRGDP + LEDOLLAR \quad (3.2)$$

Therefore, the ARDL model is presented as:

$$\Delta lnBCR_t = \alpha_0 + \sum_{i=i}^{k} \alpha_2 \Delta LBCR_{t-1} + \sum_{i=i}^{k} \alpha_2 \Delta DR_{t-1} + \sum_{i=i}^{k} \alpha_2 \Delta CRR_{t-1} + \sum_{i=i}^{k} \alpha_4 \Delta TB_{t-1} + \sum_{i=i}^{k} \alpha_4 \Delta LQR_{t-1} + \sum_{i=i}^{k} \alpha_4 \Delta LINFL_{t-1} + \sum_{i=i}^{k} \alpha_4 \Delta LRGDP_{t-1} + \sum_{i=i}^{k} \alpha_4 \Delta LEDOLLAR_{t-1} + \Psi_1 \Delta lnBCR_{t-1} + \Psi_2 \Delta DR_{t-1} + \Psi_2 \Delta CRR_{t-1} + \Psi_3 \Delta LQR_{t-1} + \Psi_4 \Delta TB_{t-1} + \Psi_5 \Delta LINFL_{t-1} + \Psi_5 \Delta LRGDP_{t-1} + \Psi_5 \Delta LEDOLLAR_{t-1} + \mu_{1t} \dots \dots 3.3$$

where:

LBCR	Logarithm of bank credit to the private sector (proxy for bank lending)
DR	Central Bank rate/discount rate
CRR	Reserve requirement
LQR	Liquidity ratio
TRB	Treasury bills rate
LINFL	Logarithm of Consumer Price Index
LRGDP	Logarithm of GDP
LEDOLLAR	Logarithm of the lilangeni/dollar exchange rate

Bank credit: This is the logarithm of bank credit to the private sector (a proxy for bank lending in the Kingdom of eSwatini). Theory[15] suggests that this variable is largely influenced by monetary policy quantitative instruments. Therefore, there is a need to fix credit control instruments at an optimal level in order to stimulate bank lending in an economy.

Discount rate/bank rate is the CBR or the discount rate**.** If there is a need to expand credit, the central bank lowers the bank rate. Ajayi (2012) suggest that the discount rate does not affect bank lending, while Karim *et al*. (2011) advocate that the bank rate is an important instrument to influence credit to the private sector. Therefore, the bank rate/discount rate is expected to show a negative relationship between the CBR and bank credit to the private sector.

Reserve requirement: It represents the amount that commercial banks should extract from their deposits to keep them at the central bank. Thus, the higher the legal reserve ratio, the lower deposits

[15] Keynes theory

volume that the commercial banks can exploit for lending, which decreases the size of the credit facilities granted by banks. As stated in the literature review, Malede (2004) shows a significant relationship between commercial bank lending and cash reserve requirement. Usually, an increase in the reserve requirement is followed by a decline in credit since it withdraws money from circulation. Therefore, a negative sign is expected for this variable.

Liquidity requirement: According to the literature reviewed, the size of the liquid assets held by the bank is one of the drivers of bank lending. The higher the liquidity ratio is associated with lower loans offered by the commercial banks. This independent variable is expected to negatively affect this variable on the proportion of credit facilities (Alfon, Argimon and Bascunana-Ambros, 2004 and Azman-Saini and Karim, 2011).

Treasury bills: Aress (2012) provides evidence that the 91-day treasury bills significantly affect bank lending to the private sector. In addition, the 91-day treasury bill is utilised as a benchmark rate for government securities determined using auction as a measure of interest rates.

Inflation: This is the logarithm of the Consumer Price Index. Studies such as Assefa (2014), Imaran and Nishatm (2013), and Sharma and Gounder (2012) have shown that the inflation rate had a negative impact on the rate of credit growth. The high inflation rates usually lead to an increase in the nominal interest rates on loans, which cause a decline in the demand for loans. Therefore, it is expected that this variable should exert a negative effect on the proportion of the credit facilities granted by banks.

Lilangeni/dollar exchange rate: this is the logarithm of the lilangeni/dollar exchange rate. Literature provides evidence that an appreciation of the local currency tends to exert pressure on the cost of borrowing. Thus, the lending behaviour of commercial banks is negatively affected by episodes of currency appreciation. Manyok (2016) empirical findings provide a negative association between exchange rates fluctuations and bank performance, including bank credit. Katusiime (2018) argues that there is a positive relationship between the exchange rate and credit to the private sector. In this context, this finding suggests that the Kingdom of eSwatini a shock from the exchange rate may constrain bank lending to the private sector, and the fluctuation mirrors the variation of the South African rand where the lilangeni is pegged.

Real GDP: this is the logarithm of real gross domestic product. Studies such as Hofmann (2001) and Calza *et al*. (2001) modelled the determinants of loans to the private sector. Their findings show that there is a positive relationship between bank credit to the private sector and real GDP. According to the Keynesian theory, investment influences saving, which increase the demand for bank credit to the

private sector. However, the notion of the Keynesian theory is criticised by (Kakarot-Handtke, 2014). Therefore, if the notion of Keynesian holds a positive relationship between bank lending and real GDP should be observed.

3.6.5.3 Optimal threshold determination

In order to establish the optimal range for the monetary policy instrument(s) that the Central Bank of eSwatini should aim to stimulate commercial bank lending to the private sector in the Kingdom of eSwatini, in line with the economic growth strategy, this study applies a quadratic method. The objective, question, and hypothesis below were used to guide the analysis.

Objective 4: To establish the optimal range for the monetary policy instrument(s) that the Central Bank of eSwatini should aim to stimulate commercial bank lending to the private sector in the Kingdom of eSwatini, in line with the economic growth strategy.

Question 4: What are the optimal limits for monetary policy regulation to influence bank lending in the Kingdom of eSwatini?

H_o: There are no optimal monetary policy instruments to stimulate bank lending directed to the private sector in the Kingdom of eSwatini.

H_1: The are optimal monetary policy instruments to stimulate bank lending directed to the private sector in the Kingdom of eSwatini.

Literature provides two types of nonlinear threshold methods, namely, nonlinear approach and quadratic function (Khan and Senhadji, 2001; Mubarik, 2005; Hussain, 2005; Sergii, 2009; Younus and Akhteruzzaman, 2012; Tule *et al.* (2015) and Olade (2015).

Previous studies that utilised the nonlinear approach include Khan and Senhadji (2001) and Mehrara and Karsalari (2011), who assessed the threshold of interest rate on private investment in developing economies.

(a) The nonlinear approach

As stated above in the previous chapter, the nonlinear approach is premised on two regimes that allow for the determination of the optimal threshold and these regimes are summarised in the equation below:

$$y = \begin{cases} \alpha_1 d_t, + \varepsilon_{1t} \ \ if \ d_t \ > \pi \\ \alpha_2 x, + \varepsilon_{2t} \ \ if \ and \ d_t \ \leq \pi \end{cases} \quad \text{.....(3.1)}$$

The dependent variable is represented by ***y,*** and $\boldsymbol{d_t=\pi}$ is the assumed threshold. The sequence $y = \alpha_1 d_t, + \varepsilon_{1t}$ shows the variables of concern that are investigated. The sequence $y = \alpha_2 x, + \varepsilon_{2t}$ depicts the situation when the variables of concern are below the threshold. The ε_{1t} and ε_{2t} show the stochastic disturbance terms.

The iteration of the equation using different values of log(π*) determine the thresholds π* of the variables of concern. In this study, the sum of α_1, α_2 and α_3 determines that the effect of the bank rate, reserve requirement, and liquidity ratio on bank credit to the private sector should be positive. The optimal threshold level is where the residual sum of squares (RSS) sequence would be minimum.

(i) The nonlinear model specification

The general specification of the threshold model is presented below:

$$y_t = \alpha_0 + \alpha_1 d_t, + \alpha_2 d(x_t - k) + \beta' Z_t + \varepsilon_t \quad \text{.....(3.2)}$$

$$d = \begin{cases} 1 \; if \; (x_{t-} > k \\ 0 \; otherwise \end{cases} \quad \text{.....(3.3)}$$

where y_t represents the dependent variable bank credit to the private sector, and k is a given threshold value. The dummy variable is denoted by d that assumes a value of one for observed values of the threshold variable greater than the given threshold level values and zero for values below. Z_t denotes the vector that contains the control variables (bank rate, cash reserve requirement, liquidity ratio, and OMO). β' represents the corresponding vector of coefficients of the independent variables. The ε_t is the random disturbance term with constant variance and mean. The thresholds of the control variables are determined by estimating equation (4) repeatedly using different values of k, selected in ascending order. The optimal value of k is attained by obtaining the value that minimises the residual of squares (RSS).

(b) The quadratic approach

Younus and Akhteruzzaman (2012), Tule *et al.* (2015), and Olade (2015) utilised a bivariate quadratic function to establish the inflation threshold for Bangladesh. Likewise, Tule *et al.* (2015) and Olade (2015) used a bivariate model to determine monetary policy thresholds. Similarly, we estimated a bivariate model to establish the discount rate, cash reserve requirement, and liquidity requirement threshold. While it may be necessary to contend for the inclusion of other plausive demand side determinants of bank credit to the private sector, this study utilises selected monetary policy instruments and macroeconomic variables.

(i) The quadratic model specification

$$y_t = \alpha_0 + \alpha_1 d_t, + \alpha_2 d_t^2 + \beta' Z_t + \varepsilon_t \quad \text{.....(3.4)}$$

The other variables in equation 3.4 have been explained in equation 3.3. In this equation $\boldsymbol{d_t}$ and $\boldsymbol{d^2}$ are interpreted as linear and nonlinear terms of the threshold variables. Equation 3.4 shows that the relationship between $\boldsymbol{y_t}$ and $\boldsymbol{d_t}$ is nonlinear of the U-shape. A positive coefficient of $\boldsymbol{d_t}$ is expected, and the squared variable is expected to be negative. Thus, differencing equation 3.4 and equating it to zero, it produces:

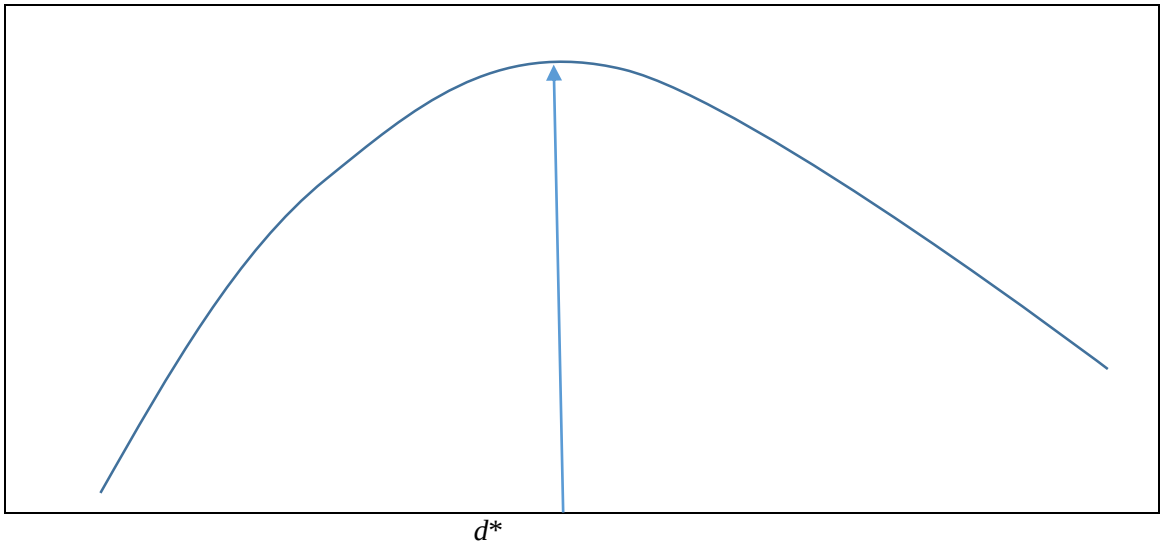
$$\frac{\partial \boldsymbol{y_t}}{\partial \boldsymbol{d_t}} = \alpha_1 + 2\alpha_2 d_t = 0 \quad \text{.....(3.5)}$$

The optimal threshold level d^* is obtained by solving equation 3.5 as follows:

$$d^* = \frac{\alpha_1}{2\alpha_2} \quad \text{.....(3.6)}$$

While the approach can be applied to establish a threshold of all variables selected for this research study, only thresholds for the three monetary policy instruments were determined. A graphical presentation of the relationship between $\boldsymbol{y_t}$ and $\boldsymbol{d_t}$ is provided below:

Figure 14.9: The Quadrant relationship between y and $\boldsymbol{d_t}$....



Source: Generated by Author (2018)

The variables of concern in this section are bank rate, cash reserve requirement, and liquidity requirement. This study utilises a combination of variables drawn in line with the literature reviewed.

The quadratic function was adopted for this study in line with Younus and Akhteruzzaman, 2012; Tule *et al.* (2015) and Olade (2015).

3.6.6 Diagnostic testing

All data series were subjected to the following diagnostic tests, serial correlation, heteroscedasticity and normality – on the residuals, in line with Hasan and Nasir (2008) and Tian and Ma (2010). According to Das and Imon (2016), it is necessary to assess whether data follow a normal distribution pattern. Therefore, these tests were used to validate the results and to ensure that data is statistically robust.

3.6.6.1 Test for normality of the residuals

The Jarque-Bera test was used for normality on the residuals with an assumption of $\epsilon_t \sim N(0,\sigma 2),\forall_t$. This Jarque-Bera compares the third and fourth moments of the residuals with those from the normal distribution. According to Brooks (2014), the argument concerning non-normality is that it may cause problems of statistical inference for the coefficient estimates such as significance tests and for confidence intervals that are based on the normality assumption. On the other hand, some authors state that non-normality is not a problem if some of the variables are weakly exogenous (see Harris, 1995; Islam and Ahmed, 1999).

The null and alternative hypotheses are provided below:

H_0: There is normality in the residuals

H_1: There is non-normality in the residuals

3.6.6.2 Serial correlation test

There are two commonly used tests for autocorrelation, namely, Durbin-Watson and Breusch-Godfrey tests. The Durbin-Watson (DW) test is premised on the assumption that Y_t is a random walk. The DW statistic is computed from the first order autocorrelation of the series $Y_t = Y_{t-1} + V_t$, approaching one. If the results show that the DW value is significantly different from zero, the null is rejected that Y_t is a random walk and I(1). Therefore the alternative hypothesis that Y_t is not I(1) is accepted. The limitation of the DW is the assumption that Y_t is a random walk variable. According to Bo Sjö (2008), the DW test is inefficient to test integrated variables when the number increases to infinite. Thus, for this study, the Breusch-Godfrey test is used to test for autocorrelation.

The Breusch-Godfrey test was used to determine whether there was a serial correlation or not – that is, if different lags of the residuals are correlated or not. A correct lag that corresponds to the VAR lag

length should be used to test for serial correlation. The covariance results should be $(\epsilon_i, \epsilon_j) = 0, \forall_{i,j;}$ otherwise, the series has a serial correlation. According to Brooks (2014), serial correlation does not have a major affect on the unbiasedness of the regression coefficients but rather significantly affects the efficiency – the estimators are not BLUE. The simplest form of the model of the residuals for the Breusch-Godfrey test is:

$$\epsilon_t = \epsilon_{t-1}\rho + v_t,\ v_t \sim N(0,\sigma_v^2) \quad \text{.....(3.7)}$$

The null hypothesis and alternative hypothesis are presented as follows:

H_0: $\rho = 0$, no serial correlation in the model

H_1: $\rho \neq 0$, there is serial correlation in the model

3.6.6.3 Test for heteroscedasticity

This test assumes that all residuals have a constant variance. For this to hold, the variance should be $(\epsilon_t) = \sigma^2 < \infty, \forall t$. The same assumption used for OLS estimation is used for the ARDL model; therefore, it is assumed that the residuals are homoscedastic (constant variance). Suppose the results show that the residuals do not have a constant variance. In that case, the estimated coefficients are not BLUE, so it does not have the minimum variance of the unbiased estimators. The heteroscedasticity test examines if the variance of the error term is constant. This study utilises an extension of the White test in EViews 9. If the residual suffers heteroskedasticity, that may signal that some omitted variables explain the dependent variable. To rectify the problem of heteroscedasticity, EViews 9 provides a White option that was used to eliminate heteroscedasticity. The White noise in EViews is used to correct the problem of heteroscedasticity. The following null and alternative hypotheses hold for this test:

H_0: Constant variance of the residuals – Homoscedasticity

H_1: Non-constant variance of the residuals – Heteroscedasticity

3.6.6.4 Regression specification error test

The Ramsey Regression Specification Error Test (RESET) is in line with Hemachandra (2016) studies, which used it to establish if nonlinear combinations of the fitted values can describe the explanatory variable. If the results depict that the nonlinear combinations of the fitted values explain the explanatory variable, the model is said to be wrongly specified and needs adjustment. This implies that if the OLS on $yt = \beta_0 + \beta_1 X_t + \epsilon_1$ and $\hat{Y}_t = \hat{\beta}_0 + \hat{\beta}_1 X_t$ are the fitted values then the RESET test seeks to test if $\hat{y}_t^2, \hat{y}_t^3 \ldots \hat{y}_t^l$ has explanatory power on Y_t in the equation. The following null and alternative hypotheses hold:

H_0: No power in nonlinear combinations – No misspecification
H_1: The nonlinear combinations have power – Misspecification

3.6.7 Granger causality test

According to Narayan and Smyth (2006) and Gente and Leon-Ledesma (2006), a cointegration model that includes exchange rate and a couple of other series tends to present challenges to researchers because it produces several cointegrating relationships, which are difficult or impossible to interpret. Therefore, for descriptive statistical analysis, it is a must to avoid such complications. Since our model includes both monetary policy instruments and macroeconomic variables, the descriptive approach was applied.

The results of the pairwise correlation matrix were further confirmed by applying the Granger causality test. The Granger causality test was used to determine possible patterns related to the direction of causality between variables. The test was undertaken to confirm the results of the pairwise correlation matrix. Further, the block exogeneity Wald test was used to verify whether excluding one variable results in statistically significant changes in another variable in the model. Before conducting ARDL cointegration, a series of tests were done, including unit root test, lag length selection, and F-Bound test.

3.6.8 Test for stability

Since the ARDL model is sensitive to structural breaks and time series, tend to mirror global events, the stability of the coefficients needs to be assessed to ensure the credibility of the results. This research utilises the cumulative sum of the recursive residuals (CUSUM) test proposed by Ryan (2011) to assess the stability of the long-run and short run coefficients. The procedure is to increase the sample size or introduce a dummy variable if there is instability in the coefficients (see, Juselius 2006, Fuinhas and

Marques 2012 and Naiya and Manap 2013). The residuals are restructured recursively and are plotted against the breakpoints for the 5 percent significance line, that is, upper and lower 95 percent confidence bounds. The long-run and short run stability of the coefficients are attained only if the plot of CUSUM fluctuates within the 5% significance level. If the plot remains within the two confidence bounds, it implies that residuals do not significantly deviate from their mean value. In line with Ryan (2011), the CUSUM procedure in this study is presented as follows:

$$Z = \frac{\bar{y} - \ddot{y}}{\delta \bar{y}} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.8)$$

The lower and upper cumulative sums are calculated as follows:

$$\left.\begin{array}{l} S_{Li} = \max[0 - (-Zt - k) + S_{Li-1} \\ S_{Hi} = \max[0 - (Zt - k) + S_{Hi-1} \end{array}\right\} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.9)$$

The control limits are plus or minus h. For example, the normal choice for detecting one-sigma shifts in the mean is depicted by $k = 0.5$ and *h*- is usually set to 5 percent if the plotted graph is within the two limits that imply stability of the model.

3.6.9 Validity and reliability

3.6.9.1 Validity

The researcher followed studies by Sekaran (2000), Fraenkel and Wallen (2000), and Mugenda and Mugenda (2003), who utilised the Content Validity Index (CVI) to ascertain the validity of the instrument used. According to Alvesson and Sandberg (2011), validity is the accuracy of illustrating features of the phenomena that it hypothesises. Validity ascertains whether the instrument used measured what it intends to measure. Seliger and Shohamy (2009) assert that research is affected by some elements that may seem insignificant to the researcher but have the potential to undermine the credibility of the findings. Literature provides three types of validity in quantitative research, and these are summarised below:

- *Face and content validity* – Dross (2015) asserts that for an instrument to be consistent, there must be a flow between the questions and objectives of the study. Therefore, it is crucial to ensure that the instrument adopted is in sync with the questions and objectives to produce credible results. Both the items and questions should capture all the issues being assessed. The process of identifying this link is known as face validity. The valuation of the items of an instrument is

known as content validity Haradhan (2017). Furthermore, Haradhan (2017) asserts that to attain credible results, the coverage of the matter or attitude should not be biased, meaning that every aspect should entail comparable and sufficient representation in the questions or items. Content validity is measured by the basis of the magnitude to which statements or questions depict the issue they are meant to measure, based on the judgement of the researcher and other professionals in the field.

- *Concurrent and predictive validity* – Moser and Kalton (2013) posit that if a scale is developed to serve as an indicator for observable criterion, its validity is judged by assessing how well that indicator performs. According to Moser and Kalton (2013), the best approach to establish the validity of an instrument is to compare it with another assessment. If both results are similar, the instrument utilised for the assessment is considered to have significant validity. According to Leedy and Ormand (2013), the process of comparing two assessments can be classified into two types of validity, namely concurrent validity and predictive validity. Concurrent validity is determined by how accurate an instrument is relative to the second assessment simultaneously done. On the other hand, predictive validity is judged based on the degree to which an instrument can project an outcome. Predictive validity may be expressed in the form of the correlation coefficient between the criterion and projected status.
- *Construct validity* – this technique is a bit complicated to use when determining the validity of an instrument because it involves statistical procedures (McMillian and Schumacher, 2013). Construct validity is established by ascertaining the impact of each construct on the total variance identified in a phenomenon. Thus, the main limitation of construct validity is the required knowledge about necessary statistical procedures.
- *Content validity* – this type of validity is conducted to measure if all construct elements are represented. This serves to ensures that all relevant main experts were allowed to critically review the questionnaire. They provided their comments on how well each question measured and probed the construct in question distinctly (Creswell, 2014). In addition, comments from the subject matter specialist were analysed and considered when the judgements about the effectiveness of each question were made.

3.6.9.2 Adopted strategy for validity

The validity of the questionnaire/instrument was measured using the Content Validity Index (CVI). This research study is motivated by Sekaran (2000); Fraenkel and Wallen (2000) and Mugenda and Mugenda (2003). The CVI was applied to the nine themes or nine main questions in the questionnaire.

Table 3.2: Content Validity Index

1.Relevance	2.Clarity	3.Simplicity	4.Ambiguity
1. not relevant 2. items need some revision 3. relevant but need minor revision 4. very relevant	1. not clear 2. items need some revision 3. clears but need minor revision 4. very clear	1. not simple 2. items need some revision 3. simple but need minor revision 4. very simple	1. doubtful 2. items need some revision 3. no doubt but need minor revision 4. meaning is clear

Source: Adapted from Yaghmale (2003:26)

3.6.9.3 Reliability

Reliability is a test that determines whether the measuring instrument produces stable and consistent results or not. It is known as the degree of accuracy or precision in the measurements made by a research instrument. The higher the degree of 'error' in the instrument, the lower the reliability. Reliability deals with the repeatability of the results obtained by the researcher using the same data and techniques used by previous researchers (Bryman and Bell, 2007). According to Saunders *et al*. (2009), reliability focuses on the consistency of the research results with the application of the same data collection tools and the same methods and procedures of analysing to get results. The different types of reliability are summarised below:

(a) *Test/retest* – this approach is utilised for determining the reliability of a research tool. This test is also known as the repeatability test since an instrument is administered twice, using the same or similar situations (Saunders *et al*., 2012). The decision on how good the instrument's reliability is based on the ratio between the first test and retest scores. The smaller the value of the ratio, the lower the instrument's reliability, and the opposite is true. The advantage of the test/retest approach is that it allows the instrument to be compared matched with itself, hence eliminating problems that could emanate from using another instrument.

Baicker, Finkelstein, Song and Taubman (2014) assert that the disadvantage of this approach is that a respondent stands a chance to reverse his or her first response, which in turn may undermine the reliability of the instrument. Furthermore, if the instrument is sensitive– for example, a questionnaire with leading questions – it may not yield an accurate evaluation of its reliability. According to Crocker and Park (2009), to overcome this problem, the researcher should increase the lag period for the two tests, but this may compromise reliability, such as the impossibility of

attaining conditions similar to those in which the questionnaire was initially administered, and the maturation of respondents.

(b) *Parallel forms of the same test* – this approach involves designing two instruments that are meant to measure the same phenomenon. These instruments are applied to two similar populations to allow for comparison. If both instruments produce similar results, the instrument is considered to be reliable. This approach does not suffer the problem of recall which affects the test/retest method. Contrary to the test/retest, there is no need for a time-lapse between the first and the second test (Kumar, 2005). However, it is cumbersome to develop two instruments that are similar in their measurement of a phenomenon. In addition, it is extremely difficult to achieve comparability in the two population groups and in the two situations under which the tests are administered.

(c) *The split-half technique* – this procedure is used to correlate half of the items with the other half and is suitable for instruments developed to measure attitudes towards a phenomenon (Sarmah and Hazarika, 2012). Therefore, the questions or statements are separated equally into two, and these two questions or statements designed to measure the same issue fall into different halves. Then, the results/scores achieved by applying the two halves are correlated. Therefore, reliability is obtained by utilising the product-moment correlation, a statistical approach, between scores attained from the two halves. However, Welman and Kruger (2002) posit that since the product-moment correlation is established on the premise of only half the instrument, it should be corrected to establish its reliability for the whole. In order to guarantee reliability, the research conducted a pre-test of the questionnaire on ten experts randomly sampled from the target population. This was done to establish the reliability of the questionnaire before the study was initiated.

Adopted reliability strategy

Cronbach's Alpha Coefficient Reliability (internal consistency and stability), which allows for test-retest, was used (Boote and Beile, 2005; Mugenda and Mugenda 2008 and Naidoo (2011). A Cronbach alpha coefficient above 0.70 is considered appropriate, implying that the instrument is credible to capture what it is intended to (Field, 2007). The Cronbach alpha was achieved using Statistical Package for Social Sciences (SPSS) and Microsoft Excel; both produce the same results.

In this study, twelve (12) respondents were used to pre-test the questionnaire, which helped mitigate inconveniences on the full-scale survey. In addition, the researcher used different experts within the

Central Bank of eSwatini. These experts examined the questionnaires' credibility to establish the effects of regulatory requirements on commercial lending behaviour in the Kingdom of eSwatini.

Overall, the pilot survey results showed good rapport; only the sequence of the questions was revised in line with the suggestions of the experts who participated in the pilot study. This enhanced the flow from the first question to the last question, as suggested by Babbie (2011). After the pre-test, to establish the suitability of the questionnaire, the questions were amended to improve the content, sequence and form, wording and layout were simplified, question difficulty was minimised, and clarity of the instructions was ensured.

In order to scientifically determine the factors that impede and stimulate bank credit to the private sector in the Kingdom of eSwatini, two approaches (statistical and graphical) were utilised, namely the impulse response and variance decomposition. The rationale for using the two approaches is provided in the following two subsections.

3.6.10 Variance decomposition analysis

According to Takaendesa, Tsheolo and Aziakpono (2006), the generalised variance decomposition traces and demonstrates the effect of each random innovation on the series in the VAR. Papapetrou (2001) suggests that the forecast error of generalised variance decomposition analysis detects information about the sequential movements due to its 'own' shocks instead of shocks from other variables. Papapetrou (2001) asserts that if shocks provide information about the forecast error variance of Y_t (dependent variable) at all forecast horizons, Y_t is an endogenous variable and vice versa.

3.6.11 Impulse response functions

An impulse response function determined the impact of unanticipated shocks on bank credit to the private sector, discount rate, cash reserve requirement, liquidity ratio, inflation, real GDP, and lilangeni/dollar. The impulse response functions trail the responsiveness of the dependent variables in the VAR following shocks of each explanatory variable in the model (Brooks, 2002). Therefore, the generalised impulse response and the Cholesky decomposition were used in this study (Kim, 2012; Diebold and Yilmaz, 2009; Klößner and Wagner, 2014). Compared to the latter, the former technique involves orthogonalisation of innovations and does not fluctuate with the ordering of variables in the VAR. This study utilised the generalised decomposition recommended by Kim (2012), Diebold and Yilmaz (2009), and Klößner and Wagner (2014).

3.6.12 Limitations

In terms of the qualitative information, the limitation of using this approach is that information provided by respondents may be subjective. This limitation was overcome by using descriptive statistical analysis.

Another challenge was the non-availability of high-frequency secondary data, especially for real GDP. This challenge was overcome by interpolating data to monthly observations. The limitation of the ARDL approach is that it does not allow for testing variables that are stationary at I(2) but only variables that are at I(1). The study focused on how monetary policy instruments affect bank lending behaviour in the Kingdom of eSwatini without comparing the results with other CMA member states due to lack of access to data. The study was also limited to central bank regulation without examining commercial banks' internal factors, microfinance institutions, and associations on a wider geographical scope.

3.6.13 Elimination of bias

In order that the results are credible, the researcher was also careful to deal with three main biases, namely researcher bias, sampling selection bias, and response bias.

3.6.14 Researcher bias

The researcher is aware that bias can manifest in different forms and that quantitative studies are largely prone to the researcher's biases. The researcher of this study is also cognisant that biases may happen unintentionally during surveys where a wrong question may be asked resulting in an inconsistency between the objectives of the research and results. To eliminate this bias, the researcher ensured that all questions are within the context of the research topic.

3.6.14.1 Sampling Selection Bias

This type of bias occurs during the sampling stage when a researcher ignores some of the appropriate sampling techniques. This may result in a sampling choice that is not representative of the study population if some target groups are excluded from the sample, which increases the chances of getting skewed results. In this study, selection sampling bias was reduced by utilising purposive sampling.

3.6.14.2 Response Bias

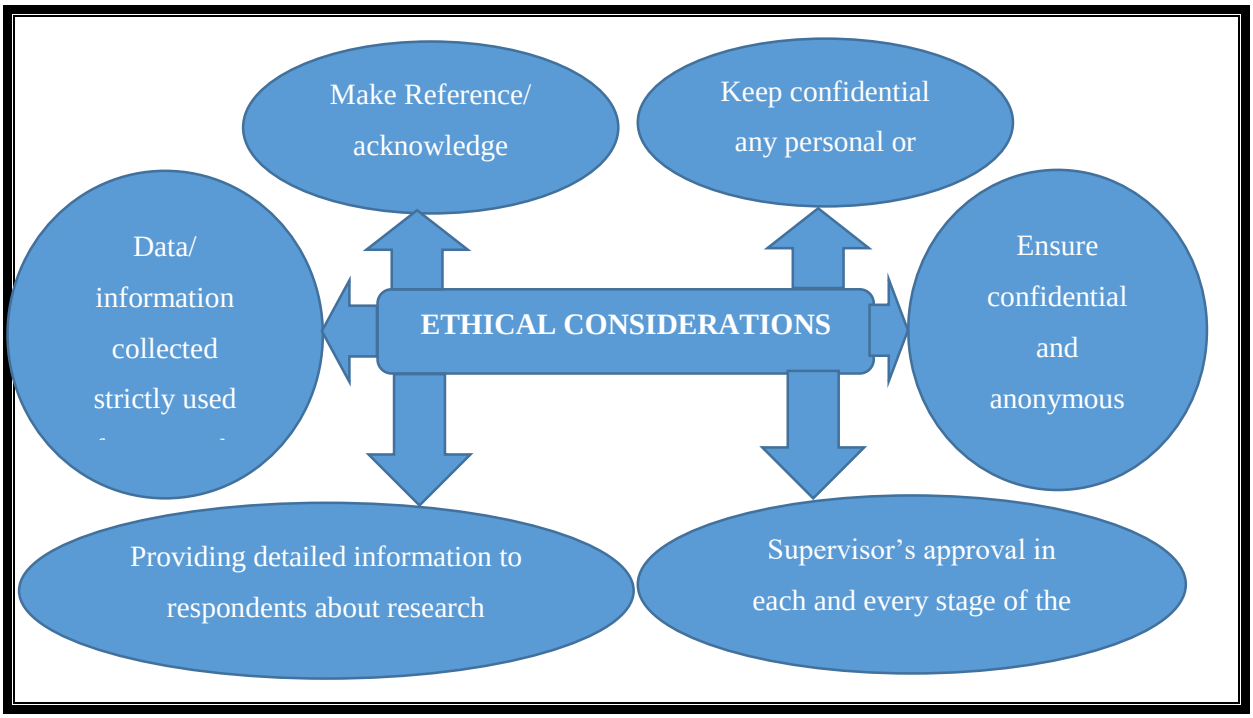
Regarding non-responses on the survey questionnaire, bias was minimal since the non-responses were only two out of the total population. Furthermore, response bias was reduced because all participants were treated anonymously in this study.

3.6.14.3 Ethical considerations

There are different procedures that a researcher has to take into consideration when researching economics and business areas. For example, Bryman and Bell (2007) assert that in research, several issues should be handled, such as informed consent, confidentiality, and anonymity. Robson (2002) also states that protecting interviewees from any ramifications of their comments being reported should be researchers' main concern.

Sekaran and Bougie (2013) state that ethics in business research are the codes of conduct or societal norm of behaviour required when conducting research. Ethical conduct should be observed by researchers, organisations, and research funders. Ethics should be observed from the initial stage of the research, and researchers should act in good faith, conduct a rigorous data analysis and ensure that the interpretation of results is not biased to personal interests. Furthermore, ethical conduct should be evident in the behaviour of the researcher when conducting the assessment, the respondents who provide the data, in analysing data and during the interpretation of the results and recommendations. Figure 3.10 provides a summary of ethical considerations observed in this study.

Figure 15.10: Ethical Considerations for this research study



Source: Generated by the Author (2018)

In terms of ethical risks, there were no major ethical risks involved in the research study, except for the fact that the researcher committed to ensuring the confidentiality of the respondents to the survey. Regarding records held for each respondent or bank, these were kept in accordance with the University of KwaZulu-Natal research ethics code, which depicts the generally accepted data protection standards.

Before the survey, the Ethical Office at UKZN wrote a letter of introduction for the researcher to be afforded the necessary support by managers and senior officials of the Central Bank of eSwatini.

3.7 Chapter Summary - Adopted Methodology and Analytical Framework

This chapter provided a summary of the methodology and analytical framework used to collect and analyse data. It presented the population of the research study and summarised the sampling procedure. The chapter took into consideration reliability and validity, as well as ethical issues for this research study. Primary data was collected using a research questionnaire from the relevant, targeted staff at the Central Bank of eSwatini. The SPSS statistical software packages, Microsoft Excel and EView 9, were used to analyse data.

The following chapter presents an analysis of the data collected from the respondents using a questionnaire and interviews. Processed primary data are presented in figures, tables, graphs, charts,

and other forms of data display are used. The chapter also analyses secondary data using the CAMELS rating analysis, the ARDL regression model, and the quadratic threshold model.

CHAPTER FOUR: ANALYSIS AND RESULTS

4. Introduction

This chapter is intended to provide details to the reader on how the primary and secondary datasets. It also presents how data was analysed and further provide the results and discussions of the research study. This research work was done to achieve all objectives developed in chapter one. These are: to establish the state of compliance to Central Bank of eSwatini regulation measures, explore factors that impede and stimulates bank lending to the private sector, establish the link and effects of monetary policy instruments on bank lending to the private sector, and to determine the optimal policy mix for the Central Bank Lending system in the Kingdom of eSwatini. Subsequently, a detailed and sequential presentation of the research findings and discussions is provided herein.

The main aim and focus of the research study were to respond to contribute and strengthen the Central Bank Lending system of the Central Bank of eSwatini. In order to eliminate limitations that are associated with using one method, the quantitative and qualitative data were collected. Subsequently, an in-depth, sequentially analysis was conducted. The analysis of the two methods was independently conducted, but the results were linked to provide a comprehensive view of the phenomenon under scrutiny. The approach follows the pragmatic philosophy, which allows the researcher to seesaws between deduction and induction to address this study's research questions. A questionnaire was utilised for primary data collection. Semi-structured interviews with knowledgeable senior officials in the financial regulation and financial markets departments were conducted. Out of the twenty-five targeted senior officials in the Financial Regulation and Financial Markets, twenty-three positively responded to the questionnaires of this study. Survey data was used to enhance understanding of the phenomenon being investigated. The qualitative data was collected to get the views of senior officials of the Central Bank of eSwatini and explain “why” bank lending is relatively low in the Kingdom of eSwatini.

Sequential modelling, data analysis and interpretation strategies were used to establish the phenomenon being examined. EViews 9, together with SPSS statistical software packages and Microsoft Excel, analysed primary and secondary data. Secondary data was collected for the period 2000 to 2019, from previous research, quarterly reports, annual reports, financials statistics, central statistics office documents and monetary policy consultative reports of the Central Bank of eSwatini and the analytical methods are used, the same results will be obtained for the Kingdom of eSwatini. A qualitative method was used to achieve objective one on the state of compliance, which was assessed by applying the CAMELS framework. In addition, a descriptive approach was used to detect the factors that impede and stimulate bank lending to the private sector and economic growth. While the analyses of objective

three also used a descriptive approach, the Autoregressive Distributed Lag (ARDL) model was applied to analyse secondary data. Narayan and Smyth (2005) opine that the ARDL method produces consistent results irrespective of whether the variables are stationary or nonstationary.

Furtherore, this model captures most of the dynamics in a model, even for a small sample (Narayan and Smyth, 2005). Finally, monetary policy instruments thresholds were achieved through the use of the Quadratic Threshold model. Therefore, the following subsection of the dissertation discusses the pertinent findings of each research question regarding the literature reviewed in chapter two and related models suggested in chapter three of this study.

The research questions formulated in chapter one were used to guide the analysis and interpretation of findings. As a way of recapping, the research questions are provided below:

Research study question one:
What is the state of commercial bank regulation/compliance in the Kingdom of eSwatini?

Research study question two:
What are the monetary policy factors that stimulate and impede bank lending to the private sector – the core sector of the economy?

Research study question three:
What are the links and impact of monetary policy instruments on bank credit to the private sector in the Kingdom of eSwatini?

Research study question four:
What are the optimal limits/threshold(s) for monetary policy regulation to influence bank lending in the Kingdom of eSwatini?

In order to uncover the prevailing situation and respond to the above-stated research questions, the researcher followed several steps defined in chapter three of this study. Thus, a credible data analysis approach and presentation of the findings were followed to ensure consistency and contribute to the body of knowledge and present sound relevant recommendations for the Kingdom of eSwatini and possibly for the other CMA member states. In addition, compliance with research methodology was of paramount importance for this study since it intended to generate the optimal policy mix for the Central Bank Lending system for the Kingdom of eSwatini.

4.1 Data Presentation Based on the Research Questionnaire

4.1.1 Level of education of participants/respondents

All staff officials in the financial regulation and financial markets departments were interviewed as primary participants. Table 4.1 below provides descriptive information on the level of education of the staff interviewed during the survey.

Table 4.1: Level of Education of Respondents

Level of Education	Frequency	Percent
PhD	None	-
Masters	4	17.4%
Bachelor	19	82.6%
Diploma	Non	-
AAT	Non	-

Source: Author Generated (2019)

The results show that a majority of the respondents had a bachelor's degree (82.6 percent). The other 17.4 percent had master's degrees. Table 4.2 below provides a descriptive presentation of respondents' experiences.

4.1.2 Experience of survey participants

The study also expected that the participants gave their highest level of experience and the summary is provided in Table 4.2 below:

Table 5.2: Respondents' experience

Work Experience	Frequency	Percent
More than 10 years	12	52.2%
5 – 9 years	8	34.8%
2 – 4 years	3	13.0%
1 year	None	-

Source: Author Generated (2019)

The study findings show that 52.2 percent of the participants had worked for more than 10 years, 34.8 percent had worked between 5–9 years, and 13 percent had an experience between two and four years at the Central Bank of eSwatini. Overall, this provides evidence that the pool of participants had significant experience working for the Central Bank of eSwatini; therefore, they had enough experience and properly understood all issues related to the effects of regulation on the lending behaviour of commercial banks. According to Braxton (2008), respondents provide reliable data compared to those who are less experienced.

4.1.3 Pilot study results

Before the full-scale survey, the questionnaire used to collect data was pilot tested to establish the questions' internal consistency and stability. This was done to verify the clarity of the instrument and the simplicity of use of the instrument. In this study, twelve (12) respondents from different departments were used for the pre-test, and these were experts within the Central Bank of eSwatini. These experts examined if the questions in the questionnaire were credible enough to probe information on regulation and the lending system in the Kingdom of eSwatini.

4.1.4 The validity of the instruments

The validity of the questionnaire/instrument was ascertained by using the Content Validity Index (CVI). The experts used the CVI to assess four key aspects: relevance, clarity, simplicity, and ambiguity. This research study followed Sekaran's (2000), Fraenkel and Wallen's (2000), and Mugenda and Mugenda's (2003) concept of ascertaining validity. The CVI was applied to each question in the questionnaire. A copy of the scale, as shown in Chapters Three and Four, was provided with the questionnaire to the experts, and the purpose and objectives of the study were properly explained to them. Using a four-point scale, the experts rated each question based on relevance, clarity, simplicity, and ambiguity. The four-point scale is provided in Table 4.3.

Table 6.3: Content Validity Index

1.Relevance	2.Clarity	3.Simplicity	4.Ambiguity
1. Not relevant 2. Items need some revision 3. Relevant but need minor revision 4. Very relevant	1. Not clear 2. Items need some revision 3. Clear but need minor revision 4. Very clear	1. Not simple 2. Item need some revision 3. Simple but need minor revision 4. Very simple	1. Doubtful 2. Items need some revision 3..No doubt but need minor revision 4. Meaning is clear

Source: Adapted from Yaghmale (2003:26)

Out of the initial twelve questions under each theme, only 7 had CVI over 0.75, and these were maintained in the questionnaire, and the rest were discarded. Both the main questions and their sub-questions were modified based on the experts' recommendations. Thus, the number of questions in each main question or theme was reduced from twelve to seven after discarding irrelevant questions. Also, the number of themes decreased from ten to nine.

4.1.5 Reliability test[16]

The twelve experts assessed if the different questions in the questionnaire were correlated to each other. In total, there are eight themes that form the main questions. All questions under each theme were designed to inform the researcher about the participants' views on the effect of monetary instruments and macroeconomic factors: bank rate/discount rate, cash reserve requirement, liquidity ratio, treasury bills/OMO, inflation, real GDP, and exchange rate. Cronbach's Alpha Coefficient Reliability, which allows for test-retest recommended by Boote and Beile (2005) and Mugenda and Mugenda (2008), was used to test for internal consistency and stability. Cronbach's Alpha Coefficient Reliability assessment was based on the level of agreement with the statements on the monetary policy instruments and macroeconomic variables used in this study. Cronbach's Alpha Coefficient results are shown in Table 4.4 below:

[16] Appendix 3

Table 7.4: Summary of Themes / Questions of the Questionnaire

The Cronbach's Alpha Coefficient Reliability Test was based on the eight themes, which are also the main questions:		
	Questions	**Cronbach's Alpha**
Question 4B	What is the effect of the bank rate/discount rate on the lending behaviour of commercial banks	0.865128
Question 4C	What is the effect of the reserve requirement on the lending behaviour of commercial banks	0.797863
Question 4D	What is the effect of the liquidity ratio on the lending behaviour of commercial banks	0.756207
Question 4E	What is the effect of the OMO on the lending behaviour of banks	0.804701
Question 4F	What is the effect of Monetary Policy speculation/expectation on bank lending behaviour	0.825899
Question 4G	What is the effect of inflation on bank lending behaviour	0.869205
Question 4H	What is the effect of exchange rate on bank lending behaviour	0.807061
Question 4I	What is the effect of the real GDP on bank lending behaviour	0.824922
Question 4J	State of compliance to the CAMELS Indicators	0.798612

Source: Survey Results Analysed using Microsoft Excel (Data from 2000 - 2019)

Notes: All questions under each theme were designed to inform the researcher about the participants' views on the effect of monetary instruments and macroeconomic factors: bank rate/discount rate, cash reserve requirement, liquidity ratio, treasury bills/OMO, inflation, real GDP and exchange rate.

As shown in Table 4.4 above, Cronbach's Alpha Coefficient for all themes is above the threshold of 0.7. Sekaran (2010) suggests that the rule of thumb for Cronbach's Alpha is that the closer the alpha is to one, the more reliable is the instrument used. Therefore, the study concludes that the questionnaire is reliable for this study.

Discussions of findings by research objectives

In discussing the study's findings, a systematic approach was employed based on the research question and the hypothesis.

4.2 Research study question one:

What is the state of commercial bank compliance in the Kingdom of eSwatini?

In order to assess the state of compliance to Central Bank regulation in line with research question one, the researcher developed the following hypothesises as a guide:

Null Hypothesis H_o: The commercial banks are not compliant with central bank regulation measures

Alternative Hypothesis H_1: The commercial banks are compliant with the central bank regulation measures

The state of regulation and compliance of commercial banks was analysed using prudential regulation (on-site regulation) and monetary policy regulation. The CAMELS framework was used to assess compliance to on-site regulation, while the discount rate, reserve requirement and liquidity requirement were used to assess the Central Bank of eSwatini regulation. Therefore, subsection 4.2 provides a narrative and descriptive analysis of the state of compliance with central bank regulation.

4.2.1 Prudential regulation – on-site regulation

The CAMELS framework is based on the following indicators

C - Capital Adequacy

A - Asset Quality

M - Management efficiency

E – Earnings Performance

L - Liquidity

S – Sensitivity

Notes: A scale of 1 to 5 was used to guide the process, where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Rating Scale

1	2	3	4	5

4.2.1.1 Capital adequacy

In terms of capital adequacy, it was established that in the Kingdom of eSwatini, a bank is required to maintain capital, that is, aside from the minimum domestic capital ratios, required by the international Basel Committee and the Financial Institution (Consolidated) Order, commensurate with the nature and

extent of its risk and the ability of management to detect and control risks. The effect of credit and market risks on a bank's financial condition is also considered when evaluating capital adequacy. In addition, the quantity of risk inherent in a financial institution's activities is used to determine the extent of the minimum requirement for that bank. The following factors are utilised to evaluate capital adequacy:

- The quality and level of capital and the overall financial condition of the institution
- How best the board of directors and the principal officer(s) can address and plan for likely or additional capital needs
- The volume of problem assets, nature, trends, and the adequacy of the reserve for bad debts account
- The composition of the balance sheet, entailing the nature and amount of intangible assets, market risk, concentration risk, and risks associated with non-traditional activities
- Risk vulnerability exposure depicted by off-balance-sheet activities
- The quality of earnings and the reasonableness of dividend payments
- Prospects and plans for growth, together with past experience in fostering growth
- Access to capital markets and other outside sources of capital

Based on the information obtained from the Central Bank of eSwatini, it was found that the capital adequacy for the banking industry was above the minimum requirement of 8 percent in the period 2003 to 2019.

Table 8.5: Compliance with capital adequacy requirement

Rating	Description	Tier I Capital	CAMELS Rating Average
1	Indicates a very strong capital level relative to the institution's risk profile. The level of capital maintained by a bank substantially exceed minimum regulatory requirements and is supported by strong asset quality and consistent and stable earnings performance.	8% or more	1
2	Shows a satisfactory capital level compared to the institution's risk profile. The level of capital meets or slightly exceeds minimum regulatory requirements.	6% to7.99%	
3	Shows a less than satisfactory level of capital. It also depicts that the level of capital maintained by the bank is inadequate to fully support the institution's risk profile. The rating also shows a need for improvement, even if the institution's capital level exceeds the minimum domestic capital requirement articulated in the FIO or the Basel Committee.	4% to 5.99%	
4	Show a deficient level of capital. In light of the institution's risk profile,' the viability of the institution is threatened. Assistance from shareholders or other external sources of funds is required. This implies that the capital is below the minimum domestic capital requirement contained in the FIO or the Basel Committee.	2% to 3.99%	
5	Indicates a critically deficient level of capital such that the bank's continued viability is seriously threatened. Immediate assistance is required.	1.99% and less	

Source: Adapted from Central Bank of eSwatini Bank Supervision Manual (2010: 1-35)

A descriptive statistical analysis was conducted to confirm the results of the CAMELS rating system, and the results are presented in Table 4.6 below:

Table 9.6: Descriptive Analysis of Capital Adequacy[17]

Descriptive Analysis based on the CAMELS Rating	
Mean	22.92267
Median	23.96000
Maximum	26.27000
Minimum	15.45000
Std. Dev.	3.146832
Skewness	-1.032273
Kurtosis	3.202275
Jarque-Bera	2.689539
Probability	0.260600
Sum	343.8400
Sum Sq. Dev.	138.6357
Observations	17

Source: Survey Data generated in Microsoft Excel (Central Bank of eSwatini data from 2003 -2019)

Capital adequacy had a mean value of 22.92, and the standard deviation was 3.15. This shows that commercial banks in the period under review were holding capital on an average value of 22.92, more than the 8 percent requirements of the banking regulator – the Central Bank of eSwatini. Overall, from 2003 to 2019, commercial banks in the Kingdom of eSwatini remained well-capitalised and all banks adhere to the minimum capital adequacy requirements of four percent for Tier 1 capital, 8 percent for total capital, and E15 million for minimum paid-up capital. In 2017, the aggregate for total capital adequacy ratios was 25.45 percent; this shows the banks' strong solvency positions. Total shareholder capital increased by 11.9 percent from E2.3 billion in June 2016 to E2.6 billion in June 2017, supported by growth in retained earnings. Banks also raised reserves appropriations, which showed their precautionary stance in an uncertain economic environment.

4.2.1.2 Asset quality

The asset quality rating provides the quantity of the current and potential credit risk associated with the investment portfolios and loans, real estate owned, and assets, together with off-balance sheet

[17] Refer also to Appendix 5.

transactions. The Central Bank of eSwatini evaluates the abilities of management to detect, measure, monitor, and control credit risk. The assessment of asset quality considers the adequacy of the reserves for bad debts accounts and how the principal officer(s) have previously identified and collected problem assets. It also considers any undue concentrations of credit, the adequacy of lending policies and credit administration procedures, and the nature and volume of specially mentioned assets. The Central Bank of eSwatini considers the following factors to evaluate market risks, diversification, investment portfolios and quality of the loans

- The existence of asset concentrations (concentrations or credit)
- Investment policies, adequacy of loans and practices and procedures
- How the board of directors and the principal officer(s) have properly administered assets, including timely identification and collection of problem assets
- The efficiency of the internal controls and management information systems
- The volume and nature of credit and collateral (security) documentation exception
- The soundness of credit administration practices, appropriateness of risk identification practices and adequacy of underwriting standards
- The level, trend of problem, distribution, classified, severity, non-accrual, restructured, and delinquent assets for both on- and off-balance sheet transactions
- The reserve for bad debts accounts
- The credit risk that emanates from off-balance-sheet transactions, such as outstanding unfunded commitments, letters of credit, and lines of credit

The results below indicate that total asset quality in the banking industry scored 1. This shows strong asset quality and credit administration practices. There are minor weaknesses in nature and risk exposure. It is modest concerning capital protection and management's abilities. Asset quality is of minimal supervisory concern. The results of the rating system are provided in Table 4.7 below:

Table 10.7: Compliance with asset quality requirement

Rating	Description	Total Assets to Total Capital and Reserves	CAMELS Rating Average
1	Imply strong asset quality and credit administration practices. There are minor weaknesses in nature and risk exposure. It is modest concerning capital protection and management's abilities. Asset quality is of minimal supervisory concern.	0% to 10%	1
2	Show satisfactory credit administration practices and asset quality. The level and severity of classifications and other weaknesses warrant a limited level of supervisory attention. Risk exposure is commensurate with capital protection and management's abilities.	10.01% to 25%	
3	Indicate that asset quality or credit administration practices are less than satisfactory. Shows deterioration in asset quality or an increase in risk exposure. The level and severity of classified assets, other weaknesses, and risks are becoming a major concern. There is generally a need to improve credit administration and risk management practices.	25.01% to 50%	
4	Show deficient asset quality or credit administration practices. The bank may hold a relatively large volume of severely classified assets that are inadequately controlled and subject the bank to increased loss potential. If left not addressed, further decline in asset quality may pose a threat to the bank's viability.	50.0% to 75%	

5	Indicates critical deficiency of asset quality or credit administration practices that present an imminent threat to the institution viability. The level and severity of classified assets are such that large losses can be expected.	75.01% and over	

Source: Adapted from Central Bank of eSwatini Bank Supervision Manual (2010: 1-35)

The CAMELS rating system results were further confirmed using a descriptive statistics analysis as shown in Table 4.8 below:

Table 11.8: Descriptive analysis of asset quality

Descriptive Analysis based on the CAMELS Rating	
Mean	7.786667
Median	7.200000
Maximum	9.800000
Minimum	6.400000
Std. Dev.	1.273839
Skewness	0.581634
Kurtosis	1.799272
Jarque-Bera	1.746838
Probability	0.417522
Sum	116.8000
Sum Sq. Dev.	22.71733
Observations	17

Source: Survey Data generated in Microsoft Excel (Central Bank of eSwatini data from 2003 -2019)

The asset quality mean value is 7.79 percent and standard deviation of 1.27, which depicts that NPLs of commercial banks were in total average of 7.79 percent of total gross loans. Thus, it shows that commercial banks in the Kingdom of eSwatini had a good asset quality. The mean asset quality ratio of 7.79 percent is within the first category, indicating a well-performing loan book.

4.2.1.3 Management efficiency

In terms of management, this study found that the Central Bank of eSwatini evaluates management against all elements that are necessary to operate a bank within reasonable banking standards and in a sound and safe manner. Management is assessed in relation to its technical proficiency, administrative ability, leadership, compliance with the FIO and any guidelines developed and issued by the Central Bank of eSwatini. This also involves examining the ability to plan and respond to fluctuating circumstances, the adequacy of and adherence to operating policies and procedures, and issues regarding the depth and succession of management. The examination of management also assesses the quality of internal controls and the level of involvement of directors and shareholders. Over the period under review, management was rated based on the following factors:

- The quality of oversight and support of all the bank's activities by the board of directors and the principal officer(s)
- How the board of directors and the principal officers, in their different roles, prepare for and respond to risks that may arise from fluctuating business conditions or the initiation of new activities or products
- The adequacy and appropriateness of internal policies and controls addressing the operations and risks of significant activities
- The effectiveness and timeliness of management information, risk monitoring systems appropriate for the bank's size, complexity, risk profile, and accuracy
- The adequacy of audits together with internal controls to ensure effective operations and reliable financial and compliance with regulatory reporting, and safeguarding assets
- How banks comply with laws, regulation measures and compliance with regulatory guidelines
- Assess whether commercial banks address all recommendations from auditors and supervisory authorities
- Management depth and succession
- Assess whether the bank provides evidence of willingness to provide legitimate banking and meets the credit needs of the community
- Policies and procedures developed to safeguard against conflicts of interest and preferential treatment for transactions for insiders (directors and officers) and their relatives
- The whole performance of the bank and its risk profile

Table 12.9: Compliance with the management efficiency

Rating	Description	CAMELS Rating Average
1	Show strong performance of the principal officer(s) and board of directors and strong risk management practices to the bank size, complexity and risk profile.	
2	Show satisfactory performance by the principal officer(s) and board of directors and risk management practices concerning the bank's size, complexity and risk profile. Insignificant weaknesses may be identified but not significant to the safety and soundness of the institution, and these weaknesses are being addressed.	
3	Indicates the performance of the principal officer(s) and board of directors that require improvement or risk management practices that are less than satisfactory based on the bank's activities.	3
4	Indicates that the performance of the principal officer(s) and board of directors is deficient or risk management practices are inappropriate considering the bank's activities.	
5	Depict critical deficiency of the performance of the principal officer(s) and board of directors or risk management practices—no means to address issues raised by the regulating authorities.	

Source: Adapted from Central Bank of eSwatini Bank Supervision Manual (2010: 1-35)

The CAMELS rating system results were further confirmed by the results of the descriptive statistics shown in 4.10 below:

Table 13.10: Descriptive analysis of management efficiency

Descriptive Analysis based on the CAMELS Rating	
Mean	2.670000
Median	3.000000
Maximum	3.000000
Minimum	2.000000
Std. Dev	0.507093
Skewness	-0.408248

Kurtosis	1.166667
Jarque-Bera	2.517361
Probability	0.284029
Sum	39.00000
Sum Sq. Dev	3.600000
Observations	17

Source: Survey Data generated in Microsoft Excel (Central Bank of eSwatini data from 2003 -2019)

Management efficiency is used as an internal factor. The mean value is 2.67 percent (approximately 3 percent) and a standard deviation of 0.51 percent. These results show the expense to income ratio computed by dividing operating expenses by operating income. To a large extent, the results show that the performance of the commercial banks' principal officer(s) and board of directors requires improvement. The rating of 3 shows that risk management practices are less than satisfactory based on the bank's activities.

4.2.1.4 Earnings performance

This study found that the Central Bank of eSwatini utilises this rating to show quantity and trends of earning and establish factors that affect the quality of earnings and sustainability. The Central Bank of eSwatini views both quality and quantity as important factors that can be negatively affected by excessive or inappropriate managed credit risk, that may lead to loan losses and require buffers to cushion the bad debts account, or by high levels of market risk that may unnecessarily expose an institution's earnings to fluctuations in interest rates. This study found that the rating of commercial banks in the Kingdom of eSwatini is premised upon but not restricted to the following factors:

- The level of earnings; entails trends and stability
- The credibility of the budgeting systems, management information systems, and forecasting processes
- The quality and sources of earnings
- The category/level of expenditure in relation to operations
- The ability to have appropriate capital through retained earnings
- The adequacy of buffers for bad debts
- The earnings exposure to different market risks such as foreign exchange, interest rate, and price risks

Table 14.11: Compliance with the earnings requirement

Rating	Description	Annualised Net Income to Average Total Assets	CAMELS Rating Average
1	Show strong earnings. Earnings are more than enough to maintain adequate capital for operations and provides an adequate provision to maintain the buffer for bad debt.	2.01% and over	1
2	Indicates satisfactory earnings. These earnings are adequate to maintain adequate capital; support operations provide enough buffers to safeguard against bad debts.	1.01% to 2%	
3	Shows that earnings need to be improved. Earnings are not fully cover operations, not sufficient capital and cannot cater for bad debts account for the institution's overall condition, growth and different factors that affect the qualify, quantity, and trend of earnings.	0.51 to 1.00%	
4	Indicates deficient earnings. In this case, earnings are insufficient to maintain capital; support operations and they are no adequate reserves for bad debts account at adequate levels.	0% to 0.50%	
5	Show earnings that are significantly deficient. A bank experiencing losses, represents a glaring threat to its viability of the business through the outflow of capital.	Less than 0%	

Source: Adapted from Central Bank of eSwatini Bank Supervision Manual (2010: 1-35)

The CAMELS rating system results were further confirmed by the results of the descriptive statistics shown in Table 4.12 below. The results confirm the CAMELS rating of 1 concerning earnings.

Table 15.12: Descriptive analysis of earnings

Descriptive Analysis based on the CAMELS Rating	
Mean	3.964667
Median	3.840000
Maximum	8.600000
Minimum	1.900000
Std. Dev	1.483186
Skewness	2.009865
Kurtosis	7.656878
Jarque-Bera	23.65296
Probability	0.000007
Sum	59.47000
Sum Sq. Dev	30.79777
Observations	17

Source: Survey Data generated in Microsoft Excel (Central Bank of eSwatini data from 2003 -2019)

As shown in Table 4.12, the earnings mean value is 3.96 and the standard deviation of 1.48 percent. The mean value of 3.96 implies that the banking sector's earnings in the Kingdom of eSwatini revolved above the first level. This suggests that in terms of earnings, banks were able to record an average of more than 2 percent, indicating that earnings were satisfactory. Furthermore, these earnings were adequate to maintain adequate capital, support operations, and provide enough buffers to safeguard against bad debts.

4.2.1.5 Liquidity

In terms of liquidity, this study uncovered that the Central Bank of eSwatini evaluates the adequacy of the banks' liquidity position by taking into consideration the current levels and potential sources of liquidity relative to funds required, coupled with the adequacy of funds management practices compared to the bank's size, risk profile, and bank's complexity. The Central Bank of eSwatini further ensures that banks can maintain a level of liquidity adequate to cover all their financial obligations on time, honour the legitimate banking needs of its community, and comply with the domestic liquidity requirements as articulated in the FIO. Furthermore, commercial banks are required to demonstrate the ability to manage unplanned circumstances through their funding sources respond to changes in market conditions that affect the ability to liquidate assets with insignificant loss suddenly. The Central Bank of eSwatini further ensures that funds management practices do not ensure that liquidity by maintaining

a high cost. Liquidity is rated based on, but not restricted to, an assessment of the following evaluation factors:

- The adequacy of liquidity sources relative to current and future needs and the ability of the bank to meet short term liquidity obligations without adversely affecting its operations
- The extent of reliance on short term, fluctuating sources of funds, such as borrowings and brokered deposits, to finance longer-term assets
- The stability and trends of deposits
- The ability of management to properly identify, assess, monitor and control the bank's liquidity position, including the effectiveness of funds management liquidity policies, strategies, contingency funding plans and management information systems
- Enough assets that can be readily convertible to cash without unnecessary losses
- Accessibility to different sources of funding, such as money markets
- The Central Bank of eSwatini also assess the level of diversification of funding sources, both on- and off-balance sheet

Table 16.13: Compliance with Liquidity requirement

Rating	Description	Liquidity Assets to Total Liabilities to the Public	CAMELS Rating Average
1	Show strong liquidity levels and well-developed fund management practices. Also, show that the bank has credible access to sources of funds on favourable terms to meet current and future liquidity needs.	50% and over	
2	Show satisfactory in terms of liquidity levels and funds management practices. Also indicates that the bank has access to enough sources of funds on reasonable terms to meet current and future liquidity obligations. Modest weaknesses may be observed in funds management practices.	30% to 49.99%	
3	Indicates that the liquidity levels or funds management practices need	20.00% to 29.99%	3

	some improvement. Banks rated 3, lacks access to funds on reasonable terms or may evidence significant weaknesses in funds management practices.		
4	Show deficient liquidity levels or improper funds management practices. Banks rated 4 are not able to obtain the adequate volume of funds on reasonable terms to meet liquidity needs.	10% to 19.99%	
5	Indicates liquidity levels or funds management practices that are very critical or deficient that signals a threat to the institution's viability. Banks rated 5 require quick external financial intervention to meet its maturing obligations.	Less than 10%	

Source: Adapted from Central Bank of eSwatini Bank Supervision Manual (2010: 1-35)

The CAMELS rating system results were further confirmed by the results of the descriptive statistics shown in Table 4.14 below. The results confirm the CAMELS rating of 1 concerning earnings.

Table 17.14: Descriptive analysis of liquidity requirement

Descriptive Analysis based on the CAMELS Rating	
	Liquidity
Mean	22.63733
Median	23.88000
Maximum	29.46000
Minimum	15.58000
Std. Dev	5.300414
Skewness	-0.072824
Kurtosis	1.204464
Jarque-Bera	2.028226
Probability	0.362724

Sum	339.5600
Sum Sq. Dev	393.3215
Observations	17

Source: Survey Data generated in Microsoft Excel (Central Bank of eSwatini data from 2003 -2019)

Table 4.14 show that the liquidity mean value is 22.64 percent and has a standard deviation of 5.30 percent. The mean value of 22.64 percent predominantly indicates the liquidity in the banking sector before it was revised in 2016. Therefore, according to the results, the banking industry can be rated 3, according to the CAMELS rating system. This suggests that funds management practices need some improvement. Hence in 2016, the Central Bank of eSwatini decided to increase the liquidity ratio to 25 percent from 20 percent.

4.2.1.6 Sensitivity to market risk

The sensitivity to market risk component shows the extent to which changes in interest rates, commodity prices, or equity prices and foreign exchange rates are likely to affect a bank's earnings or economic capital adversely. This study established that the Central Bank of eSwatini takes into consideration management's ability to identify, measure, and track market risk; the bank's size, nature, and complexity of the bank's activity; and the adequacy of its capital and earnings concerning its level of market risk exposure. The market risk analysis is rated based upon, but not restricted to, an assessment of the following evaluation factors:

- The sensitivity on bank's earnings or the economic value of its capital to any changes in foreign exchanges rates, interest rates, commodity prices, or equity prices.
- The ability of management to detect, measure, monitor, and control exposure to market risk given the bank's size, risk profile, and complexity.
- The complexity and nature of the interest rate risk exposure emanate from non-trading positions. Where appropriate, the nature and complexity of the market risk exposure arising from trading and foreign operations.

Compliance ratings in terms of foreign exchange exposure and the assets to liabilities gap is provided in Table 4.15 below:

Table 18.15: Compliance with sensitivity requirement

Rating	Description	Foreign Exchange Exposure	Assets To Liability Gap Sensitivity	CAMELS Rating Average
1	Indicates that market risk sensitivity is well managed and that there is little potential for the earnings performance or capital position to be negatively affected. Risk management practices are very strong for the sophistication, size and market risk accepted by the institution. The level of earnings and capital provide enough support for the degree of market risk taken by the institution.	15% or less	10% or less	1
2	This shows that the market risk is sensitivity is adequately controlled and that there is a moderate likelihood that the earnings performance or capital position may be negatively affected. Risk management practices are satisfactory for the size, sophistication, and market risk accepted by the institution. The level of earnings and capital provide adequate support for the degree of market risk taken by the institution.	15.01% to 25%	10.01% to 20%	
3	Indicates that control of market risk sensitivity should be improved or that there is significant potential that the earnings performance or capital position will be adversely affected. Risk management practices need to be improved given the size, sophistication" and level of market risk accepted by the bank. The level of earnings and capital is not adequately supporting the degree of market risk taken by the institution.	25.01% to 35%	20.01% to 30%	
4	Shows that control of market risk sensitivity is unbearable or has a high potential that the earnings performance or capital position will be	35.01% to 45%	30.01% to 40%	

	adversely eroded. Risk management practices are deficient for the size, sophistication, and level of market risk accepted by the institution. The level of earnings and capital provide inadequate support for the degree of market risk taken by the institution.			
5	Indicates that the control of market risk sensitivity is unbearable or that the level of market risk taken by the bank is an imminent threat to its sustainability. Risk management practices are wholly inadequate for the size, sophistication, and level of market risk accepted by the institution.	45.01% and over	40.01% and over	

Source: Adapted from Central Bank of eSwatini Bank Supervision Manual (2010: 1-35)

The above qualitative results on compliance rating regarding foreign exchange exposure and the assets to liabilities gap are consistent with the descriptive analysis in Table 4.16 below.

Table 19.16: Descriptive analysis of sensitivity

	Foreign exchange exposure	**Assets to liabilities**
Mean	12.23178	2.400000
Median	12.40503	2.000000
Maximum	15.1283	3.000000
Minimum	8.990925	2.000000
Std. Dev.	1.928602	0.507093
Skewness	-0.054446	0.408248
Kurtosis	1.840490	1.166667
Jarque-Bera	0.8477001	2.517361
Probability	0.654522	0.284029
Sum	183.4767	36.00000
Sum Sq. Dev.	52.07305	3.600000
Observations	17	17

Source: Survey Data generated in Microsoft Excel (Central Bank of eSwatini data from 2003 -2019)

Regarding foreign exchange exposure, the eSwatini banking sector recorded a mean value of 12.23 percent and standard deviation of 1.93 percent. This shows that the peg cushioned banks to the South African rand; as such, it fluctuated around 12.23 percent. Since the results indicate a value below 15 percent, this implies that it is within category 1 of the CAMELS rating in terms of foreign exposure. This indicates that market risk is well managed and there is little potential that the earnings performance or capital position may be negatively affected. Risk management practices were very strong for the size, sophistication, and market risk accepted by the institution. Therefore, the study concludes that the level of earnings and capital provide enough support for the market risk taken by the banks.

Furthermore, in terms of the assets to liabilities gap sensitivity, the mean for the period under review is 2.4 percent and the standard deviation is 0.51 percent. The value of the mean 2.4 percent also falls within the optimal threshold for rating 1 (less than 10 percent). Therefore, the study concludes that banks managed the market risk sensitivity and that there is little potential that the earnings performance or capital position may be negatively affected. The risk management practice was very strong for the size, sophistication, and market risk accepted by the institution. Therefore, the results indicate that the overall level of earnings and capital is adequate to cushion commercial banks in the Kingdom of eSwatini from market risk for any investment it takes.

4.2.2 Discussion of findings on compliance to on-site regulation – CAMELS Indicators

(i) Prudential regulation – on-site supervision

A narrative and descriptive analysis are applied in prudential regulation, based on the CAMELS framework used for bank supervision. The focus is on-site supervision, using the CAMELS framework, in line with the international requirements of the Basel Committee. In addition, the descriptive approach was utilised to confirm the results obtained from the CAMELS analysis concerning compliance with Central Bank regulation.

(a) Capital adequacy

The results show that, on average commercial banks kept about 22.92 percent capital, more than the 8 percent requirements of the banking regulator – the Central Bank of eSwatini. Overall, from 2003 to 2019, commercial banks in the Kingdom of eSwatini remained well-capitalised. All banks adhere to the minimum capital adequacy requirements of 4 percent for Tier 1 capital, 8 percent for total capital, and E15 million for minimum paid-up capital.

While capital adequacy was high, bank lending to the private sector remained relatively subdued in the Kingdom of eSwatini. A possible clarification for this might be that adhering to stricter capital regulation can lead to a long-run positive effect on GDP growth because the results of reducing the

anticipated cost of evading banking crises outweigh the costs of adhering to stringent capital requirement compliance measures, such as a reduction in lending and higher lending spreads. Contrarily, Martynova (2015) suggests that when the capital adequacy requirement is high, it reduces bank lending to the private sector. Martynova (2015) further asserts that a higher capital requirement induces commercial banks to reduce credit supply and demand by raising lending rates, thus indirectly slowing down economic growth. However, a well-capitalised banking industry improves financial stability by reducing bank risk-taking incentives and raises banks' buffers against crisis (Hernando and Villanueva, 2014; and Laidroo, 2012)

This finding is consistent with Olweny and Shipho (2011), who established an average of 21.60 for that commercial bank in Kenya, which was is way above the statutory minimum of 12.0 percent. Overall, from 2003 to 2019, commercial banks in the Kingdom of eSwatini remained well-capitalised and all banks adhere to the minimum capital adequacy requirements of 4 percent for Tier 1 capital, 8 percent for total capital, and E15 million for minimum paid-up capital. In the context of the Kingdom of eSwatini, the results show that higher capital requirement has a negative effect on bank lending to the private sector and this finding is consistent Martynova (2015) who concluded that when the capital adequacy requirement is high, it reduces bank lending to the private sector since. Due to the high capital requirement, commercial banks reduce credit supply and demand by raising lending rates, thus indirectly slowing down economic growth. While capital adequacy may be considered an effective credit risk mechanism, its effect on credit to the private sector should be closely monitored. This is also in line with the findings of Beckmann (2007), who provides that an increase in capital tend to reduce bank lending and profits because banks with a high capital ratio are usually risk-averse.

Furthermore, this finding is consistent with Sarwar and Asif (2011) for Pakistan, where the capital adequacy indicator was rated 1. This is contrary to findings by Laidroo (2012) and Hernando and Villanueva (2014), who concluded that in the case of Central and Eastern European countries, there is a positive and significant relationship between capital ratio and loan growth. The limitation of Basel II is that it provides a minimum requirement for capital requirement without setting a cap. Therefore, the mixed conclusion in the literature suggests a need to examine the optimal threshold for capital adequacy to strengthen central bank regulation. Based on the finding, it is evident that despite commercial banks being compliant to the requirement, the Central Bank of eSwatini is not using a competitive model to determine capital adequacy levels. Therefore, the finding of this study in terms of capital adequacy does inject new regulation literature regarding the concept of on-site regulation in developing countries such as the Kingdom of eSwatini. Worth noting is that there is no empirical study in the Kingdom of eSwatini that has revealed the effect of capital adequacy on credit to the private sector.

(b) Asset quality

The asset quality mean value of 7.79 percent and a standard deviation of 1.27 portrays that NPLs of commercial banks were, in total, an average of 7.79 percent of total gross loans. It shows that the commercial banks in the Kingdom of eSwatini had a good asset quality. The mean asset quality ratio of 7.79 percent is within the first category indicating a well-performing loan book. Our findings are similar to the results of the Central Bank of Kenya, where a mean of 4 percent was obtained for Kenya (Central Bank of Kenya, 2011).

This finding is also consistent with the theory of Otoritas (2017), which emphasis keeping a CAR (minimum 8%) and non-performing loan (NPLs) (maximum 5%). Despite that asset quality for commercial banks in the Kingdom of eSwatini are within the required thresholds of zero and ten, the Central Bank of eSwatini should monitor this component to keep bank exposure to credit risk within reasonable limits. Furthermore, economic growth remains subdued if domestic arrears are weighing heavily on the banking sector's asset quality, which may lead to an increase in NPLs. This finding is consistent with the "risk absorption" theory (Diamond and Rajan, 2000; Berger and Bouwman, 2009). This finding is contrary to the results of Ongore and Kusa (2013), who found an average asset quality ratio of 15.52 for banks in Kenya. The finding of this study signals a low exposure of banks to credit risk in the Kingdom of eSwatini. Despite the low risk, the Central Bank of eSwatini should continue to consider the interplay between capital adequacy, asset quality and credit performance to safeguard against any risk associated with high capital adequacy.

(c) Management efficiency

The mean value of management efficiency is 2.67 percent (approximately 3), and the standard deviation is 0.51 percent. These results show the expense to income ratio, computed by dividing operating expenses by operating income. To a large extent, the results show that the performance of the commercial banks' principal officer(s) and board of directors requires improvement. The rating of 3 shows that risk management practices are less than satisfactory based on the bank's activities. This finding is consistent with the results of Babar and Zeb (2011) and Sarwar and Asif (2011) for Pakistan, who found that banks had poorly emphasised management but stressed the strengthening of capital adequacy. This finding is contrary to those of Majithiya and Pattani (2010), who established a high rating of management quality for India. This finding is in line with those of the previous study by Tiisekwa (2013) found poor management quality for Tanzania. Therefore, this study also suggests that the Central Bank of eSwatini should emphasise that commercial banks should consider the value of money by focusing on the three E's; efficiency, effectiveness and economy. Furthermore, the weak management in the Kingdom of eSwatini may imply a low level of competency of its employees in the banking industry, which is likely to affect the banking system as the Kingdom of eSwatini continues to integrate with other banks in the SADC region. Therefore, for the banking industry in the Kingdom of

eSwatini to improve its competency, it needs to continue capacitating its employees to position itself to compete better regional and international.

(d) Earnings performance

The mean value of earnings performance is 3.96 percent, and a standard deviation of 1.48 percent implies that earnings in the banking sector in the Kingdom of eSwatini revolved above the first level. This suggests that in terms of earnings, banks were able to record an average of more than 2 percent (3.96), indicating that earnings were satisfactory. These earnings were adequate to maintain adequate capital; support operations provide enough buffers to safeguard against bad debts. This finding is different from the finding of Sarwar and Asif (2011) in the case of Pakistan and Malaysia, who found that there was a need for earnings quality and liquidity because the two indicators reflected poor management of earnings and liquidity. The poor rating in terms of earnings quality reflected too rigid lending policies and lending criteria coupled with poor management due to lack of experience, which limited Islamic banks to participate in a broad conventional environment.

(e) *Liquidity*

The results further show a liquidity mean value of 22.64 percent and a standard deviation of 5.30 percent. The mean value of 22.64 percent predominantly indicates the liquidity in the banking sector before it was revised in 2016. This falls within category 3 of the CAMELS rating system. In 2016, the Central Bank of eSwatini decided to increase the liquidity ratio to 25 percent from 20 percent. This suggests that funds management practices need some improvement. This finding is consistent with Kamau (2009), who established that in Kenya, the liquidity ratio for the banking sector average 37 percent in 2008 and 39.8 percent in 2009, way above the statutory minimum liquidity requirement of 20 percent while the levels of credit to the private sector and subdued economic growth remain low.

Contrary to Kamau's (2009) finding, Shen *et al*. (2010) provide that the relationship between liquidity risk and NIM is positive. The more liquidity a bank has the higher the interest revenue. Therefore, the monetary authorities of the Kingdom of eSwatini should closely monitor the spillover effects of high liquidity. Furthermore, the trade-offs between return and liquidity risk may trigger a shift in investment from short term securities to long-term securities, which increases liquidity risk. Therefore, the researcher of this study ascribes to the notion by Levine (1998) and Uzhegova (2010), that despite that high liquid assets serves as a quick strategy to create cash on short notice, they have the potential to reduce the ability of management to properly identify investment options, thus limiting the capacity to raise finance and reducing bank lending to the private sector.

(f) Sensitivity

The results show stability in terms of sensitivity captured by foreign exchange exposure and assets to liability gap sensitivity. The foreign exchange exposure of the eSwatini banking sector recorded a mean value of 12.23 percent and a standard deviation of 1.93 percent. This shows that banks were cushioned by the peg to South African rand; therefore, it fluctuated within an average of 12.23 percent. The results indicate a value below 15 percent, which implies that in terms of foreign exposure, it is within category 1 of the CAMELS rating. This indicates that market risk is well managed and there is little potential that the earnings performance or capital position may be negatively affected.

Furthermore, in terms of the assets to liabilities gap sensitivity, the mean for the period under review is 2.4 percent and the standard deviation is 0.51 percent. The value of the mean 2.4 percent also falls below the optimal threshold for rating 1 (less than 10 percent). Thus, the researcher concludes that the market risk sensitivity was well managed by banks. The banking industry in the Kingdom of eSwatini is resilient to shocks from exchange rate, interest rate and equity price volatilities can affect the earnings and capital of financial institutions. This finding is consistent with the results of Babar and Zeb (2011) for Pakistan, who found that the average for sensitivity to market risk was 9.42 percent indicating commercial banks were rated 1 since the mean was below the threshold of 15 percent. This is also consistent with the first level of Trautmann (2006), which shows a strong position of the bank in terms of soundness and performance. This result is also consistent with Masood *et al*. (2016), who used the CAMELS framework for Pakistan and found that the sensitivity indicator is good but establishes limitations in terms of investment opportunities in the banking industry. Therefore, it is logical to conclude that while the rating of sensitivity 1, there may be the limited scope of investment opportunities in the financial industry of the Kingdom of eSwatini.

Overall, the findings of this study in terms of compliance with on-site regulation measures show that commercial banks were compliant, except for management efficiency. Table 4.17 provides a summary of the results.

Table 20.17: Commercial Banks compliance with on-site CAMELS Indicators

S/N	CAMELS INDICATORS	Rating	Status	
			CAMEL Threshold	Central Bank of eSwatini Threshold
1	Capital adequacy	1	Compliant	Compliant
2	Asset quality	1	Compliant	Compliant
3	Management Efficiency	3	Not compliant	Not compliant
4	Earnings	1	Compliant	Compliant
5	Liquidity	3	Not compliant	Compliant (above a threshold of 25%)
6	Sensitivity	1	Compliant	Compliant

Source: Generated by Author using data from the Central Bank of eSwatini (2003 - 2019)

Notes: there was no data from 2000; hence data used begins from 2003.

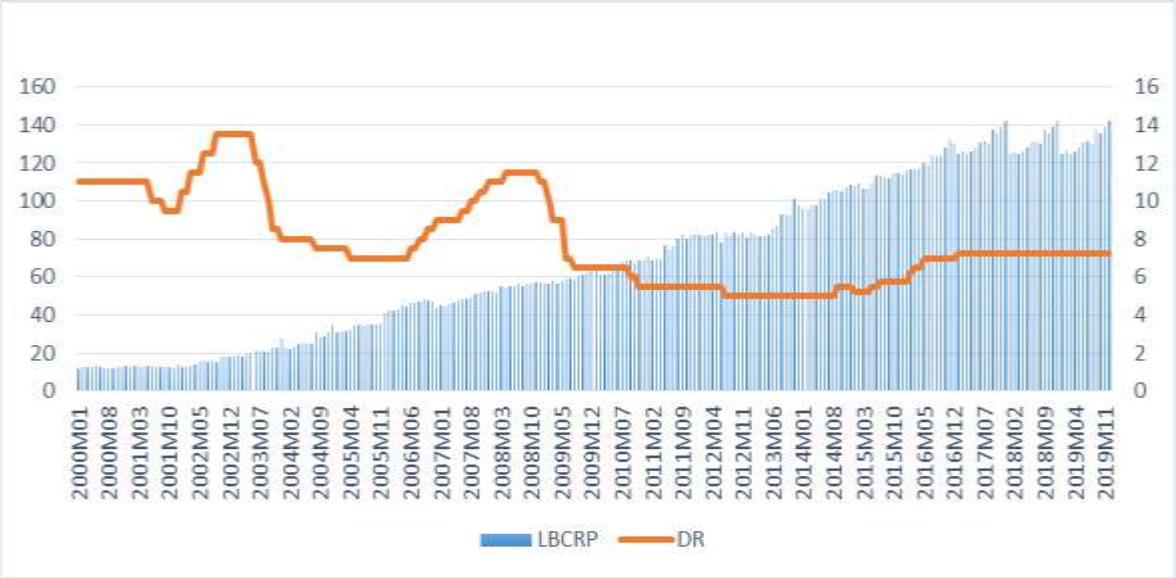
4.2.3 Monetary policy regulation

The state of monetary policy regulation is assessed by using trends for the period under review. The findings of this study indicate that the Central Bank of eSwatini regulates the banking sector in the Kingdom of eSwatini, and its mandate is derived from the Central Bank of eSwatini Order of 1974. The Central Bank of eSwatini is responsible for ensuring reasonable price levels and fostering a stable financial sector conducive to stimulating growth. This study found that monetary policy formulation in the Kingdom of eSwatini is a product of the CMA agreement. The CMA is premised on the idea of coordinated monetary policy in it strives to ensure a low and stable level of inflation.

(a) Discount rate

This study found that since 2001 it was set at par with the South African repo rate until June 2008. From 2008, the Central Bank of eSwatini sometimes deviated from parity by fifty basis points below or above the SA repo rate but in March 2010 decided to restore parity of the bank rate with the SARB repo rate. Deviations from the parity were noted from 2015 but are not more than 100 basis points. Similarly, commercial banks were compliant to the Central Bank of eSwatini in terms of maintaining the lending rate (prime rate) margin of 3.5 percent throughout the period 2000 to 2019. As shown in figure 4.1 above, episodes of high or increasing discount rates (2001 to 2002 and 2008) were not accompanied by a major decline in credit to the private sector; instead, it trended upward.

Figure 16.1: Trends of bank credit and discount rate



Source: Generated by Author in EViews 9 using data from the Central Bank of eSwatini (2000 - 2019)

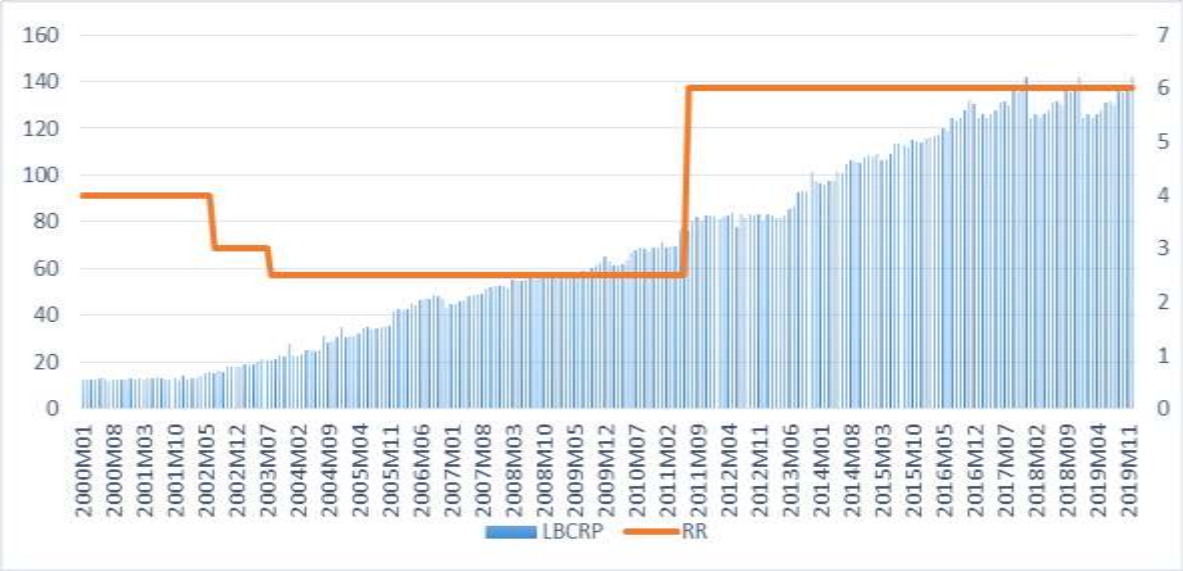
Survey results of the discount rate and bank credit: About 87 percent of the participants interviewed indicated that the discount rate was changed more than four times each year over the past ten years. Episodes of steady discount rates begin from 2009. Changes in the discount rate is largely associated with domestic and external economic shocks, in particular inflation. According to the respondents, an increase in the discount rate was not followed by a decrease in bank lending to the private sector.

(b) Reserve requirement

The assessment shows that the Central Bank of eSwatini effected three changes on the reserve requirement over the period under review. The first was to introduce a separate call account for banks in 2003, which earns interest. The reserve requirement was further revised in 2011 from 2.6 percent to 6 percent. The 6 percent is meant to facilitate the clearing and settlement of interbank transactions such as transactions between the commercial banks and central bank and to safeguard banks' liquidity and safety. Over the period under review, commercial banks had been compliant to maintain reserves at 6 percent as required by the Central Bank of eSwatini.

A graphical presentation of the relationship between the cash reserve requirement and bank lending to the private sector is provided below.

Figure 17:2: Trends of Bank Credit and Cash Reserve Requirement



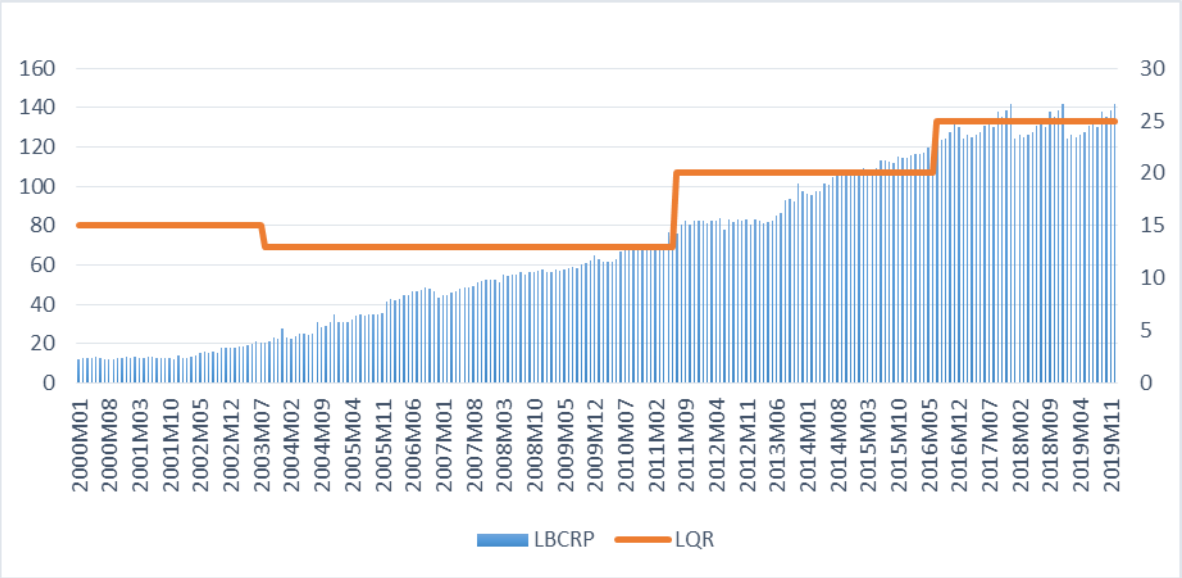
Source: Generated by Author in EViews 9 using data from the Central Bank of eSwatini (2000 - 2019)

(c) Liquidity requirement

The researcher found that before the year 2000, the liquidity requirement was fixed at 17.5 percent. The liquidity requirement was revised downwards to 15 percent in February 1999. This was followed by another downward revision of the liquidity requirement, which was introduced in August 2003, from 15 percent to 13 percent, and the rationale was to lessen the negative tax effect this has on banks' intermediation. In July 2011, the liquidity requirement was revised upwards to 20 percent from 13 percent to protect the industry from spillover effects of the fiscal crisis. A further increase was effected in July 2016, from 20 percent to 25 percent. The liquidity ratio in most cases was above the statutory requirement as such foreign banks have increased their investments in South African markets due to lack of investment avenues in the domestic markets. Over the period under review, the Central Bank of eSwatini managed to ensure that a reasonable proportion of any increase in deposit liabilities is placed in official hands or is otherwise employed in instruments recognised to represent priority uses for the available funds and to be readily convertible to primary liquidity if an individual bank finds itself called upon to accept a fall in its deposit liabilities. In a nutshell, commercial banks were compliant, and they held excess reserves well above the Central Bank thresholds.

The graph below provides the trends for liquidity requirement and bank credit to the private sector.

Figure 18.3: Trends Bank Credit and Liquidity Requirement



Source: Generated by Author in EViews 9 using data from the Central Bank of eSwatini (2000 - 2019)

From 2000 to 2019, a reduction in liquidity requirement was followed by an increase in bank credit to the private sector.

This research study established that in the absence of adequate investment instruments, coupled with persistent and continuous excess liquidity in the domestic banking system, banks have traditionally looked towards the South African markets to manage their liquidity. However, the government recently introduced long-term dated papers which could help absorb the excess liquidity in the banking sector. Worth noting is that in an environment where monetary policy emphasises that banks should have excess liquidity, like eSwatini bank, they become concerned about the possibilities of default on loans, then reduce their lending. The excess liquidity is either kept by the banks as liquid assets, or as cash and deposits or at the central bank as treasury bills or bonds and in other attractive, marketable securities outside the country. Therefore, an increase in bank liquidity coupled with an accommodative monetary stance is tantamount to contractionary monetary policy because it supports a lower level of investment in the domestic economy.

Regarding monetary policy regulation, this study established that the banking sector in the Kingdom of eSwatini is regulated by the Central Bank of eSwatini. Its mandate is derived from the Central Bank of eSwatini Order of 1974. Similar to other regulators, it is the Central Bank of eSwatini to ensure reasonable levels of price and foster a stable financial sector conducive to stimulating growth. It was found that monetary policy formulation in the Kingdom of eSwatini is a product of the Common

Monetary Area[18] (CMA) agreement. The CMA is premised on the idea of coordinated monetary policy striving to ensure a low and stable level of inflation.

Like the other smaller member states in the CMA, the Kingdom of eSwatini pegs its currency at par with the South African rand and further allows for the free movement of the rand. The Kingdom of eSwatini, as a pegging member state, is required to preserve the credibility of the fixed parity with foreign reserves amounting to or above the conventional international standard of three months of import cover. Since 2014, the Central Bank of eSwatini has aligned its target to the Southern African Development Community (SADC) requirement of six months of import cover. Keeping and sustaining the exchange rate peg works as an intermediate goal for monetary policy in the Kingdom of eSwatini. The CMA arrangement provides that there is free mobility of capital within the CMA countries. Therefore, the rule of impossible trinity creeps in and presents significant conditions for consideration when setting monetary policy in the Kingdom of eSwatini.

Since the Kingdom of eSwatini has unrestricted capital mobility, and its exchange rate is pegged, it does not have monetary policy independence similar to other countries outside the CMA. Therefore, the Kingdom of eSwatini has limited scope to implement discretionary monetary policy in response to economic shocks. Thus, changes in the discount rate largely reflect the trend of the South African Reserve Bank (SARB) monetary policy stance by implication of the 'impossible trinity' concept.

In November 2009, a Monetary Policy Consultative Committee (MPCC) was instituted for the first time in the Kingdom of eSwatini. The role of the MPCC is to advise on matters relating to the monetary policy of the bank, assist the bank in formulating its monetary policy and facilitate the exchange of views on matters relating to the economic developments in the country. The MPCC has no decision-making powers and does not determine, formulate or implement, but consults not only on monetary policy issues but also any issue arising from the other objectives of the bank. The MPCC usually meets a day after the SARB repo rate has been announced. The bank is expressly declared the sole legal determiner and public announcer of the rates for discounts, rediscounts, and advances (interest rates as a monetary policy instrument).

[18] The Kingdom of ESwatini, Namibia and Lesotho

4.2.4 Discussion of the results on compliance to monetary policy regulation the Kingdom of eSwatini

(a) Compliance with the discount rate

This study found that the Central Bank of eSwatini utilises three instruments to influence bank credit to the private sector: reserve, discount, and liquidity. Secondary information obtained from the Central Bank of eSwatini provides evidence that all commercial banks were compliant to maintain a margin of 3.5 percent between the discount rate and the prime lending rate.

Further, this study found that the discount rate is used as the main policy tool to influence the country's monetary conditions. Its movement is almost similar to the South African Reserve Bank's (SARB) repo rate. Through the discount rate, the Central Bank of eSwatini can influence commercial banks borrowing from the Central Bank, in turn, causing changes to other interest rates in the economy. It was also found that over the past 17 years, changes in the discount rate in the Kingdom of eSwatini was largely driven by the following factors: domestic inflation, credit extension, SARB's repo rate, GDP, and other international economic developments. Prior to inflation targeting in SA, the Central Bank of eSwatini fixed the discount rate at fifty basis points below the SA repo rate to stimulate investment. From 2001, the discount rate was set at par with the South African repo rate until June 2008. From 2008, the Central Bank of eSwatini sometimes deviated from parity by fifty basis points below or above the SA repo rate but in March 2010 decided to restore the parity of the bank rate with the SARB repo rate. Deviations from parity were noted from 2015 but are not more than 100 basis points.

The finding of indicates that the discount rate was changed about thirty-five times in the period 2000 to 2019. The primary focus was to curtail inflation pressure and to inject liquidity into the economy. Commercial banks were also expected to maintain a margin of 3.5 percent between the bank rate and prime lending rate. Despite that some episodes of high discount rate may have led to an increase in the risk of defaulters, commercial banks were consistently adhering to the margin of 3.5 percent.

While the findings provide evidence of compliance to monetary policy requirements, the policy mix of regulation remains a cause for concern (low interest rate but high reserve requirement and liquidity requirement). Literature (Romer and Romer, 2000; Gertler and Gilchrist, 2003 and Amidu, 2006) provides that the higher the discount rate, the lower the bank credit. Performance in terms of bank lending to the private sector remained subdued over the reviewed period, which suggests that this instrument constrained commercial banks. This finding also complements Morris and Sellen's (2005) study, which uncovered that a contractionary monetary policy of the discount rate triggers a reduction in economic activity.

(b) Compliance with the reserve requirement

Similar to other countries, this research study also established that the Central Bank of eSwatini, as an umbrella for commercial banks requires them to keep a certain percentage (6 percent) of their deposits at the Central Bank. The cash reserve requirement (CRR) is used for clearing and settlement of interbank transactions such as cheque clearing. This instrument also helps the Central Bank facilitate transactions between itself and commercial banks and ensures liquidity and safety of banks. The CRR affects bank lending behaviour by influencing bank liquidity and credit extension. In the period under review, all banks were compliant to the statutory requirement. In the period under review (2000 to 2019), the reserve requirement was changed three times from 4 percent to 2.5 percent to 6 percent. Throughout the period, commercial banks compliedwith the requirement set by the Central Bank of eSwatini. The 6 percent requirement seems to be a bit high for an economy like the Kingdom of eSwatini. Comparing the Kingdom of eSwatini with CMA member states, the 6 percent seem to be higher. The International Monetary Fund (2018) reports recommended that commercial banks in Lesotho comply with a 3 percent cash reserve requirement and consider adjusting its minimum liquid downwards from 25 percent. Similar to other CMA countries, the reserve requirement is rarely altered. Chodechai (2004) Central banks should keep the reserve requirement stable because it can cause sudden liquidity problems, especially for banks with low excess reserves.

(c) Compliance with the liquidity requirement

The Central Bank of eSwatini utilised the liquidity requirement to compel commercial banks to keep a certain portion of the deposits as cash to cater for immediate withdrawal. The liquidity requirement ratio is designed to ensure a prudent distribution of individual banks' assets and not as a means to control monetary aggregates. The current liquidity requirement is 25 percent. It ensures that a reasonable proportion of any increase in deposit liabilities is placed in official hands, or otherwise employed in instruments recognised to represent priority uses for the available funds and to be readily convertible to primary liquidity in the event that an individual bank finds itself called upon to accept a fall in its deposit liabilities. The researcher found that before 1999 the liquidity requirement was fixed at 17.5 percent. The liquidity requirement was revised downwards to 15 percent in February 1999. Another downward revision of the liquidity requirement was affected in August 2003 from 15 percent to 13 percent and the rationale was to lessen the negative tax effect this has on banks' intermediation. In July 2011, liquidity requirement was revised upwards to 20 percent from 13 percent in an effort to protect the industry from spillover effects of the fiscal crisis. A further increase was effected in July 2016, from 20 percent to 25 percent. The liquidity ratio in most cases was above the statutory requirement because foreign banks have increased their investments in South African markets due to lack of investment avenues in the domestic markets.

While positive of compliancy to the liquidity requirement of the Central Bank of eSwatini is a positive position for the banks against risk, it is also necessary to appreciate the negative effects. This study, therefore, supports the argument by Diamond and Rajan (2006), who found that high liquidity tends to influence bank lending heterogeneous. Furthermore, the theory on the bank lending channel suggests that the effects of the liquidity requirement is transmitted through the capital 9structure of banks and cause liquidity problems.

Taken together, the findings of this study in terms of compliance with the discount rate, reserve requirement and liquidity requirement show that commercial banks were compliant, as shown in Table 4.18 below:

Table 21.18: Credit control variables of the Central Bank of eSwatini

	Central Bank Instruments	**Changes 2000 - 2019**	**Commercial Banks Status**
1	Discount rate	35 times	Compliant
2	Reserve requirement	4%, 2.5% and 6%	Compliant
3	Liquidity requirement	15%, 13%, 20% and 25%	Compliant

Source: Generated by Author using data from the Central Bank of eSwatini (2000 - 2019)

4.2.5 Overall Decision based on question one hypothesis:

Based on the CAMELS rating system findings on prudential regulation, the null hypothesis is rejected that commercial banks are not compliant with central bank regulation measures. It is therefore concluded that commercial banks are compliant to all requirements except for management efficiency. This study recommends that the Central Bank of eSwatini should continue tightening measures on management efficiency for commercial banks.

In terms of compliance with monetary policy instruments, all banks were compliant to requirements set by the Central Bank of eSwatini for the discount rate, reserve requirement and liquidity requirement. Overall, the trend of the variables of concern indicates that episodes of high discount rate coupled with high reserve requirement and liquidity requirement resulted to a decrease in bank lending to the private sector and the reverse is true.

4.3 Research study question two:

What are the monetary policy factors that stimulate and impede bank lending to the private sector – the core sector of the economy?

In order to establish factors that stimulate and impede lending in the Kingdom of eSwatini, descriptive design was used. The researcher framed hypothesises as follows:

Null Hypothesis (H_0): The monetary policy instruments impedes bank lending to the private sector– the core sector for economic growth in the Kingdom of eSwatini

Alternative Hypothesis (H_1): The monetary policy instruments do not impede bank lending to the private sector– the core sector for economic growth in the Kingdom of eSwatini

The analysis of factors that stimulate bank lending and those that impede lending to the private sector is based on Likert scale results and descriptive analysis. These methods of analysis were used to assess the views of the senior officials of the Central Bank of eSwatini regarding the impact of monetary policy instruments and macroeconomic factors on bank credit to the private sector in the Kingdom of eSwatini.

Table 22.19: Themes of the Questionnaire Sections

	Survey Thematic Areas
1	Effect of the bank rate/discount rate on the lending behaviour of commercial banks
2	Effect of the reserve requirement on the lending behaviour of commercial banks
3	Effect of the liquidity ratio on the lending behaviour of commercial banks
4	Effect of the OMO on the lending behaviour of banks
5	Effect of Monetary Policy speculation/expectation on bank lending behaviour
6	Effect of inflation on bank lending behaviour
7	Effect of exchange rate on bank lending behaviour
8	Effect of the real GDP on bank lending behaviour
9	State of compliance to the CAMELS Indicators

As stated under the methodology section, out of the twenty-five interviewed members of staff at the Central Bank of eSwatini, twenty-three respondents were able to provide fully completed questionnaire; hence the analysis is based on the twenty-three usable information from the survey. The other two

questionnaires were not useful because they were not well answered, the twenty-three respondents accounts for 85 percent of the targeted group. The analysis of the survey responses on monetary policy instruments and macroeconomic factors were evaluated based on structured Likert scale, where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

4.3.1 Effect of the discount rate on bank lending

The study required the respondent's opinion on the degree central bank discount rate affects bank lending to the private sector in the Kingdom of eSwatini. The results on the effect of the discount rate are provided in Table 4.20 below.

Table 23.20: Discount rate effect on bank lending to the private sector

	Responses					**Total Responses**
Statement on discount rate	**1**	**2**	**3**	**4**	**5**	**N = 23**
The bank rate/discount rate is used as a tool in monetary policy, influencing the bank lending and interest rates by changing the amount of of funds available for banks to make loans with.			3 13%	20 87%		100%
The bank rate/discount rate causes immediate liquidity problems for banks with low excess reserves, thereby influencing lending and payment systems in the commercial banks concerned.		19 83%	4 17%			100%
The higher the bank rate/discount rate, the less funds banks will have to loan out, leading to lower money creation and perhaps ultimately to higher purchasing power of the money.			6 26%	17 74%		100%
The higher the bank rate/discount rate, the more charges on loan are charged.		21 91%	2 9%			100%
The lower the bank rate/discount rate, the less charges on loan are charged.		21 91%	2 9%			100%

Source: Survey Results Analysed using SPSS (Data from 2003 - 2019)

Notes: A scale of 1 to 5 was used where, 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree.

N=25-2=23 participants

The results also depict that around 86 percent of the participants agreed that the discount rate is significant in influencing the bank lending and the prime rate by changing the amount of funds available for banks to issue loans to the private sector. The rest (14 percent) were neutral for this statement. Around 83 percent disagreed that the discount rate causes immediate liquidity problems for banks with low excess reserves, thereby influencing lending and payment systems in the commercial banks concerned. The rest (17 percent) opted to be neutral concerning the statement provided in the questionnaire. Further, around 74 percent of the respondents were of the view that the higher the discount rate, the less funds banks will have to loan out, leading to lower money creation and perhaps ultimately to higher purchasing power of the money. The remaining 26 percent decided to be neutral on this statement. In addition, out of the twenty-three respondents, around 91 percent of the respondents strongly disagreed that the higher the bank discount rate, the more charges on loans. The other 9 percent disagreed. The responses were similar even for the statement that the lower the discount rate, the lower the charges on loans.

4.3.2 Effect of the reserve requirement on bank lending to the private sector

The analysis and results for the statement related to the reserve requirement effect on bank lending in the Kingdom of eSwatini are presented in Table 4.21 below:

Table 24.21: Reserve requirement effects on bank lending to the private sector

	Responses					**Total Responses**
Statement	**1**	**2**	**3**	**4**	**5**	**N**
The reserve requirement is used as a tool in monetary policy, influencing the banks' lending and interest rates by changing the amount of funds available for banks to make loans with.		3 13%	20 87%			100%
The reserve requirements cause immediate liquidity problems for banks with low excess reserves, thereby influencing lending and payment systems in the commercial banks concerned.	5 22%	18 78%				100%
Holding some funds in excess reserves provides enhanced liquidity and therefore the smoother operation of the payment system.				21 91%	2 9%	100%
The higher the reserve requirement, the less funds banks will have to loan out, leading to				22 95%	1 5%	100%

lower money creation and perhaps ultimately to higher purchasing power of the money.						
The higher the reserve requirement, the more charges on loan are charged.	3 13%	20 87%				100%
The lower the reserve requirement, the less charges on loan.	2 9%	21 91%				100%

Source: Survey Results Analysed using SPSS (Data from 2003 - 2019)

Notes: A scale of 1 to 5 was used where, 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree.

N=25-2=23 participants

The results in Table 4.21 above show that out of the twenty-three participants interviewed, around 87 percent of the participants were neutral to the statement that the reserve requirement is used as a tool in monetary policy, influencing the bank lending and prime rate by changing the amount of funds available for banks to issue loans to the private sector. The remaining 13 percent disagreed with the statement. Around 78 percent of the twenty-three participants disagreed with the statement that the reserve requirements cause immediate liquidity problems for banks with low excess reserves, thereby influencing lending and payment systems in the commercial banks concerned. The remaining 22 percent strongly disagreed with the statement. Out of the twenty-three respondents, 91 percent agreed with the statement that holding some funds in excess reserves provides enhanced liquidity and therefore more smooth operation of payments systems. The remaining nine percent strongly agreed. It was further found that, 95 percent of the respondents agreed that the higher the reserve requirement, the less funds banks will have to loan out, leading to lower money creation and perhaps ultimately to higher purchasing power of the money. The remaining five percent strongly agreed with the statement. Furthermore, the results show that around 86 percent and 14 percent of the respondents disagreed and strongly disagreed, respectively, with the statement that, the higher the reserve requirement, the higher the charges on loans. Furthermore, around 91 percent disagreed with the view that the lower the reserve requirement, the less charges on loan are charged.

4.3.3 Effect of the liquidity requirement on bank lending to the private sector

Perceptions of the respondents were also analysed based on five statements which were structured to establish their views concerning the effect of the liquidity requirement on bank lending to the private sector in the Kingdom of eSwatini. The results are provided in Table 4.22 below:

Table 25.22: Liquidity requirement effect on bank lending to the private sector

	Responses					Total Responses
Statements	**1**	**2**	**3**	**4**	**5**	**N**
The liquidity ratio is used as a tool in monetary policy, influencing the bank lending and interest rates by changing the amount of funds available for banks to make loans with.				23 100%		100%
The liquidity ratio causes immediate liquidity problems for banks with low excess reserves, thereby influencing lending and payment systems in the commercial banks concerned.	4 18%	19 82%				100%
The higher the liquidity ratio is set, the less funds banks will have to loan out, leading to lower money creation and perhaps ultimately to the higher purchasing power of the money.	3 13%	5 22%	15 65%			100%
The higher the liquidity ratio is set, the more charges on loan are charged.		23 100%				100%
The lower the liquidity ratio is set, the less charges on loan.		23 100%				100%

Source: Survey Results Analysed using SPSS (Data from 2003 - 2019)

Notes: A scale of 1 to 5 was used where, 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree.

N=25-2=23 participants

The results above show that out of the twenty-three members of staff interviewed 100 percent of the participants agreed with the statement that the liquidity ratio is used as a tool in monetary policy, influencing the bank lending and interest rates by changing the amount of funds available for banks to make loans. In terms of the statement that the liquidity ratio causes immediate liquidity problems for banks with low excess reserves thereby influencing lending and payment systems in the commercial banks concerned, around 82 percent of the participants disagreed, and 18 percent strongly disagreed. Out of the twenty-three participants, around 65 percent were neutral on the statement that the higher the liquidity ratio is set, the less funds banks will have to loan out, leading to lower money creation and

perhaps ultimately to higher purchasing power of the money. Around 22 percent disagreed with the statement and 13 percent strongly disagreed. Lastly, staff members disagreed with the last two statements on the liquidity ratio as shown in the table above.

4.3.4 Effect of open market operation on bank lending to the private sector

This analysis was based on three statements which were structured to establish the views of the respondents concerning the effect of OMO on bank lending to the private sector in the Kingdom of eSwatini.

Table 26.23: Open Market Operation effect on bank lending to the private sector

	Responses					**Total Responses**
Statement on OMO	**1**	**2**	**3**	**4**	**5**	**N**
Open market operations (OMO) provides the bank with low risk investments with certainty in pay off, and therefore, banks may prefer OMO than issuing credit to the private sector			23 100%			100%
OMO is used to regulate money in supply and therefore changes the levels of money available to the bank for lending				3 13%	20 87%	100%
OMO controls the short term market interest rate of base money in an economy, and thus indirectly control the total money supply				20 87%	3 13%	100%

Source: Survey Results Analysed using SPSS (Data from 2003 - 2019)

Notes: A scale of 1 to 5 was used where, 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree.

N=25-2=23 participants

All respondents were neutral concerning the statement that open market operations (OMO) provide the bank with low risk investments with certainty in pay off and therefore, banks may prefer OMO than issuing credit to the private sector. Around 87 percent of the participants strongly agreed with the view that OMO are used to regulate money in supply and therefore changes the levels of money available to the bank for lending. The other 13 percent strongly agreed with the statement. Around 87 percent of the respondents agreed that OMO controls the short term market interest rate of base money in an economy,

and thus indirectly control the total money supply. The remaining 13 percent strongly agreed with the statement.

This finding is consistent with Kimani (2013), who concluded that banks participation in market operations is high, and this has a ripple effect on bank lending to the private sector. This implies that in the Kingdom of eSwatini, open market operations offer a safe and less risky investments platform for commercial banks. While OMO is a low risk investment opportunity for commercial banks, it reduces available deposits which can be used to extend loans to the private sector. Thus, the government is a dominant borrower in the economy.

4.3.5 Effect of expectations on bank lending to the private sector

This analysis was based on four statements which were structured to establish the views of the respondents concerning the effect of expectation on bank lending to the private sector in the Kingdom of eSwatini.

Table 27.24: Expectation effects on bank lending to the private sector

	Responses					**Total Responses**
Statements	**1**	**2**	**3**	**4**	**5**	**N**
Expectations on policy rate (interest rates) and financial conditions, had a significant influence on bank lending behaviour				18 78%	5 22%	100%
The decision to extend loans to new or existing customers by banks is largely determined by the current and near–term expected state of the macroeconomy	4 17%	19 83%				100%
Investors' spending increases banks' willingness to lend that immediately affects their investment and spending decisions	14%	86%				100%
When banks are not certain about changes in the monetary policies in South Africa, banks in the Kingdom of eSwatini might be forced to withhold credit in fear that it might result in NPLs		100%				100%

Source: Survey Results Analysed using SPSS (Data from 2003 - 2019)

Notes: A scale of 1 to 5 was used where, 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree.
N=25-2=23 participants

In terms of the response of commercial banks to monetary policy changes (interest rates) and financial conditions, the results show that 78 percent of the respondents agreed with the statement and 22 percent strongly agreed. Around 83 percent of the respondents disagreed with the statement that the decision to extend loans to new or existing customers by banks is largely determined by the current and near–term expected state of the economy. The other 17 percent of the respondent strongly disagreed. Around 86 percent disagreed with the statement that investors' spending increases the bank's willingness to lend, which immediately affects their investment and spending decisions. The remaining 14 percent strongly disagreed with the statement. All the respondents were of the view that monetary policy stance in South Africa does not influence the lending behaviour of commercial banks in the Kingdom of eSwatini.

This finding is contrary to the economic theory of bank lending, which provides that the higher the uncertainty, the more the Central Bank would tighten its monetary policy since. In this context, this implies that the peg is significant in cushioning the currency, such that the effect of an external shock is felt after a lag period. This finding is contrary to Kimani (2013) for Kenya, who concluded that monetary policies expectation has a significant and negative influence on bank lending to the private sector.

4.3.6 Effect of inflation on bank lending to the private sector

This study further provides an analysis of the views of the respondents concerning the effect of inflation on bank lending to the private sector in the Kingdom of eSwatini. Table 4.25 provides the results based on five statements included in the questionnaire:

Table 28.25: Inflation effect on bank lending to the private sector

	Responses					Total Responses
Statements	**1**	**2**	**3**	**4**	**5**	**N=23**
Inflation tends to influence bank lending by changing the amount of funds available for banks to issue loans.		23 100%				100%
The inflation causes immediate liquidity problems for banks with low excess reserves, thereby influencing lending.	4 17%	19 83%				100%
The higher the inflation, the less funds banks will have to lend to the private sector.			22 96%	1 4%		100%
The higher the inflation, the higher the charges on loan to private sector.		4 17%		17 74%	2 9%	100%
The lower the inflation, the lesser the charges on loan to the private sector.		4 9%		17 73%	2 9%	100%

Source: Survey Results Analysed using SPSS (Data from 2003 - 2019)

Notes: A scale of 1 to 5 was used where, 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree.

N=25-2=23 participants

Of the twenty-three respondents, 100 percent disagreed with the statement that inflation tends to influence bank lending by changing the amount of funds available for banks to issue loans. Participants were not of the view that inflation is an immediate liquidity problem for banks with low excess reserves and lending. This was evidenced by the 83 percent of the respondents who disagreed, and 17 percent strongly disagreed with the statement. Around 96 percent of the participants opted to be neutral in terms of the statement that the higher the inflation, the less funds banks will have to lend to the private sector. The remaining four percent agreed with the statement. In terms of the statement that the higher the inflation, the higher the charges on loans to the private sector, 74 percent agreed, nine percent agreed, and 17 percent disagreed. Similar results were obtained concerning the last statement of the question of inflation.

The views of the respondents are in sync with Assefa (2014), Imaran and Nishatm (2013), and Sharma and Gounder (2012) provide evidence of a negative effect of inflation rate on the rate of growth in credit. The effect of a rise in inflation rates is that it increases the nominal interest rates on loans, which cause a decline in the demand for loans. In this context, the adverse effect of inflation on private sector

credit indicates that there is need for the Central Bank of eSwatini to track of the development of prices and manage inflation pressures in order to support bank credit to the private sector.

4.3.7 Effect of the lilangeni/dollar exchange rate on bank lending to the private sector

The views of the participants were analysed using six statements which were structured to establish the views of the respondents concerning the effect of the lilangeni/dollar exchange rate on bank lending to the private sector in the Kingdom of eSwatini.

Table 29.26: Lilangeni/dollar exchange rate effects on bank lending to the private sector

	Responses					**Total Responses**
Statements	**1**	**2**	**3**	**4**	**5**	**N**
The exchange rate tends to influence the bank lending by changing the amount of funds available for banks to make loans.			4 17%	17 74%	2 9%	100%
The exchange rate causes immediate liquidity problems for banks with low excess reserves, thereby influencing lending and payment systems in the commercial banks.		20 87%	3 13%			100%
The higher the exchange rate, the less funds banks will have for loans to the private sector.		4 17%	19 83%			100%
The higher the exchange rate, the higher the charges on loan to the private sector.		10 43%	5 22%	8 35%		100%
The lower the exchange rate, the less the charges on loan to the private sector.		7 30%	16 70%			100%

Source: Survey Results Analysed using SPSS (Data from 2003 - 2019)

Notes: A scale of 1 to 5 was used where, 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree.

N=25-2=23 participants

The results above show that the exchange rate influences bank lending by changing the amount of funds available for banks to make loans. The results show that about 74 percent of the twenty-three respondents agreed that the exchange rate significantly influenced bank lending to the private sector. Around nine percent strongly agreed that the exchange rate significantly influences bank lending and 9 percent opted to be neutral. Around 87 percent indicated that the exchange rate causes immediate

liquidity problems for banks with low excess reserves, thereby influencing lending and payment systems in the commercial banks. The rest (13 percent) preferred to be neutral. Concerning the statement that the higher the exchange rate, the higher the charges on loan to private sector, 43 percent disagreed, 35 percent agreed, and 22 percent were neutral. Furthermore, 30 percent strongly disagreed with the statement that the lower the exchange rate, the lower the charges on loans to private sector. Around 70 percent disagreed with statement.

The views of the survey participants are in line with the notion by Manyok (2016) who suggest that foreign exchange there is a negative association between exchange rates fluctuations and bank performance, including bank credit. The views of the participants in this study are contrary to the contribution by Katusiime (2018), who argues that there is a positive relationship between the exchange rate and credit to the private sector. In this context, this finding suggests that the Kingdom of eSwatini a shock from exchange rate may constrain bank lending to the private sector and the fluctuate mirrors the variation of the South African rand where the lilangeni is pegged.

4.3.8 Effect of the real gross domestic product on bank lending to the private sector

This analysis was based on the five statements which were structured to establish the views of the respondents concerning the effect of the real gross domestic product (real GDP) on bank lending to the private sector in the Kingdom of eSwatini. A summary of the views in a statistics format is presented in Table 4.27 below:

Table 30.27: Real Gross Domestic Product effects on bank lending to the private sector

	Responses					**Total Responses**
Statements	**1**	**2**	**3**	**4**	**5**	**N**
The real GDP tends to influence bank lending by changing the amount of funds available for banks to make loans.			6 26%	17 74%		100%
The real GDP causes immediate liquidity problems for banks with low excess reserves, thereby influencing lending and payment systems in the commercial banks.		23 100%				100%
The higher the real GDP, the less funds banks will have for loans to the private sector.			5 22%	18 78%		100%
The higher the real GDP, the higher the charges on loan to private sector.	13 56%	10 44%				100%

The lower the real GDP, the less the charges on loan to the private sector.	12 52%	11 48%				100%

Source: Survey Results Analysed using SPSS (Data from 2003 - 2019)

Notes: A scale of 1 to 5 was used where, 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree.

N=25-2=23 participants

Of the twenty-three respondents, 74 percent were of the view that real GDP tends to influence bank lending by changing the amount of funds available for banks to make loans. Around 26 percent preferred to be neutral concerning this statement. Regarding the statement that real GDP causes immediate liquidity problems for banks with low excess reserves, thereby influencing lending and payment systems in the commercial banks, 100 percent of the respondents disagreed with the statement. Concerning the statement that the higher the real GDP, the less funds banks will have for loans to the private sector, around 56 percent agreed, and 44 percent preferred to be neutral. Around 52 percent of the respondents strongly disagreed with the statement that, the higher the real GDP, the higher the charges on loans to the private sector. The remaining 48 percent disagreed with the statement.

This finding is consistent with the Keynesian theory, which provides that investment influences saving and the demand for credit in a positive direction. This is contrary to Kakarot-Handtke (2014) who argues in favour of the loanable fund theory that firms borrow only if there is a demand for a product or service in the market. In this study, the notion of Keynesian holds; there is a positive relationship between bank lending and real GDP.

4.3.9 Discussion of the results on monetary policy factors that stimulate and impede bank lending to the private sector – the core sector of the economy

(a) Discount rate/bank rate:

The finding on the discount rate indicate that 83 percent of the participants agreed that the discount rate is significant in influencing the bank lending and interest rates by changing the amount of funds available for banks to issue loans to the private sector. About 83 percent disagreed that the discount rate causes immediate liquidity problems for banks with low excess reserves thereby influencing lending and payment systems in the commercial banks concerned.

Possible enlightenment for this might be that changes in the discount rate are significant in influencing the bank lending by changing the amount of funds available for banks to issue loans to the private sector. This finding is consistent with Keeton (2001) and Stiglitz and Weiss's (2001), who provide that through

the discount rate/interest rate, the Central Bank is capable of reducing and increasing the ability of banks to issue new loans. Contrary to this findings Ajayi (2012) suggest that the discount rate does not affect bank lending, while Karim *et al*. (2011) advocate that the bank rate is an important instrument to influence credit to the private sector. As expected, the discount rate is negative, which implies a negative relationship between the discount rate and bank credit to the private sector. This finding also indicates that the effectiveness of the Central Bank of eSwatini in controlling the money supply and inflation in the Kingdom of eSwatini.

(b) Reserve requirement

The analyses of the views of participants indicate that around 78 percent of the twenty-three participants disagreed with the statement that the reserve requirements cause immediate liquidity problems for banks with low excess reserves thereby influencing lending and payment systems in the commercial banks concerned. Around 91 percent of the respondents agreed with the statement that holding some funds in excess reserves provides enhanced liquidity and therefore the smoother operation of payment systems (the remaining 9 percent strongly agreed). Around 95 percent of the respondents agreed that the higher the reserve requirement, the lesser funds banks would have to loan out, leading to lower money creation and perhaps ultimately to higher purchasing power of the money.

The views that the reserve requirement has a negative relationship with bank lending, corroborate the ideas of Malede (2004), who established a negative sign. The fact that the views of the senior officials who were interviewed suggest that there is a negative but not an immediate effect implies that an upward adjustment of the reserve requirement is accompanied by a decline in credit since it withdraws money from circulation. Thus, the lower the reserve requirement, the more the volume of the deposit/available funds that can be used by the commercial banks for lending. This finding supports the view of Kimani (2013), who found that the reserve requirement has a negative effect on bank credit.

(c) Liquidity requirement

The results show that of the twenty-three members of staff interviewed, 100 percent of the participants agreed with the statement that the liquidity ratio is used as a tool in monetary policy, influencing the bank lending and interest rates by changing the amount of funds available for banks to make loans. In terms of the statement that, the liquidity ratio causes immediate liquidity problems for banks with low excess reserves thereby influencing lending and payment systems in the commercial banks concerned, around 82 percent of the participants disagreed, and 18 percent strongly disagreed.

This finding is consistent with the contributions of Alfon *et al*. (2004) and Azman-Saini and Karim (2011) who provides that the higher the liquidity requirement, the lower the proportion of loans offered by the commercial banks. Therefore, while commercial banks are compliant to the liquidity requirement

of the Central Bank of eSwatini, its direct effect on bank lending undermines the credibility of the monetary authorities.

(d) Treasury bills

The finding in terms of the impact of treasury bills suggests that, of the twenty-three respondents, around 86 percent of the participants strongly agreed with the view that OMO/treasury bills are used to regulate money in supply and therefore changes the levels of money available to the bank for lending. The results also show that around 87 percent of the respondents agreed that OMO/treasury bills control the short term market interest rate of base money in an economy, and thus indirectly controls the total money supply.

Taken together, the views of the participants confirm the suggestion that there is a negative relationship between treasury bills rate and bank credit. It could be argued that, in the Kingdom of eSwatini, commercial banks prefer to part money in the treasury bills or government bond or to invest it outside the country. Aress (2012) provides evidence that the 91-day treasury bills have a significant effect on bank lending to the private sector. Thus, a negative relationship is expected between treasury bills and bank lending to the private sector.

(e) Inflation

The results show that, of the twenty-three respondents, 100 percent disagreed with the statement that inflation tends to influence bank lending by changing the amount of funds available for banks to issue loans. Participants were not of the view that inflation is an immediate liquidity problem for banks with low excess reserves and lending.

The views of the participants in terms of the relationship between inflation and bank lending to the private sector advances the conclusions of Assefa (2014), Imaran and Nishatm (2013), and Sharma and Gounder (2012) who showed that the relationship between the two variables is negative. The high inflation rates tend to increase in the nominal interest rates on loans, which cause a decline in the demand for loans.

(f) Lilangeni/dollar exchange rate

The results show that about 74 percent of the twenty-three respondents agreed that the effect of the exchange rate is significant on bank lending to the private sector. Around 87 percent indicated that the exchange rate causes immediate liquidity problems for banks with low excess reserves thereby influencing lending and payment systems in commercial banks.

The views of the senior Central Bank Officials seem to be consistent with the finding of Manyok (2016). Manyok (2016) provides evidence that an appreciation of the local currency tends to exert pressure on the cost of borrowing. In this study, the responses suggest that bank lending is negatively affected by episodes of currency appreciation. Empirical findings by Manyok (2016) provides that there is a negative association between exchange rates fluctuations and bank performance, including bank credit. Contrary to this finding, Katusiime (2018) argues that there is a positive relationship between the exchange rate and credit to the private sector. In this context, this finding suggests that for the Kingdom of eSwatini a shock from exchange rate may constrain bank lending to the private sector.

(g) Real GDP

The finding suggests that, of the twenty-three respondents, 74 percent were of the view that real GDP tends to influence bank lending by changing the amount of funds available for banks to make loans. Around 52 percent of the respondents disagreed with the statement that the higher the real GDP, the higher the charges on loans to the private sector. The remaining 48 percent preferred to be neutral.

The views of the senior officials of the Central Bank of eSwatini confirms the findings by Hofmann (2001) and Calza *et al*. (2001) established a positive relationship between bank credit to the private sector and real GDP. This finding also advances the notion of the Keynesian theory, which asserts that investment influences saving and increase the demand for bank credit to the private sector.

Overall, the current results based on the data collected from the senior officials of the Central Bank of eSwatini suggest that factors that impede bank lending are the discount rate, reserve requirement, liquidity requirement, TBR, inflation and exchange rate. The senior officials of the central bank of eSwatini are of the view that the impact of real GDP in the lending system is positive. These also results suggest that none of the included variables had an immediate effect on bank lending system; instead, the effects were not after a certain period. The views of the participants indicate that bank credit to the private sector in the period 2000 to 2019 was more sensitive to changes in the discount rate and real GDP. The null hypothesis is rejected, and the conclusion is that the three variables of concern discount rate, reserve requirement and liquidity requirement impeded bank lending to the private sector in the period 2000 to 2019.

4.3.10 Overall Decision based on question two hypothesis:

Results from figure 4.20 to figure 4.27 taken together indicate that factors that impede bank lending are the discount rate, reserve requirement, liquidity requirement, TBR, inflation and exchange rate. The only variable that stimulated bank lending to the private sector is the real GDP. The results further, provide that, none of the included variables had an immediate effect on bank lending system; instead,

the effects were not after a certain period. These findings suggest that in general the effect of the included variables is discount rate (negative), reserve requirement (negative), liquidity requirement (negative), TBR (negative), inflation (negative), real GDP (positive) and exchange rate (negative). The null hypothesis is therefore rejected that; monetary policy instruments do not have a significant effect on bank lending – the core sector for economic growth in the Kingdom of eSwatini. Therefore, this study suggests that the Central Bank of eSwatini, should consider the implications of all the included variables when setting its policy mix for the lending system.

4.4 Research Study Question Three:

What are the links and impact of monetary policy instruments on bank credit to the private sector in the Kingdom of eSwatini**?**

This study also assesses the current monetary policy mix in the lending system to determine if there is a link and impact of monetary policy instruments on bank lending to the private sector in the Kingdom of eSwatini the following hypothesis were used as a guide:

Null Hypothesis (H_0): There is no link/impact of monetary policy instruments on bank credit to the private sector in the Kingdom of eSwatini.

Alternative Hypothesis (H_1): There is a link and impact of monetary policy instruments on bank credit to the private sector in the Kingdom of eSwatini.

This subsection analysed the monetary policy instruments and the control variables, using the ARDL approach to determine the link and impact of the three variables of concern (discount rate, reserve requirement and liquidity requirement) on bank credit to the private sector. This research study utilised monthly time series data spanning from January 2000 to December 2019. Similar to other cointegrations such as the Engel and Granger and Johansen cointegration as suggested by Pesaran *et al*. (2001), the time series data was subjected to a number of pre-tests to ensure accuracy of the model. The analyses also involved different diagnostics tests such as normality test, serial correlation, heteroscedasticity and CUSUM test on the residuals.

4.4.1 Pairwise correlation matrix analysis

Before conducting the unit root test, correlations between selected variables was examined. The pairwise correlation matrix was used to determine variables that are strongly correlated to bank credit to the private sector and those that have relatively low correlations with the dependent variable. The decision for correlation in this analysis was based on a theory of the Pearson product-moment correlation coefficient, which was introduced in honour of Karl Pearson in 1900.

Table 31.28: Pairwise correlation matrix

	LBCRP	**DR**	**CRR**	**LQR**	**TBR**	**LINFL**	**LRGDP**	**LEDOLLAR**
LBCRP	1.000000							
DR	-0.752215	1.000000						
CRR	0.548513	-0.503739	1.000000					
LQR	0.617099	-0.449661	0.934548	1.000000				
TBR	-0.553891	0.868949	-0.518879	-0.479190	1.000000			
LINFL	-0.156825	0.541120	0.041240	0.044316	0.513719	1.000000		
LRGDP	0.966173	-0.727610	0.615758	0.689885	-0.542588	-0.102387	1.000000	
LEDOLLAR	0.524016	-0.235224	0.716249	0.767615	-0.298776	0.147334	0.612117	1.000000

Source: Generated by Author in EViews 9 using data from the Central Bank of eSwatini (2000 - 2019)

As shown in Table 4.28, the only correlation coefficients whose magnitude is between 0.9 and 1.0 are bank credit to the private sector and real GDP. The rationale to maintain the variable real GDP in this study is because it is a proxy for economic developments which have been identified as a very influential determinant in this study's literature review. According to the concept of the Pearson product-moment correlation coefficient variables whose magnitude range between 0.7 and 0.9 or more show a high level of correlation. The results of this study depict that the discount rate and real gross domestic product are strongly associated with bank credit to the private sector in the Kingdom of eSwatini. The results of the discount rate and real GDP are negative 0.75 and positive 0.97, respectively. The rest of the variables (reserve requirement, liquidity requirement, TBR, and lilangeni/dollar exchange rate) show moderate association with bank credit to the private sector, except for inflation which indicates a very weak relationship. Contrarily, some of the signs of the coefficients are not as expected; for example, the cash reserve requirement, liquidity requirement, and lilangeni/dollar exchange rate are moderate and positively related to bank credit to the private sector.

The correlation matrix shows a strong correlation between the discount rate and TBR, discount rate and real gross domestic product, cash reserve requirement and liquidity ratio, cash requirement and lilangeni/dollar exchange rate, and liquidity requirement and lilangeni/dollar exchange rate. The rest of

the variables are moderately associated, except for the discount rate and lilangeni/dollar exchange rate, cash reserve requirement and inflation, liquidity requirement and inflation, TBR and lilangeni/dollar exchange rate, inflation and real GDP, and inflation and lilangeni/dollar which shows a weak association with bank credit to the private sector.

4.4.2 Descriptive Statistics of the behaviour of the selected variables

Table 4.29 below provides a statistical description of the minimum, mean, standard deviation, and the maximum values of all the variables considered in this research study. The central tendency point was measured by the mean, and the dispersion of the variables from their averages was assessed based on the standard deviation.

Table 32.29: Descriptive Statistics

	LBCRP	DR	LCRR	LLQR	TBR	LINFL	LRGDP	LEDOLLAR
Mean	15.39535	7.951389	4.002315	16.34259	7.673750	1.876337	10.41071	8.961072
Median	15.55186	7.250000	3.500000	15.00000	6.990000	1.840550	10.44423	7.917700
Maximum	16.46880	13.50000	6.000000	25.00000	13.04000	2.687847	10.68868	16.10850
Minimum	13.99177	5.000000	2.500000	13.00000	5.620000	0.955511	10.11222	5.732200
Std. Dev.	0.755991	2.489036	1.582975	3.912204	1.535728	0.363915	0.175102	2.555134
Skewness	-0.522173	0.600852	0.336879	0.853580	1.148712	0.135652	-0.211331	0.977568
Kurtosis	2.029534	2.182089	1.294336	2.470551	3.603517	2.430970	1.778348	2.828933
Jarque-Bera	18.29217	19.01762	30.26916	28.75243	50.78151	3.576607	15.03968	34.66641
Probability	0.173117	0.216437	0.082165	0.062131	0.09532	0.567244	0.312542	0.07011201
Sum	3325.396	1717.500	864.5000	3530.000	1657.530	405.2888	2248.713	1935.592
Observations	240	240	240	240	240	240	240	240

Source: Generated by Author in EViews 9 using data from the Central Bank of eSwatini (2000 - 2019)

The results show that, total bank lending to the private sector in the Kingdom of eSwatini for the period under review ranged between a minimum of 13.99 percent to a maximum of 16.47 percent and had an average of 15.40 percent. The average discount rate of the Central Bank of eSwatini during the period 2000 to 2019 was recorded with a mean of 7.95 percent with a minimum discount rate of 5 percent and a maximum discount rate of 13.50 percent. The reserve requirement fluctuated from a minimum of 2 percent to a maximum of 6 percent with an average of 4 percent. The liquidity ratio recorded a minimum value of 13 percent and a maximum value of 25 percent, with a mean of 16.34 percent. The TBR had a minimum of 5.62 percent and a maximum 13.04 percent, with a mean of 7.63 percent. Changes in inflation were ranging from a minimum value of 0.955 percent and a maximum value of 2.69 percent, with a mean of 1.88 percent. Oscillations of real gross domestic product ranged from a minimum of 10.11 percent to a maximum of 10.69 percent and had a mean of 10.41 percent. The exchange rate recorded an average of 8.96 percent and with a minimum value of 5.73 percent rising to a maximum of 10.11 percent. The standard deviations for all the variables show that data was broadly spread around their corresponding means. However, the Jarque-Bera statistic indicates that selected variables are not

normally distributed. Harries (1995), Jaccard and Becker (2009), and Hanna and Dempster (2013) justify the use series that are not normally distributed only if the N is large enough or more than $N \geq 50$, which is the case in this study.

Skewness shows the symmetry of the distribution. If the mean is at the centre of the distribution, the skewness value becomes zero, and it is concluded that the distribution is normal. Therefore, a positive value indicates a skew to the right (right tail is longer than the left tail) and a negative value indicates a skew to the left (left tail is longer than the right tail). The descriptive statistics from Table 4.29 revealed that the variables were all asymmetrical with some variables positively skewed and others negatively skewed. Since out of the eight variables, five were negative, a conclusion is made that they are negatively skewed, meaning that their left tails are longer than their right tails.

Furthermore, statistical analysis to establish the physiognomies of the location and variability of the different sources of the secondary data and to ascertain the extent to which the data was peaky. The Kurtosis as a statistical measure was used to explore the extent to which the data was flat and peaked relative to the normality of the distribution. If a variable is normally distributed, the value is 3. If the Kurtosis >3 it depicts a sharp peak and a heavy tail very close to the mean (leptokurtic). Thus, a Kurtosis < 3 shows an opposite flat top (platykurtic). The results in Table 4.29 show that the distribution of the selected variables was platykurtic. This was confirmed by the *p-value* of the Jarque-Bera test statistic for all selected variables which were less than the 0.05 critical values, except for inflation. The statistical implication of the Jarque-Bera test statistic is that the null hypothesis was rejected, and the alternative hypothesis was accepted since the residuals were normally distributed. Based on this results it is safe to conclude that shocks on the discount rate, cash reserve requirement, liquidity requirement, treasury bills, volume of deposits, inflation, real gross domestic product, and exchange rate, resulted to periodic fluctuations and speculation.

4.4.3 Testing for unit root

Estimating a model using non-stationarity variables produce spurious regression results. The concept of stationarity suggests that if a time series suffers unit root, that series is not stationary and needs to be differenced to attain stationarity. Economic time series data such as exchange rate, consumer production index, and interest rates exhibit trending behaviour of nonstationary in the mean, standard deviation, and for statistical inferences. Despite the critiques and claims that the unit root test is unnecessary and complicated since it does not exploit prior knowledge of the time series (Misati and Nyamongo, 2010), it assists in determining the difference in time series data and ensures stationarity. Furthermore, a stationarity test ensured that the statistical properties of the included variables did not vary over time. Additionally, the estimation on nonstationary variables has the tendency to give a misleading parameter

estimate of the relationship between the dependent and independent variables; hence the test was necessary for this study.

As indicated under the methodology section, the concept of unit root test assumes that macroeconomic data is nonstationary. As such a pre-test was performed in order to ensure that a stationary cointegration relationship exists among variables. The time series properties were tested by using a unit root test which also examined the presence of a stochastic trend in the adopted ARDL regression model. This research study is motivated by Bondzie, Fosu and Asare (2014), who utilised the ADF test and Phillips-Perron (PP) models for unit root testing. These two tests were used in this study for confirmatory testing. The results of the unit root test are presented in Table 4.30 below. Since the graphical plots of the time series were trending beginning slightly above the intercept, the tests were conducted using the 'intercept and trend' deterministic trend assumption. The ADF and PP test the null hypothesis that the variables have a unit root. If the null hypothesis of the first two tests (ADF and PP) is rejected, that would suggest that the selected variables do not have a unit root.

Table 33.30: Unit root test [19]

Variable	**ADF**		**Decision**	**PP**		**Decision**
	Level	**1st Diff**	**Status**	**Level**	**1st Diff**	**Status**
LBCRP	-1.1845 [-4.0015] (0.9105)	-20.4722*** [-4.0015] (0.0000)	*I*(1)	-1.2700 [-4.0013] (0.8923)	-21.1706*** [-4.0015] (0.0000)	*I*(1)
DR	-1.3254 (-4.0015) (0.8788)	-6.6419*** (-4.0017) (0.0000)	*I*(1)	-2.1089 [-4.0013] (0.5375)	-13.9646*** [-4.0015] (0.0000)	*I*(1)
CRR	-1.9408 [-4.0013] (0.6296)	-14.6073*** [-4.0015] (0.0000)	*I*(1)	-1.9434 [-4.0013] (0.6282)	-14.6072*** [-4.0015] (0.0000)	*I*(1)
LQR	-1.6886 [-4.0031] (0.7532)	-14.7589*** [-4.0015] (0.0000)	*I*(1)	-1.6863 [-4.0013] (0.7542)	-14.7619*** [-4.0015] (0.0000)	*I*(1)
TBR	-2.6352 [-4.0013] (0.2652)	-15.1610*** [-4.0015] (0.0000)	*I*(1)	-2.7210 [-4.0013] (0.22920]	-15.1598*** [-4.0015] (0.0000)	*I*(1)
LINFL	-2.1865 [-4.0013] (0.4942)	-13.6930*** [-4.0015] (0.0000)	*I*(1)	-2.5072 [-4.0013] [0.3244]	-13.7431*** [-4.0015] (0.0000)	*I*(1)

[19] Appendix 6.

LRGDP	-0.4036 [-4.0015] (0.9869)	-13.6009*** [-4.0015] (0.0000)	*I*(1)	-0.6962 [-4.0013] (0.97150)	-11.7604*** [-4.0015] (0.0000)	*I*(1)
LEDOLLAR	-1.9481 [-4.0013] (0.6257)	-11.8981*** [-4.0015] (0.0000)	*I*(1)	-2.0029 [-4.0013] (0.5961)	-13.5542*** [-4.0015] (0.0000)	*I*(1)

Source: Generated by Author in EViews 9 using data from the Central Bank of eSwatini (2000 - 2019)

Notes ***indicates the level of significance at 1%, ** 5% and *10%. Figures in brackets are *p-value*s

ln - denotes the natural logarithm. I(0) and I(1)is the order of integration zero and one.

As shown in Table 4.30 above, the unit root tests on the variables at their level and first difference values have been conducted, and the degree of integration is confirmed through ADF and PP. The results depict that all selected variables – bank credit (LBCRP), discount rate (DR), cash reserve requirement (CRR), liquidity ratio (LQR), Treasury bill rate (TBR), exchange rate (LEDOLLAR), inflation (INFL) and real GDP (LRGDP) – are stationary at first difference. As mentioned in chapter three, the advantage with the ARDL model is that it is capable of capturing the dynamics of the variables irrespective of whether the variables are integrated of order *I*(0) or *I*(1). Since all variables were not stationary at *I*(2), the ARDL bounds testing approach to cointegration was utilised.

Before applying the cointegration, the lag length to be used was identified.

4.4.4 Lag length selection criteria

The lag length criteria was used to establish the lag length for the ARDL model. It is crucial to select a proper lag length because results that are generated using a wrong specification may lead to spurious estimates as some of the information in the system may be left in the error term. In Table 4.31 the results show the lag order, namely Schwarz information criterion (SIC), Hannan-Quinn (HQ) information criterion, Akaike information criterion (AIC), final prediction error (FPE) and the sequential modified LR test statistic (each test at 5% level). The Schwarz information criterion (SIC) and Akaike information criterion (AIC) were used for this study because they provide better results.

Table 34.31: Lag Length for selected variables

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1280.151	NA	3.31e-05	12.38606	12.51443	12.43797
1	1207.881	4760.752	2.49e-15*	-10.92193*	-9.766628*	-10.45479*
2	1257.278	90.72078*	2.88e-15	-10.78152	-8.599287	-9.899139
3	1299.986	75.14907	3.55e-15	-10.57679	-7.367618	-9.279165
4	1326.832	45.17373	5.14e-15	-10.21954	-5.983434	-8.506676
5	1372.296	73.00464	6.27e-15	-10.04131	-4.778268	-7.913206
6	1410.381	58.22622	8.30e-15	-9.792127	-3.502151	-7.248784
7	1466.942	82.12146	9.30e-15	-9.720593	-2.403683	-6.762010
8	1511.062	60.66532	1.19e-14	-9.529442	-1.185596	-6.155619

Source: Generated by Author in EViews 9 using data from the Central Bank of eSwatini (2000 - 2019)

Notes: * indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level), FPE: Final prediction error, AIC: Akaike information criterion, SC: Schwarz information criterion, HQ: Hannan-Quinn information criterion

The results of the lag order selection in Table 4.31 show that all the criteria – Schwarz information criterion (SIC), Hannan-Quinn (HQ) information criterion, Akaike information criterion (AIC), Final prediction error (FPE) (each test at 5% level) – chose lag length 1, while the sequential modified LR test statistic selected lag length 2. This study tested the two lags proposition and finally applied the one that performed best for the model. The lag length used in this study is lag length 1 which was selected by the SIC and AIC.

Having established the lag length, the researcher proceeded to apply the cointegration test to establish the existence of cointegration.

4.4.5 Cointegration test

The ARDL, which is also known as the bounds testing approach recommended by Pesaran *et al*. (2001), was utilised to establish the existence of cointegration. This approach has several strengths compared to other cointegration techniques. Narayan and Smyth (2005) opine that the ARDL method produces consistent results irrespective of whether the variables are stationary or nonstationary. Furthermore, this model captures most of the dynamics in a model even for a small sample (Narayan and Smyth, 2005). This subsection provides both short run and long-run results. A simple linear transformation was used to establish a dynamic Error Correction Model (ECM) from the ARDL (Pesaran and Chin, 1999).

The actual analysis of the ARDL involves two stages: the first stage entails examine the presence of the long-run relationship between the variables, and this was achieved by calculating the F-statistic to test the significance of the lagged levels of the series in the error correction in the ARDL model. As stated in chapter three, Pesaran *et al*. (2001) provide two sets of asymptotic critical values for examining cointegration for a significance level. Lower values are calculated based on the assumption that the regressors are *I*(0). The second set for the upper value is calculated based on the assumption that the variables are *I*(1). If the calculated F-statistics exceed the greater critical value, the conclusion is to reject the null hypothesis of no cointegration. If the computed F-statistic falls below the lower critical value, the null hypothesis is accepted. Any value of the F-statistic value falls in between the two bounds the result is inconclusive.

The second stage is conducted if and only if the results of the first stage show that there is a long-run cointegration between the variables. The second stage entails estimating the long-run model through selecting the orders of ARDL model utilising the AIC lag length. This is followed by an estimation of the Error Correction Model (ECM) utilising the long-run estimates. The ECM provides for the speed of adjustment of the dependent variable to explanatory variables to be estimated. The speed of adjustment should be between negative one and zero. The speed of adjustment above negative 0.5 shows that the dependent variable adjusts quickly to shocks that affect the independent variable. A value of zero depicts the non-existence of long-run relationships. A positive value suggests that the system moves away from equilibrium in the long-run.

4.4.5.1 ARDL F-Bounds test for cointegration

The bounds test results for cointegration alongside with critical values are reported in Table 4.32 below. The ARDL F-Bounds test utilises an automatic inbuilt asymptotic critical value of F-statistic test to compare asymptotic lower critical bound *I*(0) and critical upper bound *I*(1) values. As shown in Table 4.32, the result of the F-Bounds test for cointegration provides evidence that there is a long-run linear relationship.

Table 35.32: ARDL F- bound test results

Test Statistic	Value	Significance	I(0)	I(1)
F-statistic	4.31	10%	1.92	2.89
K	7	5%	2.17	3.21
		2.5%	2.43	3.51
		1%	2.96	4.26

Source: Generated by Author in EViews 9 using data from the Central Bank of eSwatini (2000 - 2019)

Notes ****indicates the level of significance at 1%, *** 2.5%, **5% and *10%. Critical values are extracted from Narayan (2005); Unrestricted Intercept and No Trend (Case III). Null Hypothesis: No levels relationship
K – number of independent variables included.

The bounds test indicates that cointegration is only present when the natural logarithm of bank credit to the private sector is the dependent variable and explanatory variables are discount rate, cash reserve requirement, liquidity requirement, TBR, Consumer Price Index, real GDP, and lilangeni/dollar exchange rate. The computed F-statistic is 4.31, which is greater than the upper bound critical value at 1% significance level. The null hypothesis that there is no long-run relationship between bank lending to the private sector and the discount rate, cash reserve requirement, liquidity requirement, TBR, Consumer Price Index, real GDP and lilangeni/dollar is rejected. Since there is cointegration, the following subsection provides the long-run impact of the selected determinants on bank credit to the private sector in the Kingdom of eSwatini.

4.4.6 Long-run impact of the determinants on bank credit to the private sector

The specification finally selected where the derived long-run elasticities are presented in Table 4.33 below.

Table 36.33: ARDL Long-run results -Dependent variable: Bank Credit

Variable	Coefficient	Std. Error	t-Statistic	Probability*
C	-4.906844	1.424022	-3.445765	0.0007
LBCRP(-1)	0.826802	0.044172	18.71788	0.0000***
DR	-0.022723	0.009299	-2.443670	0.0154***
DR(-1)	0.015758	0.010080	1.563250	0.1195
CRR	-0.012606	0.007656	-1.646560	0.1012
LQR	0.002307	0.003046	0.757495	0.4496
TBR	0.004068	0.005491	0.740956	0.4596
LINFL	0.003570	0.012559	0.284251	0.7765
LRGDP	3.236969	1.594969	2.029487	0.0437***
LRGDP(-1)	-2.504742	1.560740	-1.604842	0.1101
LEDOLLAR	-0.001904	0.002398	-0.793727	0.4283
R-squared	0.997032	Mean dependent var		15.40171
Adjusted R-squared	0.996886	S.D. dependent var		0.751938
S.E. of regression	0.041958	Akaike info criterion		-3.454464
Sum squared residuals	0.359145	Schwarz criterion		-3.282013
Log likelihood	382.3549	Hannan-Quinn criteria.		-3.384786
F-statistic	6852.460	Durbin-Watson stat		2.404242
Prob(F-statistic)	0.000000			

Source: Generated by Author in EViews 9 using data from the Central Bank of eSwatini (2000 - 2019)

Notes: ***indicates the level of significance at 1%, ** 5% and *10%.
Log - denotes the natural logarithm.
Lag length - one lag selected by the Akaike Information Criterion (AIC).
p-value s and any subsequent tests do not account for model selection.

The lagged variable bank credit to the private sector is statistically significant in the long-run. It shows that current changes in bank credit to the private sector are linked to the previous year effects. The coefficient of the lagged variable of bank credit to the private sector has a correct sign, and it is statistically significant; the *p-value* is zero. This shows that a unit increase in current lending to the private sector is influenced by 0.83 percent of the previous month's changes in bank credit to the private sector. This result is consistent with the study by Olokoyo (2011), who also established that the current banks' lending performance is significantly and positively influenced by the changes of the previous period.

The results further show that there is a negative relationship between the discount rate and bank credit to the private sector in the Kingdom of eSwatini. Table 4.33 shows that a one percent increase in the discount rate led to a 0.02 percent decline in bank lending to the private sector for zero lag in 2000 to

2019. The discount rate entered the long-run with a correct sign, proving that the central bank discount rate effectively influences lending to the private sector. The *p-value* of this coefficient is 0.02 < 0.05; therefore, the null hypothesis is rejected, and the conclusion is that from 2000 to 2019 the discount rate significantly affected bank credit to the private sector in the Kingdom of eSwatini. This result shows that commercial banks in the Kingdom of eSwatini increased their loans to the private sector when the discount rate was low. This is in line with the bank lending theory. Furthermore, the results are in line with the empirical findings of Olokoyo (2011). This finding is contrary to Ajayi (2012) who found that the discount rate does not affect bank lending, while Karim *et al*. (2011) advocate that the discount rate is an important instrument to influence credit to the private sector. The sign for the discount rate is in line with the researcher's expectation for the relationship between the discount rate and bank credit to the private sector.

In line with Malede (2014), Table 4.33 above shows that the coefficient of the cash reserve requirement is negative 0.01, not statistically significant. This suggests that the cash reserve requirement was not amongst the main drivers of bank credit to the private sector in the Kingdom of eSwatini. The results are similar to those of Mwafag (2015), who investigated factors affecting bank credit in Jordan and found that the cash reserve requirement was statistically insignificant even though it had a different sign.

The coefficient of the liquidity requirement is 0.002 (p-value=0.449), TBR 0.004 (p-value=0.4596), inflation 0.004 (*p-value* =0.7765) and lilangeni/dollar exchange rate negative 0.002 (p-value = 0.428) were found to be statistically insignificant. This implies that during the period 2000 to 2019, they were not significantly influencing the variation in bank credit to the private sector. The results of this study are not consistent with the previous finding of Azman-Saini and Karim (2011), who established that the liquidity ratio is one of the major determinants of bank credit to the private sector. In 2007 the liquidity ratio was increased to 25 percent, well above the threshold of 12.48 percent. The results provide that the current liquidity ratio levels may be a contributing factor to slow bank credit to the private sector; therefore, the Central Bank of eSwatini should consider its effect on bank lending when setting its monetary policy.

The results indicate that amongst the three variables of concern (discount rate, reserve requirement and liquidity requirement), only the discount rate was significant in the lending system to influence commercial bank's lending behaviour in the long-run, hence the need to strengthen the lending system for the Central Bank of eSwatini.

The real GDP, which is utilised as a proxy for economic conditions on bank credit to the private sector, entered the long-run with an expected sign. The coefficient is positive and statistically significant at 1

percent. Therefore, a 1 billion increase in GDP led to a 3.24 percent increase in bank credit to the private sector from 2000 to 2019, *ceteris paribus*. This suggests that with a strong economic environment, economic activity translates to demand for goods and services, which stimulates investment and increases per capita income and savings. Combined, all these factors encourage banks to increase lending to the private sector, and the results are consistent with Kashif and Mohammed (2008). These findings also confirm the bank lending theory and is complimenting empirical studies by Olokoyo (2011) and Guo and Stepanyan (2011), who established a positive relationship between GDP and bank credit to the private sector. This finding is also in line with Hofmann (2001), who estimated the determinants of private sector credit and the results exhibit a positive relationship between bank credit and real GDP. Calza *et al*. (2001) modelled the determinants of loans to the private sector, a case of the euro area for the period 1980 to 1999. Calza *et al*. (2001) applied the Johansen approach. The analysis used general real GDP, short term market rates, and bond yield rates as independent variables. Applying a Vector ECM, they establish that credit is positively related to real GDP in the long-run.

The R-squared and adjusted R-squared values are very high at 0.997032 (99.70%) and 0.996886 (99.69%), respectively. This implies a high predictive power of the multivariate model and shows that there was no exclusion of important monetary and macroeconomic predictor variables that significantly influence bank credit to the private sector over the period under review.

The F-statistic is also very high, and its *p-value* is zero, which is smaller than 5% implying that the discount rate, cash reserve requirement, liquidity ratio, TBR, Consumer Price Index, real GDP, and lilangeni/dollar exchange rate were jointly exerting a significant effect on the bank credit to the private sector in the Kingdom of eSwatini.

4.4.7 Estimated short run results of bank credit to the private sector

The short run dynamic coefficients associated with the long-run relationships obtained from the cointegrated equation (ECM) are provided in Table 4.34 below.

Table 37.34: Error Correction results (*Dependent Variable: ΔLBCRP)*

Variable	Coefficient	Std. Error	t-Statistic	Probability*
C	-0.002264	0.005452	-0.415301	0.6784
D(LBCRP(-1))	0.588951	0.222322	2.649090	0.0087***
D(DR)	-0.028275	0.009440	-2.995254	0.0031***
D(DR(-1))	0.032825	0.010237	3.206418	0.0016***
D(CRR)	-0.010972	0.017564	-0.624678	0.5329
D(CRR(-1))	0.018057	0.010820	1.668830	0.0967
D(LQR)	0.007654	0.007330	1.044149	0.2977
D(TBR)	0.009102	0.006993	1.301687	0.1945
D(LINFL)	-0.021452	0.025274	-0.848765	0.3970
D(LINFL(-1))	0.040259	0.024989	1.611089	0.1087
D(LRGDP)	2.504892	1.411532	1.774591	0.0775
D(LEDOLLAR)	-0.002907	0.005281	-0.550496	0.5826
ECM9(-1)	-0.975991	0.233148	-4.186146	0.0000

Source: Generated by Author in EViews 9 using data from the Central Bank of eSwatini (2000 - 2019)

Notes: ***indicates the level of significance at 1%, ** 5% and *10%.

The lagged variable of bank credit to the private sector entered the short run with a correct sign. The results imply that previous changes of bank credit to the private sector resulted in 0.59 percent increase fluctuations in the period 2000 to 2019. The coefficient sign was maintained in the long-run. Similar to the long-run, the coefficient of the discount rate was negative and statistically significant in the short run. Contrary to the long-run equation, the lagged discount rate was statistically significant with a p-value of 0.0016, less than 5 percent significance level but with a wrong sign. Thus, the study concludes that the discount rate has a significant negative effect on bank lending after a change in monetary policy stance for the zero lag. Surprisingly, the other variables were statistically insignificant in the short run. The reserve requirement is statistically not significant but with a correct sign in the short run.

The ineffectiveness of the reserve requirement in the period under review reflects that monetary authorities in the Kingdom of eSwatini were not actively using this instrument to influence bank lending and economic activities. The coefficient of the liquidity requirement is positive but not significant. This implies that excess liquidity contributes positive, but it was not significant to influence bank lending to the private sector in the Kingdom of eSwatini in the short run. The coefficient of liquidity requirement 0.007 (p-value=0.298) is also not significant but positive in the short run, implying a positive contribution to bank lending. Similar to the long-run, the coefficient of the TBR is 0.009 (p-value=0.4195), inflation 0.040 (p-value = 0.397) and lilangeni/dollar exchange rate negative 0.003 (p-

value = 0.5826) were found to be statistically insignificant. This implies that during the period 2000 to 2019, selected variables were not significant in influencing the variation in bank credit to the private sector. This also indicates that the only active monetary policy instrument influencing the lending system was the discount rate in the lending system of the Central Bank of eSwatini. The other difference when comparing the short run results with the long-run results is that the t-statistic has worsened instead of improving. The error correction coefficient is negative (correct sign) and highly significant at 0.98. The coefficient of ECM_{t-1} implies that the economy takes 0.98 percent to return to the equilibrium rate of growth after a shock. It shows that a disequilibrium of the previous period shocks is quickly adjusted into long-run equilibrium in the current period.

Overall, the findings of this research work provide insights that the only effective instrument in the policy mix for the Central Bank Lending system is the discount rate. There is evidence that the other two variables of concern in this study, the reserve requirement and liquidity ratio, were not active tools in the central bank lending system, warrant the need to determine their thresholds in this study.

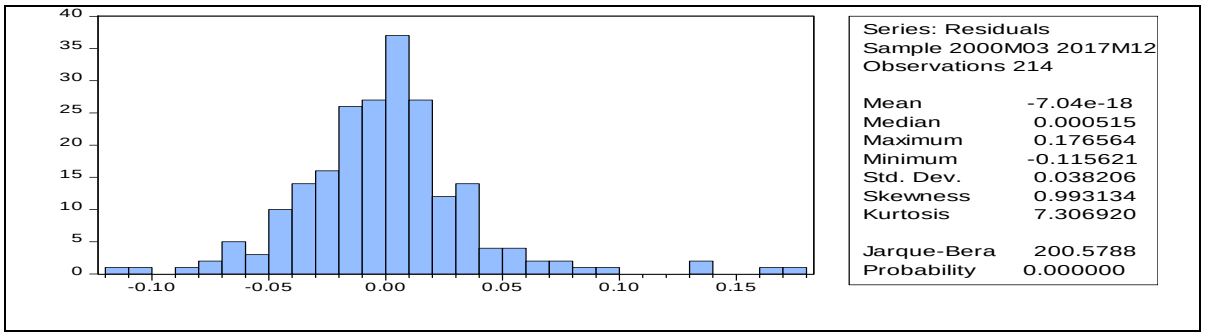
4.4.8 Diagnostic checks

The practice is that before using time series data, there is a need to subject it to diagnostic checks, namely, serial correlation, normality tests, and heteroscedasticity. This was done to minimise the spuriousness of results due to misspecification. Further, Das and Imon (2016) assert that there is a need to assess whether data follow a normal distribution pattern.

4.4.8.1 Test for normality of the residuals

The normality test is based on a null hypothesis that the distribution of the residuals is normal. If the probability of the Jarque-Bera is less than 5 percent, the null hypothesis is rejected, and if it is more 5 percent the decision is to accept it.

Figure 19.2: Residual normality test



Source: Generated by Author in EViews 9 using data from the Central Bank of eSwatini (2000 - 2019)

As shown in figure 4.4 above, we reject the null hypothesis and conclude that the residuals are not normally distributed. Harries (1995) indicates that non-normality in the residuals is accepted if and only if some of the selected series are weakly exogenous, as is the case in the model for this study. Jaccard and Becker (2009) and Hanna and Dempster (2013) further justify proceeding using series that are not normally distributed by stating that the assumption of normality can be relaxed if and only if the sample size N is large enough or more than $N \geq 50$. Jaccard and Becker (2009) argument is that for a sample of more than fifty observations, the distribution of $\boldsymbol{\epsilon}$, the central limit theorem exerts pressure that the estimates converge to a normal distribution as N increases. Therefore, we continued with the other diagnostic tests.

4.4.8.2 Serial correlation test

As stated in chapter three, Breusch-Godfrey was applied to test for correlation in this study. The Breusch-Godfrey Lagrange Multiplier test is guided by the following hypotheses for testing autocorrelation:

H_0: No autocorrelation problem.

H_1: The problem of autocorrelation exists.

$\alpha = 0.05$

Decision Rule:

Reject H_0 if the p-value falls below the significant level of 0.05.

Otherwise, accept H_1 or fail to reject H0 Breusch-Godfrey Serial Correlation LM Test

Table 38.35: Breusch-Godfrey Langrange Multiplier (LM) test

F-statistic	2.789540	Prob. F(1,200)	0.0964
Observed*R-squared	2.943749	Prob. Chi-Square (1)	0.0862

Source: Generated by Author in EViews 9 using data from the Central Bank of eSwatini (2000 - 2019)

Notes: If the calculated p-value is more than 5 percent, we fail to reject the null hypothesis.

The probabilities of the F-statistic (0.096) and the R^2 (0.0862) are greater than the p-value of 0.05, which implies no serial autocorrelation. Therefore, the null hypothesis is accepted that there is no serial correlation.

4.4.8.3 Heteroskedasticity test

The heteroscedasticity test was used to assess if the variance of the error term is constant. The standard estimation techniques become inefficient if the error term varies. Therefore, if the residual suffers heteroscedasticity, it indicates that some omitted variables explain the dependent variable.

The heteroscedasticity tests were based on the following hypotheses.

H_0 : Data is homoskedastic.

H_1: Data is heteroskedastic.

Therefore, if the p-value is below a threshold of 0.05, the conclusion is that the data is significantly heteroscedastic.

Table 39.36: Heteroscedasticity Test: Breusch Pagan Godfrey

F-statistic	0.883827	Prob. F(12,201)	0.5643
Observed*R-squared	10.72592	Prob. Chi-Square(12)	0.5525
Scaled explained SS	29.83916	Prob. Chi-Square(12)	0.0030

Source: Generated by Author in EViews 9 using data from the Central Bank of eSwatini (2000 - 2019)

Notes: If the calculated p-value is more than 5%, we fail to reject the null hypothesis.

Table 4.36 shows the heteroscedasticity test for the Breusch Pagan Godfrey. The Breusch Pagan Godfrey F-statistics p-value is 0.56, and the observed R-squared p-value of 0.55 is more than the 5 percent level of significance, which indicates the absence of heteroscedasticity in the residuals.

4.4.9 Analysis of causal nexus of the determinants and bank credit

The Granger causality test was applied to assess the linear causation between bank lending and all selected determinants. All variables were first differenced to ensure they are stationary, and the results can be relied upon. The results in Table 4.37 below show unidirectional causality among the variable under consideration.

Table 40.37: Granger Causality Test[20]

Null Hypothesis:	Chi-square(Probability)	Comments
D(LRGDP) does not Granger Cause D(LBCRP)	6.7221(0.0114)**	Confirmed
D(LBCRP) does not Granger Cause D(LRGDP)	9.1325(0.0000)***	Confirmed
D(CRR) does not Granger Cause D(DR)	1.35487(0.1822)	No causality
D(DR) does not Granger Cause D(CRR)	5.03596(0.0023)**	Confirmed
D(TBR) does not Granger Cause D(DR)	11.1233(0.000)***	Confirmed
D(DR) does not Granger Cause D(TBR)	14.6472(0.0000)***	Confirmed
D(LINFL) does not Granger Cause D(CRR)	3.9976(0.0512)	No causality
D(CRR) does not Granger Cause D(LINFL)	4.5394(0.0171)	No causality
D(LEDOLLAR) does not Granger Cause D(CRR)	0.1335(0.8788)	No causality
D(CRR) does not Granger Cause D(LEDOLLAR)	10.0122(0.0000)***	Confirmed
D(LINFL) does not Granger Cause D(LQR)	4.7936(0.0511)**	Confirmed
D(LQR) does not Granger Cause D(LINFL)	0.0247(0.6543)	No causality
D(LEDOLLAR) does not Granger Cause D(LQR)	0.1402(0.4423)	No causality
D(LQR) does not Granger Cause D(LEDOLLAR)	7.25231(0.0002)***	Confirmed

Source: Generated by Author in EViews 9 using data from the Central Bank of eSwatini (2000 - 2019)

Notes ***indicates the level of significance at 1%, ** 5% and *10%.

The causality test results in Table 4.37 indicate a bidirectional causal relationship between real GDP and bank credit to the private sector. This indicates a feedback effect between bank credit and real GDP. This also shows that an increase in real GDP positively influences bank deposits, which in turn causes an increase in bank credit to the private sector in the short and long-run. This study also provides a strong bidirectional causal relationship between the discount rate and treasury bill rates. This finding shows that the Central Bank of eSwatini through discount rate positively influenced TBR in a positive direction. The study also reveals that a causality was running from liquidity requirement to lilangeni/Dollar exchange rate. Furthermore, the Granger causality test shows unidirectional causality running from the reserve requirement to the lilangeni/Dollar exchange rate and from inflation to liquidity requirement. Findings of this study advance the notion of Khan and Senhadji (2003), Mubarik (2005), Risso and Carrera (2009) and Hussain and Malik, 2011), that causality can either run from bank lending to the explanatory or the other way around.

[20] Appendix 8.5

In order to determine whether changes in the value of the selected variables due to shocks impede or stimulate bank credit to the private sector, the impulse response function and variance decomposition are in the next subsections.

4.4.10 Variance decomposition analysis

The variance decomposition technique detects the forecast error variance in one variable explained by innovations in itself and the other variables. As stated in the preceding chapter, the variance decomposition can separate the fluctuations in the endogenous variable into element shocks in the VAR. It shows the percentage of error variance in the model defined by the dependent variable and its explanatory variables. Thus, in this research study the variance decomposition was used to measure the variation of bank credit to the private sector due to shocks on all variables used: discount rate, cash reserve requirement, liquidity requirement, TBR, inflation, real GDP, and lilangeni/dollar exchange rate. The variance-covariance matrix was factorised using the Choleski decomposition method suggested by Doan (1992).

(a) Discount rate

The results presented in Table 4.38 below indicate that a shock on the discount rate resulted in a 97.55 percent innovation in itself in the first month and 58.52 on the twelfth month. A shock on the discount rate resulted in a 2.45 percent variation in the private sector credit in the first month and 2.14 in the twelfth month. The innovation of the discount rate is shown in Table 4.38 below.

Table 41.38: Variance Decomposition for Discount Rate on Bank Credit to the private sector

Period	S.E.	LBCRP	DR	CRR	LQR	TBR	LINFL	LRGDP	LEDOLLAR
1	0.304599	2.453976	97.54602	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.431163	1.244042	96.70703	0.009493	0.001065	1.557843	0.244613	0.045151	0.190765
3	0.532507	0.999355	93.33165	0.014282	0.003594	4.137233	0.795573	0.117335	0.600974
4	0.621631	1.184103	88.84493	0.013178	0.008351	6.990916	1.592048	0.193756	1.172718
5	0.702586	1.498419	84.05877	0.010387	0.016665	9.735099	2.566188	0.263396	1.851079
6	0.777044	1.798408	79.38536	0.009461	0.030315	12.20420	3.658271	0.322156	2.591824
7	0.845877	2.027423	75.01129	0.011945	0.051400	14.34677	4.820258	0.369432	3.361488
8	0.909655	2.172816	71.00484	0.017725	0.082200	16.16573	6.015108	0.406167	4.135412
9	0.968819	2.241885	67.37550	0.025736	0.125032	17.68731	7.214978	0.433865	4.895691
10	1.023746	2.249281	64.10520	0.034572	0.182121	18.94570	8.399397	0.45113	5.629510

11	1.074770	2.211397	61.16444	0.042903	0.255495	19.97582	9.553671	0.468377	6.327894
12	1.122199	2.142630	58.52027	0.049705	0.346910	20.81021	10.66759	0.477926	6.984763

Source: Generated by Author using EViews 9 (Central Bank of eSwatini data from 2000-2019)

(b) Reserve requirement

Innovation in the reserve requirement shows a significant variation which is accounted for by its own innovation in the twelfth month, Table 4.39 below. As shown below, the error variance in the twelfth period for the cash reserve requirement is 91.76 percent. Changes resulting from a shock on the cash reserve requirement resulted to 1.09 percent in bank credit to the private sector in month eighth, but this variation remained low up to the twelfth month. The rest of the variables show relatively low innovation in the twelfth month except for the discount rate and inflation. The innovation of the reserve requirement is shown in Table 4.39 below.

Table 42.39: Variance Decomposition for the Reserve Requirement on Bank Credit

Period	S.E.	LBCRP	DR	CRR	LQR	TBR	LINFL	LRGDP	LEDOLLAR
1	0.249750	0.019657	0.098738	99.88160	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.345694	0.033476	0.054229	99.78060	0.009167	0.012013	0.097921	0.003178	0.009413
3	0.415434	0.118205	0.100073	99.39493	0.026629	0.028959	0.289859	0.010037	0.031313
4	0.471678	0.257764	0.223060	98.79894	0.048980	0.044022	0.541396	0.019960	0.065878
5	0.519426	0.437185	0.409411	98.05518	0.073708	0.054252	0.824591	0.032345	0.113327
6	0.561238	0.643264	0.645960	97.21424	0.099074	0.059081	1.117895	0.046639	0.173847
7	0.598616	0.864849	0.920825	96.31566	0.123964	0.059295	1.405505	0.062349	0.247552
8	0.632516	1.092856	1.223717	95.38935	0.147737	0.056350	1.676472	0.079057	0.334459
9	0.663583	1.320136	1.545987	94.45721	0.170093	0.051939	1.923751	0.096412	0.434475
10	0.692277	1.541254	1.880541	93.53467	0.190968	0.047728	2.143319	0.114129	0.547396
11	0.718934	1.752237	2.221675	92.63213	0.210450	0.045219	2.333407	0.131979	0.672907
12	0.743811	1.950317	2.564876	91.75616	0.228722	0.045678	2.493878	0.149784	0.810588

Source: Generated by Author in EViews 9 using data from the Central Bank of eSwatini (2000 - 2019)

(c) Liquidity requirement

The innovation of the liquidity requirement is shown in Table 4.40 below. The results above indicate that the variation in the liquidity requirement to its own innovation in the first month was 37.39 percent but declined gradually until it recorded 34.88 percent in the twelfth month. Thus, its impact on bank credit to the private sector remained relatively low throughout the twelve months.

Table 43.40: Variance Decomposition of the Liquidity requirement on Bank Credit to the private sector

Period	S.E.	LBCRP	DR	CRR	LQR	TBR	LINFL	LRGDP	LEDOLLAR
1	0.601291	0.203821	0.039665	62.36751	37.38901	0.000000	0.000000	0.000000	0.000000
2	0.838042	0.154129	0.040693	62.34899	37.16725	0.257569	0.029502	0.000859	0.001013
3	1.012275	0.114020	0.033662	62.12803	36.92782	0.690742	0.101405	0.003014	0.001308
4	1.153297	0.087849	0.026002	61.80110	36.67716	1.186252	0.214004	0.006584	0.001053
5	1.272609	0.078200	0.024462	61.42748	36.41500	1.680127	0.362064	0.011633	0.001042
6	1.376209	0.086162	0.033898	61.04364	36.13931	2.138323	0.538607	0.018177	0.001886
7	1.467734	0.111643	0.057179	60.67196	35.84840	2.544652	0.736158	0.026192	0.003810
8	1.549607	0.153667	0.095517	60.32590	35.54167	2.893385	0.947540	0.035617	0.006710
9	1.623548	0.210637	0.148903	60.01318	35.21959	3.184738	1.166321	0.046369	0.010267
10	1.690832	0.280577	0.216519	59.73777	34.88355	3.422138	1.387027	0.058346	0.014074
11	1.752439	0.361309	0.297063	59.50110	34.53558	3.610581	1.605195	0.071437	0.017728
12	1.809140	0.450610	0.388994	59.30291	34.17808	3.755660	1.817324	0.085525	0.020896

Source: Generated by Author using EViews 9 (Central Bank of eSwatini data from 2000-2019)

(d) Treasury Bills rate, inflation, Real Gross Domestic Product and Lilangeni/Dollar exchange rate innovations[21]

In terms of the TBR, the results provided evidence of high influence at 84.45 percent in the first month and decreased at a steady rate to settle at 29.48 percent in month twelve. The results for inflation indicate that innovation of this variable accounted for about 98.75 percent of the changes in bank lending in the first month and the effect remained strong even in month twelve at 78.83 percent. Real GDP is 97.09 percent in the first month remain relatively high even in month twelve. This provides evidence that an increase in real GDP translates to an increase in bank deposits and loanable funds. In terms of the lilangeni/Dollar Exchange Rate, innovation in this variable from 2000 to 2019 accounted for 99.81 percent in the first month and remained strong and high at 84.13 percent in month twelve. This finding is contrary to the views of the participants who were interviewed for this study.

4.4.11 Impulse response function

As indicated in chapter three, the impulse response functions trace the responsiveness of the dependent variables in the VAR after a shock of each explanatory variable in the model (Brooks, 2002). This study utilised the generalised impulse response suggested by Kim (2012), Diebold and Yilmaz (2009), and Klößner and Wagner (2014). The strength of the generalised impulse response technique compared to

[21] See Appendix 6

the other techniques is that it can capture innovations without being affected by structural breaks in the VAR. The results of the impulse response are presented in Appendix 7.

The response of bank credit to its own innovation begins at a high level, and the trend declines steadily but does not reach zero; instead, it maintains a constant trend over time. In terms of cross innovation, bank credit to the private sector responds rapidly to changes in the monetary policy stance but declines after two months and reaches zero, which is maintained over time, reflecting the decision taken by the monetary policy authority on the discount rate. The response of bank credit to a shock on the cash reserve requirement is consistent with the long-run results. The cash reserve requirement begins at zero, but in less than two months, it declines to a level below zero and maintains a constant decline over time. The response of bank credit to a shock on the liquidity requirement begins slightly above zero and maintains a slight increase over time which is a true reflection of the highly liquid banks in the Kingdom of eSwatini. This implies that the increase in liquidity ratio over the period 2000 to 2019 was not effective to reduce available funds that can be utilised for loans. Similar results were obtained for bank credit to the private sector and treasury bills. The response of bank credit to a shock on inflation trended above zero for the first eight months and dropped to zero afterwards, which was then maintained for the remaining twelve months. In terms of bank credit and real GDP, the results show a significant positive relationship between the two variables of concern. Bank credit responded immediately but maintained a constant trend over the period 2000 to 2019. The effect of the lilangeni/dollar exchange rate was insignificant over the whole period.

Bank credit to the private sector responds fast to innovation from discount and real GDP. In conclusion, the response of bank credit to real GDP is greater than that of the other variables including the discount rate.

4.4.12 Discussion of the findings on the link and impact of monetary policy instruments on bank lending to the private sector in the Kingdom of eSwatini.

4.4.12.1 Comparing the short and long-run results

(a) Lagged variable of bank credit to the private sector: the finding of this study indicates that the coefficient of the lagged variable of bank credit to the private sector is 0.827 (p-value = 0.000) and 0.589 (p-value = 0.009) statistically significant in the long-run and short run. It provides evidence that current changes in bank credit to the private sector were linked to the previous year effects. The results show that a unit increase in current lending to the private sector is influenced by 0.827 percent of the previous month's changes in bank credit to the private sector in the long-run and 0.589 in the short run. The results are consistent with the study by Olokoyo (2011), who

also established that the current banks' lending performance are significantly and positively influenced by the changes of the previous period.

(b) **Discount rate**: The results also indicate that in the long-run, there is a negative relationship between the discount rate and bank credit to the private sector in the Kingdom of eSwatini. The discount rate coefficient is negative 0.02 percent and this implies that a one percent increase of the discount rate led to a 0.02 percent decline in bank lending to the private sector for zero lag in the period 2000 to 2019. Thus, the discount rate entered the long-run with a correct sign, proving that the central bank discount rate effectively influences lending to the private sector. The *p-value* of this coefficient is $0.02 < 0.05$. Therefore, the null hypothesis is rejected and the researcher concludes that during the above-stated period, the discount rate significantly affected bank credit to the private sector in the Kingdom of eSwatini. Furthermore, the results are in line with the empirical findings of Olokoyo (2011). In the short run, similar to the long-run, the coefficient of the discount rate is negative 0.033 (p-value =0.003), and it is statistically significant. Contrary to the long-run equation, the lagged discount rate is 0.033 (p-value = 0.002), less than a 5 percent significance level but with a wrong sign. The significant coefficient of the discount rate with a positive sign is consistent with the work of Misati and Nyamongo (2010), who also established that the CBR was the main determinant of bank lending rates. Thus, the study concludes that the discount rate has a significant negative effect on bank lending after a change in monetary policy stance for the zero lag.

(c) **Reserve requirement**: In the long-run, the coefficient of the cash reserve requirement is negative 0.013 (p-value = 0.101), not statistically significant. This suggests that the cash reserve requirement was not amongst the main drivers of bank credit to the private sector in the Kingdom of eSwatini. The results are similar to Malede (2014) and Mwafag (2015) study, who investigated factors affecting bank credit in Jordan and found that the cash reserve requirement was not statistically significant. Chimkono, Muturi and Njeru (2016) also found that the cash reserve requirement was statistically not significant with a coefficient of negative 0.14, showing a negative relationship with bank credit for Malawi. Meltzer (2003) also found that the reserve requirements had no significant impact on bank lending and investments. Ajayi and Atanda (2012) study provides evidence that the cash reserves requirement had a negative and statistically significant effect on bank lending in Nigeria. In the short run, the coefficient of the reserves requirement maintained the negative sign, and it was not significant. Contrary to this finding, Olusanya *et al*. (2012) found a positive relationship between the cash reserve requirement and bank lending and performance. The cash reserve requirement is currently at 6 percent in the Kingdom of eSwatini; this implies that a further increase of this monetary instrument may reach

a point where it significantly affects bank lending. Furthermore, the results indicate a need to set this instrument at an optimal level to positively influence bank lending.

(d) **Liquidity ratio:** the liquidity ratio beta coefficient is 0.008 in the short run and 0.002 in the long-run, both positive and statistically not significant. In terms of the positive sign, these results are consistent with findings by Olkoyo (2011), Olumuyiwa *et al*. (2012) for Nigeria, and Malede (2014) in the case of Ethiopia, who provide evidence of a positive but statistically significant relationship between liquidity ratio and credit supply.

(e) **Treasury bills**: Treasury bills coefficient in this study is 0.004 (p-value = 0.459 for the long-run and 0.009 (p-value = 0.019) in the short term, both statistically not significant. This implies that both the short and long-run treasury bills rate did not influence bank lending to the private sector in the Kingdom of eSwatini during the period under review. Literature provides conflicting views in terms of the effect of treasury bills on bank credit. The bank lending theory by Bernanke and Blinder (1995) indicate that the tightening of monetary policy compels banks to reduce credit and securities. The positive sign in this finding contradicts results by Emran and Farazi (2009), who assessed the effect of government borrowing (treasury bills) and bank lending to the private sector in developing found that a $1.00 increase in borrowing by the government resulted in a decline in private sector credit by $1.40. Furthermore, the results are not consistent with Olweny and Chiluwe (2012) findings who provide evidence of an inverse relationship between treasury bills to private sector investment. In addition, Yosse (2016) also found a negative relationship between treasury bills rate and private sector investment. The causation direction was from treasury bills to private investment. The positive sign of the treasury bill coefficient suggests that there has been an increasing government borrowing trend, though not significant, which improved the interest rates on the domestic money markets. The positive sign also indicates the relatively riskless nature of government borrowing which commercial banks prefer than private investors. Overall, due to the accommodative monetary policy stance, interest rates are automatically lowered across the board and then commercial banks prefer to park their money in treasury bills than to invest in long-term government bonds. This tends to have a negative effect on bank credit to the private sector.

(f) **Inflation:** The long-run coefficient of inflation is 0.003570, and the p-value is 0.7765 in the long-run while the short run coefficient is negative 0.02 with a p-value of 0.39. In the short run, the coefficient has a correct sign but is not statistically significant. In terms of the sign, this finding is consistent with findings by Assefa (2014), Imaran and Nishatm (2013), and Sharma and Gounder (2012), who found a negative relationship between the inflation rate and bank lending. Contrary to Assefa (2014), Imaran and Nishatm (2013), and Sharma and Gounder (2012)'s

conclusion that a low inflation rate has a positive impact on bank lending since it lowers the nominal interest rates on loans, which causes the increase in the demand for loans, credit demand remained subdued in the Kingdom of eSwatini. Tomak (2013) for Turkey, Moussa (2016) for Tunisia, and Amino (2014) for Ethiopia established a positive effect of a surge in inflation on bank lending to the private sector. In the long-run, the sign positive contradicts economic theory and ignores the central bank's intervention from time to time. The negative but not significant inflation in the short run show that the monetary policy stance of the Central Bank of eSwatini was effective to contain same within the CMA required bands on 3 to 6 percent, and the levels of inflation were not significant in influence variation on bank lending to the private sector.

(g) **Real GDP:** The long-run coefficient of real GDP is 3.237 and the p-value is 0.043, statistically significant. Therefore, a 1 billion increase in GDP led to a 3.24 percent increase in bank credit to the private sector from 2000 to 2019, *ceteris peribus*. In the short run, the real GDP coefficient is 2.504892 with a p-value of 0.078, not statistically significant. The long-run finding is consistent with Hofmann (2001) and Calza *et al*. (2001) results, who provide evidence that there is a positive relationship between bank credit to the private sector and real GDP. The findings are also in line with the bank lending theory. The results are also consistent with empirical studies of Guo and Stepanyan (2011) and Olokoyo (2011), who established that a surge in real GDP tends to increase income and people's earnings, which is followed by a hike in volumes of domestic deposits and bank liquidity which then induces commercial banks to lend more to the private sector. Further, this finding is consistent with Hofmann (2001), who estimated the determinants of private sector credit, and the results exhibit a positive relationship between bank credit and real GDP. This finding is also in line with Calza *et al*. (2001), who found a positive relationship between bank credit and the real GDP in the long-run. According to Flamini, McDonald & Schumacher (2009), the real GDP affects several factors directly linked to the supply and demand for loans and deposits. For example, in cyclical downswing such as financial crises, banks may be affected by a surge of NPLs and, consequently, deterioration in bank credit. On the other hand, during the cyclical upswing, the demand for credit increases. However, this finding contradicts Amidu's (2014) study, which concludes that the level of economic activity negatively affects the banks lending behaviour in a well-developed financial sector with many banks. In this study, it is logical to advance that strategies targeted to stimulate economic activity will automatically boost credit to the private sector.

(h) **Lilangeni/Dollar exchange rate**: the coefficient of the lilangeni/ Dollar exchange rate in the long-run is negative 0.002, and the p-value is 0.428, not significant. In the short run, the lilangeni/ Dollar exchange rate is negative 0.003 with a p-value of 0.586, not statistically significant. Since the coefficients in the long and short run are not significant, this implies a weak but negative

relationship between exchange rate and bank lending to the private sector. The results of this study imply that during the period 2000 to 2019, measures taken by the Central Bank of eSwatini to control inflation were effective to control negative pass-through effects of exchange rate on bank lending. The exchange rate coefficient is not significant but negative; it suggests the need to keep a closer look at exchange rate developments to avoid its movement to the significant zone. Kashyap *et al*. (2006) provide that a negative exchange rate may influence banks to withhold credit in fear of increasing the level of NPLs. Furthermore, the Central Bank of eSwatini to manage the exchange rate to curtail uncertainty that may result in the herding behaviour of commercial banks. As suggested by Chang *et al*. (2000), if banks are uncertainty about the future, they mimic the behaviour of the leading bank. Stever and Wilcox (2007) state that commercial banks are also likely to reduce credit due to herding. The effects of herding include the weakening of lending standards, misappropriation of lending resources, asset price bubbles, and high systemic risks which affect the business cycle (Barron and Valev, 2000; Stever and Wilcox. 2000).

4.4.12.2 Model Fit, causality and Diagnostic results

The R-squared and adjusted R-squared values are very high at 0.997032 (99.70%) and 0.996886 (99.69%), respectively. The indicates a high predictive power of the multivariate model and shows that there was no exclusion of important monetary and macroeconomic predictor variables that have significantly influenced bank credit to the private sector over the period under review. The error correction coefficient is negative (correct sign) and highly significant at 0.98. The coefficient of ECM_{t-1} indicates that the economy takes 0.98 percent to return to the equilibrium rate of growth after a shock. It also shows that a disequilibrium of the previous period shocks is quickly adjusted into long-run equilibrium in the current period.

While some of the series used showed signs of not being normally distributed, this study adopted the justifications by Harries (1995), Jaccard and Becker (2009) and Hanna and Dempster (2013). Harries (1995) provides that non-normality in the residuals is accepted if and only if some of the selected series are weakly exogenous, as is the case in the model for this study. Jaccard and Becker (2009) and Hanna and Dempster (2013) further justify proceeding using series that are not normally distributed by stating that the assumption of normality can be relaxed if and only if the sample size *N* is large enough or more than $N \geq 50$. Jaccard and Becker (2009) argument is that for a sample more than fifty observations, the distribution of ϵ, the central limit theorem exerts pressure that the estimates converge to a normal distribution as *N* increases. This study utilised monthly data from 2000 to 2019. Therefore, the number of observations is 240, way above the threshold of $N \geq 50$, which implies that the estimates converged to a normal distribution as *N* increases above fifty observations.

The results of the serial autocorrelation indicate that there is no serial autocorrelation, the probabilities of F-statistic (0.096) and the R^2 (0.0862), respectively, are greater than the p-value of 0.05. In addition, the Breusch Pagan Godfrey F-statistics p-value is 0.56, and the observed R-squared p-value of 0.55 is more than the 5 percent level of significance, which indicates the absence of heteroscedasticity in the residuals.

The causation results indicate a bidirectional causal relationship between real GDP and bank credit to the private sector, a strong bidirectional causal relationship between the discount rate and treasury bill rates, causality running from liquidity requirement to lilangeni/Dollar exchange rate. Furthermore, the Granger causality test shows unidirectional causality running from the reserve requirement to the lilangeni/Dollar exchange rate and from inflation to liquidity requirement. Thus, findings of this study advance the notion of Khan and Senhadji (2003), Mubarik (2005), Risso and Carrera (2009) and Hussain and Malik, 2011), that causality can either run from bank lending to the explanatory or the other way around.

The results of the ARDL model were further confirmed by the variance decomposition and impulse response function. The variance decomposition confirmed innovation in selected variables were influencing the variation in bank credit to the private sector at different levels. Findings are in line with Kim (2012), Diebold and Yilmaz (2009), and Klößner and Wagner (2014). The impulse response function also provides evidence that the significant instrument in the lending system is the discount rate. The study also confirms the findings of previous studies on the positive and significant relationship between bank lending and real GDP. These findings are consistent with the bank lending theory and empirical studies of Guo and Stepanyan (2011), Olokoyo (2011) and Gumata and Ndou (2017).

Findings of this study present the need to establish an optimal policy mix 9thresholds) for the Central Bank Lending system, which is addressed in subsection 4.6 of this study.

4.4.13 Overall Decision based on question three hypothesis:

The results contribute to the existing literature by confirming that changes in bank lending are largely driven by the discount rate (positive and negative). The other two variables of concern (reserve requirement and liquidity requirement) were not significant. Therefore, this study concludes that monetary policy instruments link and impact on bank lending to the private sector in the Kingdom of eSwatini. Therefore, the null hypothesis is rejected that there is no link and impact of monetary policy instruments on bank lending to the private sector in the Kingdom of eSwatini.

4.5 Research Study Question Four:

What are the optimal limits/threshold(s) for monetary policy regulation to influence bank lending in the Kingdom of eSwatini?

This subsection aims to contribute to available knowledge by determining the optimal policy mix or thresholds for the Central Bank Lending system for the Kingdom of eSwatini. The optimal thresholds for the Central Bank Lending system will allow the Bank to stimulate commercial bank lending to the private sector in the Kingdom of eSwatini, promoting investment and stimulating economic growth. This is envisaged to bring a change and guide the monetary authorities in setting its credit control instruments. Based on the questions, the hypotheses were formulated as follows:

Null Hypothesis (H_0): There are no optimal monetary policy instruments to stimulate bank lending directed to the private sector in the Kingdom of eSwatini.

Alternative Hypothesis (H_1): There are optimal monetary policy instruments to stimulate bank lending directed to the private sector in the Kingdom of eSwatini.

The study utilised a quadratic function to determine the threshold of the variables of concern. The researcher followed research studies of Younus and Akhteruzzaman (2012), Tule *et.al.* (2015) and Nazir, Saeed and Muhammad (2017).

As stated in chapter three, the quadratic approach was adopted to determine the optimal thresholds for the three monetary policy instruments (discount rate, cash reserve requirement, liquidity ratio). The nonlinear model is denoted by a quadratic function:

$$y_t = \alpha_0 + \alpha_1 d_t, + \alpha_2 d_t^2 + \beta' Z_t + \varepsilon_t \quad \text{.....[provided in equation 3.4, Chapter 3]}$$

In this equation $\boldsymbol{d_t}$ and $\boldsymbol{d^2}$ denote the linear and nonlinear terms of the threshold variables. Equation 6 shows the relationship between $\boldsymbol{y_t}$ and $\boldsymbol{d_t}$ is a nonlinear of an inverted U-shape. A positive coefficient of $\boldsymbol{d_t}$ is expected, and the squared variable is expected to be negative. Thus, differencing equation six and equating it to zero it produces:

$\frac{\partial y_t}{\partial d_t} = \alpha_1 + 2\alpha_2 d_t = 0$……[provided in equation 3.5, Chapter 3]

The optimal threshold level d^* is obtained by solving equation 3.4 as follows:

$d^* = \frac{\alpha_1}{2\alpha_2}$……..……[provided in equation 3.6, Chapter 3]

Below, this study presents and discusses the analysis of quadratic equations for the three monetary policy instruments. Similar to Nazir *et al.* (2017), equations were simulated to establish the actual relationship between the dependent variable and each instrument. In addition, the threshold level of each monetary policy instrument of the Kingdom of eSwatini was established. For 2000 and 2019, the average of the three instruments was: 7.95 percent for the discount rate, 5.18 percent for the reserve requirement and 16.34 for liquidity requirement.

4.5.1 Threshold of the discount rate on bank credit

Results of the optimal discount rate threshold on bank credit to the private sector are shown below in Table 4.41.

Table 44.41: Threshold of the Discount rate on Bank Credit to the private sector

Variable	Coefficient	Standard Error	t-Statistic	Probability.
DR	-4.469271	0.107632	-4.152355	0.0000
DR^2	0.426733	0.006136	2.075039	0.0392
C	18.06546	0.438299	41.21718	0.0000
R-squared	0.559780	Mean dependent var		15.39535
Adjusted R-squared	0.555647	S.D. dependent var		0.755991
S.E. of regression	0.503943	Akaike info criterion		1.481083
Sum squared residual	54.09308	Schwarz criterion		1.527962
Log likelihood	-156.9569	Hannan-Quinn criterion.		1.500022
F-statistic	135.4247	Durbin-Watson stat		0.021045
Prob(F-statistic)	0.000000			

Source: Generated by Author using EViews 9 (Central Bank of eSwatini data from 2000-2019)

$\partial(\ln BCR)/\partial DR_t = c + \beta_1 DR + 2\beta_2 DR^{\wedge 2} = 0$

$= 4.469271/(2x0.412673)$

Discount rate Threshold = 5.42 percent

The quadratic equation results for the discount rate and bank credit to the private sector show that the relationship between the two variables is nonlinear because the discount rate is significant at 5 percent level. When the discount rate is hovering below 5.42 percent, it positively correlates to bank lending to the private sector. As the discount rate increases, credit demand will be increasing but at a declining rate when the discount rate is high or exceeds 5.42 percent, that will reduce the desire for bank lending to the private sector. Thus, the discount rate will become negatively correlated to bank lending to the private sector. Since the Kingdom of eSwatini part of its inflation is imported from South Africa, its major trading partners, the discount rate hovers above the threshold of this study to control inflation. Therefore, the current levels of the bank rate allowed the Central Bank of eSwatini to attain both the SADC and CMA targets of 3–7 percent and 3–6 percent, respectively. Therefore, to support the bank lending, the Central Bank of eSwatini should allow a bit of inflation by fixing its discount below 5.42 percent. This finding also suggests that there is a need for the Central Bank of eSwatini to complement the discount rate by loosening the reserve requirement and liquidity requirement to boost bank lending, which in turn encourage investment and contribute to economic growth. As stated above in the period between 2000 and 2019, the discount rate averaged 7.95 percent, which is higher than the threshold of the discount rate in this study but similar to Gumata and Ndou (2017), who found that the threshold for credit in South Africa is 7.17 percent and concluded that there is need to complement the policy rate with prudential tools. In this case, the low threshold level compared to South Africa reflects the additional pressure that emanates from imported inflation pressures. This is contrary to findings by Olaniyi (2019), who found that the threshold for the interest rate on investment (a proxy for private sector credit was 22.6 percent) for Nigeria. Olaniyi (2019) concluded that Nigeria should target interest rate levels that do not constrain growth and investment.

4.5.2 The threshold of the cash reserve requirement on bank credit

This study further examines the cash reserve requirement threshold, and the results provide evidence (Table 4.42) that this variable affects bank lending in the expected direction; for example, the higher the reserve requirement, the lower the credit to the private sector.

Table 45.42: Threshold of the Cash Reserve Requirement on Bank Credit to the private sector

Variable	Coefficient	Standard Error	t-Statistic	Probability
CRR	-4.405445	0.144533	-30.48046	0.0000
CRR^2	0.546188	0.016879	32.35954	0.0000
C	22.91589	0.268679	85.29100	0.0000
R-squared	0.879989	Mean dependent var		15.39535

Adjusted R-squared	0.878862	S.D. dependent var	0.755991
S.E. of regression	0.263122	Akaike info criterion	0.181392
Sum squared residuals	14.74665	Schwarz criterion	0.228271
Log likelihood	-16.59035	Hannan-Quinn criterion	0.200331
F-statistic	780.9187	Durbin-Watson stat	0.132965
Prob(F-statistic)	0.000000		

Source: Generated by Author using EViews 9 (Central Bank of eSwatini data from 2000-2019)

$\partial(\ln BCR)/\partial CRR_t = c + \beta_1 CRR + 2\beta_2 CRR^2 = 0$

$= 4.405445/(2x0.546188)$

Cash Reserve Requirement Threshold = 4.03 percent

The results above show that the optimal point for the cash requirement was 4.03 percent in the period between 2000 and 2019. This suggests that any rise of the cash reserve requirement below 4.03 percent positively affects bank credit to the private sector. Conversely, it also suggests that an increase beyond 4.03 percent negatively affects bank credit to the private sector in the Kingdom of eSwatini. Since the current level of the reserve requirement is 6 percent, with an average of 5.18 percent for the period 2000 to 2019, it implies that it was hovering above the threshold of 4.03 percent. Therefore, the reserve requirement contributes to the subdued performance of credit to the private sector in the Kingdom of eSwatini.

4.5.3 The threshold of the Liquidity requirement on bank credit

The results of the optimal liquidity requirement threshold on bank credit to the private sector are shown below in Table 4.43.

Table 46.43: Threshold of the Liquidity requirement on Bank Credit to the private sector

Variable	Coefficient	Standard Error	t-Statistic	Probability
LQR	-0.269064	0.108869	-2.471439	0.0142
LQR^^2	0.010781	0.003010	3.582256	0.0004
C	16.74882	0.937384	17.86762	0.0000
R-squared	0.415984	Mean dependent var		15.39535
Adjusted R-squared	0.410500	S.D. dependent var		0.755991

S.E. of regression	0.580442	Akaike info criterion	1.763737
Sum squared residuals	71.76240	Schwarz criterion	1.810616
Log likelihood	-187.4836	Hannan-Quinn criterion	1.782676
F-statistic	75.85803	Durbin-Watson stat	0.025921
Prob(F-statistic)	0.000000		

Source: Generated by Author using EViews 9 (Central Bank of eSwatini data from 2000-2019)

$\partial(\ln BCR)/\partial LQR_t = c + \beta_1 LQR + 2\beta_2 LQR^2 = 0$

$= 0.269064/(2x0.010781)$

Liquidity requirement Threshold = 12.4787 = 12.48 percent

The results of the liquidity requirement indicate that any increase below 12.48 percent has a positive effect on bank lending to the private sector. This also indicates that above 12.48 percent of the liquidity requirement negatively affected bank credit to the private sector. This is consistent with previous findings, such as Azman-Saini and Abdul Karim (2011), who established that the liquidity ratio is one of the major determinants of bank credit to the private sector. The average liquidity requirement was 16.34. The results provide a clear picture that the liquidity ratio has a negative effect on bank credit; therefore, the Central Bank of eSwatini should consider the effect of the liquidity requirement on bank lending to the private sector when setting monetary policy in the Kingdom of eSwatini.

4.5.4 The threshold of the discount rate on inflation

Since the mandate of the Central Bank of eSwatini is to control inflation, this research study further examined the optimal threshold for the discount rate on inflation (see Table 4.44) in the Kingdom of eSwatini in line with the findings of the cash reserve requirement and liquidity requirement.

Table 47.44: Threshold of the Discount rate on inflation

Variable	Coefficient	Standard Error	t-Statistic	Probability
DR	-0.225164	0.062213	-3.619258	0.0004
DR^2	0.017493	0.003547	4.931702	0.0000
C	2.452878	0.253343	9.682062	0.0000
R-squared	0.365286	Mean dependent var		1.876337
Adjusted R-squared	0.359326	S.D. dependent var		0.363915

S.E. of regression	0.291285	Akaike info criterion	0.384764
Sum squared residuals	18.07243	Schwarz criterion	0.431643
Log likelihood	-38.55452	Hannan-Quinn criterion	0.403703
F-statistic	61.29210	Durbin-Watson stat	0.155805
Prob(F-statistic)	0.000000		

Source: Generated by Author using EViews 9 (Central Bank of eSwatini data from 2000-2019)

$\partial(\ln LINFL)/\partial DR = c + \beta_1 DR + 2\beta_2 DR^2 = 0$

$= 0.225164/(2x0.017493)$

Discount rate threshold for inflation = 6.44 percent

The results show that a rise in discount rate above 6.44 percent will reduce inflation in the Kingdom of eSwatini. Thus, with a discount rate above 6.44 percent, the Central Bank of eSwatini will contain inflation within reasonable levels while stimulating bank credit to the private sector. The researcher concludes that setting the discount rate at 5.42 percent or below will yield positive growth on bank credit to the private sector if the cash reserve requirement is below 4.03 and the liquidity requirement is below 12.48. On the other hand, any point above 5.42 percent has a negative effect on the Commercial Bank Lending System and on the overall economic growth in the Kingdom of eSwatini.

4.5.5 Discussion on the optimal policy mix for the Central Bank Lending system to influence bank lending in the Kingdom of eSwatini

This subsection simulated monetary policy instruments used in the Kingdom of eSwatini to determine the threshold for the bank rate, reserve requirement, and liquidity requirement. It also explored the optimal threshold for the discount rate on inflation in the Kingdom of eSwatini in line with the cash reserve requirement and liquidity requirement findings. The reason for exploring the optimal threshold for the discount rate on inflation was premised on its primary use to curb inflation. The study utilised a quadratic function to determine the threshold of the variables of concern. The researcher followed the research studies of Younus and Akhteruzzaman (2012), Tule *et al*. (2015), and Nazir *et al.* (2017). The results are summarised below:

(a) Discount rate – the results for the discount rate and bank credit to the private sector show that the relationship between the two variables is nonlinear because discount rate (DR2) is significant at the 5 percent level. Below 5.42 percent, the discount rate is positively correlated to bank

lending to the private sector. Any increase above 5.42 percent tends to reduce the private sector's appetite for credit for investment, which has a ripple effect on economic growth in the Kingdom of eSwatini. The results are close to Gumata and Ndou (2017) who found that the threshold for credit in South Africa is 7.17 percent and concluded that there is a need to complement the policy rate with prudential tools. In this case, the low level of the threshold compared to South Africa is reflective of the added inflation pressure, which emanates from imported inflation. Sarma, 2008 and Demirgüç-Kunt and Klapper (2013) stated that interest rate impact on financial inclusion includes a broad spectrum of financial services such as bank loans, savings, and deposits. In the context of the Kingdom of eSwatini this implies that if the thresholds of the three monetary instruments are fixed according to the findings of this study, any point below 5.42 per will influence bank credit to the private sector positive.

(b) **Cash reserve requirement** – the results show that the turning point for cash requirement was 4.03 percent in the period between 2000 and 2019. This indicates that any rise of the cash reserve requirement below 4.03 percent positively affects bank credit to the private sector. On the other hand, it also suggests that a rise above 4.03 percent negatively affects bank credit to the private sector in the Kingdom of eSwatini. Since the current level of the reserve requirement is 6 percent, above the threshold of 4.03 percent, it has a negative effect on lending to the private sector in the Kingdom of eSwatini.

This finding aligns with the International Monetary Fund's (2018) study for Lesotho, a member state of the CMA, where the Kingdom of eSwatini also belongs. The International Monetary Fund (2018) concluded that commercial banks in Lesotho should comply to a 3 percent cash reserve requirement and consider adjusting its minimum liquid asset requirement to an optimal threshold which will stimulate credit and economic growth. Primus (2016) found that a higher reserve requirement had a negative impact on credit in Trinidad and Tobago. There are several implications of the higher reserve requirement in the Kingdom of eSwatini. The higher than the threshold reserve requirement may indicate a bias towards tightening, which can result in higher market interest rates by changing market expectations. Since changes in the reserve requirement are interrelated to other policy changes, expectations about a reserve requirement hike may translate into market interest rates volatility. The high reserve requirement can also have a negative impact on excess reserves and banks' capacity to extend loans to the private sector. Another implication of the higher than the threshold reserve requirement in the Kingdom of eSwatini is that it imposes a tax levy on commercial banks, increasing the cost of credit, which automatically tightens the monetary condition (Borio and Disyatat, 2009). In addition, a high reserve requirement may induce commercial banks to expand their loan-deposit rate spread, passing some of the reserve requirement cost to their customers (Montoro and Moreno, 2011). In

line with the International Monetary Fund (2018)'s recommendation for Lesotho, the researcher recommends that the Central Bank of the Kingdom of eSwatini consider any point below 4.03 percent for the reserve requirement.

(c) **Liquidity requirement** – the results of the liquidity ratio indicate that any increase below 12.48 percent has a positive effect on bank lending to the private sector. This also shows that above 12.48 percent, the liquidity requirement tends to affect bank credit to the private sector negatively. The most interesting part about the results of the liquidity requirement in this study is that the threshold is 12.48 percent, way below the current Central Bank of eSwatini liquidity requirement (25 percent). In the context of the Kingdom of eSwatini, this confirms the significant interplay between liquidity regulation and credit creation, which triggers undesired externalities that are difficult to control by the Central Bank using its monetary policy instruments. The current policy stance for the Central Bank of eSwatini is designed to ensure that the banking industry holds a higher liquidity buffer. However, the effect of a high liquidity requirement is that it tends to influence banks negatively in the area of lending to the private sector. In the long-run and during times of financial stress, the higher liquidity requirement may significantly damage the banking industry and cause macroeconomic instability. This study concludes that bank regulation strategies should strive to strike a balance between bank liquidity and bank credit if the desired outcome is to foster economic growth. Since the banking industry is highly liquid in the Kingdom of eSwatini, measures to control the risk associated with high liquidity should consider its effect on bank lending.

This finding is consistent with Kamau (2009), who established that in Kenya, the liquidity ratio was very high, 37 percent in 2008 and 39.8 percent in 2009, way above the statutory minimum liquidity requirement of 20 percent, while the levels of credit to the private sector was low and economic growth remain very low. Contrary, Kamau (2009) and Shen *et al*. (2010) provide that the relationship between liquidity risk and NIM is positive; the more liquidity a bank has, the higher the interest revenue. In this study, the results imply that the monetary authorities of the Kingdom of eSwatini should closely monitor the spillover effects of high liquidity. The trade-offs between return and liquidity risk may trigger a shift in investment from short term securities to long-term securities, which increases liquidity risk. Therefore, the researcher of this study ascribes to the notion by Levine (1998) and Uzhegova (2010), that despite that high liquid assets serves as a quick strategy to create cash on short notice, they have the potential to reduce the ability of management to properly identify investment options, thus limiting the capacity to raise finance and reducing bank lending to the private sector.

Findings of this study support those of Maynard and Moore (2006), who provides that in Barbados, episodes of high levels of excess reserves/liquidity had a negative relationship to the business cycle;

commercial banks opted to hold excess reserves during episode economic slump period. The same sentiments are shared by Ganley (2004), who also established that a hike in liquidity can potentially increase domestic consumption activity, which can fuel inflation and resultantly reduce bank credit when the central bank applies price control measures. Given the above arguments, it therefore logical to conclude that, while it remains necessary to safeguard against financial risk associated with external shock, it is crucial for the Central Bank of eSwatini to take into consideration the negative impact on other key indicators such as bank credit to the private sector- the core driver of economic growth. Since the increase in liquidity requirement has not yielded the desired outcome in the Kingdom of eSwatini, the researcher concludes that the problem emanates from the mismatch of the policy instruments. Given the above, it is worth exploring liquidity levels below the 12.48 percent threshold and adjust other the discount rate and reserve requirements to the proposed levels. In the context of the Kingdom of eSwatini, banks' liquidity preference indicates that commercial banks are constrained to increase their loans share in their asset portfolio, which tend to low loan-deposit ratio and increase the interest rate spread. By adopting the proposed thresholds for the three variables of concern, the researcher envisages that the Central Bank will be able to balance between controlling inflation, encouraging bank credit to the private sector, control bank liquidity and stimulate economic growth.

The policy implications of these findings of this subsection are that there is a need for the Central Bank of eSwatini to continue strengthening its monetary policy instrument by attaining a stable level of the discount rate, reserve requirement, and liquidity requirement, which is optimal to contain inflation, bank credit to the private sector, ensure sustainable financial sector stability and stimulate economic growth in the Kingdom of eSwatini. Since the mandate of the Central Bank of eSwatini is to control inflation, ensure financial sector stability, and stimulate economic growth, the lending system policy mix should be optimal.

Overall, the results are consistent with previous studies such as Gumata and Ndou (2017), Hofmann (2001), Calza *et al*. (2001), Guo and Stepanyan (2011) and Olokoyo (2011). Therefore, there is a need for the Central Bank of eSwatini to apply measures that will enable it to fulfil its mandate of price stability, financial stability, and stimulating economic growth. Findings of this study indicate that the current levels of the three monetary policy instruments are not optimal to stimulating bank credit to the private sector instead, they are efficient to maintain inflation within the SADC range of 3–7 percent and CMA range of 3–6 percent. The quadratic analysis results show that the optimal monetary policy instruments thresholds for the Kingdom of eSwatini are 5.42 percent for the discount rate, 4.03 percent for the reserve requirement, and 12.48 percent for the liquidity requirement. The study further concludes that the levels of discount rate in the period 2000 and 2019 allowed the Central Bank of eSwatini to maintain inflation within the SADC ranges of 3–7 percent and CMA range of 3–6 percent. Since moving

towards 6.44 percent or above may trigger credit pressures, the Central Bank should remain vigilant to deal with any deviations associated with bank credit to balance its policy mix.

4.5.6 Overall Decision based on question four hypothesis

The study utilised a quadratic function to determine the threshold of the variables of concern. The researcher followed the research studies of Younus and Akhteruzzaman (2012), Tule *et al*. (2015), and Nazir *et al.* (2017). The focus was on three variables of concern - monetary policy instruments (discount rate, reserve requirement and liquidity requirement).

Table 48.45: Current status versus optimal Thresholds

Monetary Policy Instruments	**Current Status Average 2000-2019**	**Decision**	**Optimal Policy Mix (Thresholds)**
Discount rate	7.95 percent	Not optimal	5.42 percent
Reserve requirement	5.18 percent	Not optimal	4.03 percent
Liquidity requirement	16.34 percent	Not optimal	12.48 percent

Source: Author generated (2019)

As noted above, during the period between 2000 and 2019, the three instruments' average was 7.95 percent for the discount rate, 5.18 percent for the reserve requirement, and 16.34 for liquidity requirement. Therefore, the findings of this study for the three variables of concern show that the current policy mix of the Central Bank Lending system is not optimal. Therefore, the null hypothesis that the current levels of the monetary policy instruments are not optimal to influence bank lending to the private sector holds in the Kingdom of eSwatini.

Discount rate: The results for the discount rate and bank credit to the private sector show that the relationship between the two variables is nonlinear because the discount rate is significant at 5 percent level. Below 5.42 percent, the discount rate has a positive impact on bank lending to the private sector. Conversely, any increase above 5.42 percent tends to reduce the desire for bank lending to the private sector.

Cash reserve requirement: The results show that the turning point for cash requirement was 4.03 percent in the period between 2000 and 2019. This indicates that any rise of the cash reserve requirement below 4.03 percent positively affects bank credit to the private sector. It also suggests that

a rise above 4.03 percent has a negative effect on bank credit to the private sector in the Kingdom of eSwatini. Since the reserve requirement is 6 percent, it implies there is a need for the Central of eSwatini to revise it downwards. The current levels exert a negative effect on lending to the private sector in the Kingdom of eSwatini.

Liquidity requirement: The results of the liquidity requirement indicate that any increase below 12.48 percent has a positive effect on bank lending to the private sector. This also indicates that above 12.48 percent of the liquidity requirement negatively affected bank credit to the private sector. The average liquidity requirement was 16.34. The results provide evidence that the liquidity ratio has a negative effect on bank credit; therefore, the Central Bank of eSwatini should consider the effect of the liquidity requirement on bank lending to the private sector when setting monetary policy in the Kingdom of eSwatini.

Overall, this study recommends that the Central Bank of eSwatini can aim the range of 3.50 percent to 5.42 percent for the discount rate, 2.5 percent to 4.03 percent for the reserve requirement and 10 percent to 12.48 percent for liquidity requirement if the desired target is to stimulate bank credit to the private sector and economic growth in the Kingdom of eSwatini.

This study, therefore, presents the following optimal policy mix for the Central Bank lending system in the Kingdom of eSwatini. This policy mix can be applied in the other small CMA countries like Lesotho and Namibia and achieve similar results.

Table 49.46: Threshold for Monetary Policy Instruments

Variable	**Average between 2000 and 2017**	**Optimal Threshold**	**Optimal Range**
Discount rate Threshold	7.95%	5.42 %	3.50% - 5.42%
Reserve Requirement Threshold	5.18%	4.03 %	2.5% - 4.03%
Liquidity requirement Threshold	16,34%	12.48 %	10% - 12.48%

Source: Authors' computation in EVIEWS 9 software (data 2000 - 2019)

4.6 Chapter Summary

The chapter analyses and provides interpretations of results in line with the study's four objectives and four questions. The study concludes that commercial banks are compliant to all CAMELS indicators

except for management efficiency. Therefore, there is a need for some improvement in terms of management efficiency. Regarding the influence of monetary policy instruments and macroeconomic variables, the study also shows that the discount rate, treasury bills, and real GDP were strongly associated with variations in bank credit to the private sector in the Kingdom of eSwatini. The results show that factors that impeded bank credit to the private sector from 2000 to 2019 were the discount rate and the TBR. The researcher also concludes that the discount rate and real GDP were statistically significant in the long-run for the period investigated. In the short run, the results indicate that only the discount rate was effective between 2000 and 2019. The study further provides that the optimal thresholds for the three monetary policy instruments are: 5.42 percent for the discount rate, 4.03 percent for the reserve requirement, and 12.48 percent for the liquidity requirement, *ceteris peribus*. Since the mandate of the Central Bank of eSwatini is to control inflation through the discount rate, the study further determined the optimal threshold on inflation, and the results show that it is 6.44 percent. Therefore, the researcher concludes that any point between the range of 5.42 percent and 6.44 percent for the discount rate affects bank lending negatively and this also has an adverse effect on economic growth since investment is affected. The study further concludes that the levels of discount rate in the period 2000 and 2019 allowed the Central Bank of eSwatini to maintain inflation within the SADC ranges of 3–7 percent and CMA range of 3–6 percent. Since moving towards 6.44 percent may trigger credit pressures, the Central Bank should remain vigilant to deal with any deviations associated with bank credit to balance its policy mix.

CHAPTER FIVE: CONCLUSION, POLICY IMPLICATIONS, RECOMMENDATIONS AND AREAS FOR FURTHER RESEARCH

5. Introduction

This subsection provides conclusions of the study based on the research objectives and hypothesis. This chapter discusses the findings documented in chapter 4, in line with the theoretical models and related literature reviewed in chapter three of this research study. This chapter also provides conclusions concerning how all the four research questions are answered, appraisal of the study and the contributions to the available body of knowledge is also presented. In addition, this chapter provides recommendations and implications of the research findings, which may be considered by the Central Bank of eSwatini and the other Common Monetary Area (CMA) countries.

The study provides that previous research studies have separately assessed the effect of prudential regulation, monetary policy and thresholds of monetary policy instruments but have not linked the three in one conceptual framework. For example, Haile and Assefa (2006) and Daniel (2008) examined the determinants of private investment in Ethiopia; Abebe (2008) and Tadesse and Melaku (2019) explored the effectiveness of monetary policy in Ethiopia; Bajide (2011) and Misati (2010) investigated how different monetary and fiscal elements crowd out the private sector; Wirnkar and Tanko (2008), Mihailović et al. (2009), Roman and Şargu (2013) and Rozzani and Rahman (2013) utilise the CAMELS framework to examine the state of regulation – compliance with prudential regulation; and Younus and Akhteruzzaman (2012), Tule et al. (2015), and Olade (2015) applied the quadratic function to determine thresholds for monetary policy indicators. Despite e vast literature on central bank regulation (prudential regulation and monetary policy instruments), none of the studies was conducted on the Central Bank Lending system in the Kingdom of eSwatini. Since the focus of previous research studies was limited to assess the effect of prudential regulation on bank lending, monetary policy regulation on bank lending behaviour, and thresholds of monetary policy instruments on bank lending separately, central banks have remained inefficient in balancing on-site prudential regulation and monetary policy instruments to influence the lending system effectively, and this has had far-reaching consequences on credit and economic growth.

Thus, this research study presents the effect and implications of prudential on-site monetary policy instruments and thresholds in one conceptual framework to bridge existing gaps in the literature. Using this approach, the study uncovered valuable knowledge in the central bank lending system that could

doubtless strengthen the Central Bank Lending system of the Kingdom of eSwatini and the other CMA countries. Therefore, the research topic for this study is framed as: *"Strengthening central bank regulations to stimulate economic growth through commercial bank lending system: A study of central bank lending system in the kingdom of eSwatini."*

As a recap, this research formulated the following four research objectives, which were addressed by the assessment:

(a) To establish the state of commercial bank compliance in the Kingdom of eSwatini

(b) To establish monetary policy factors that stimulate bank lending and those that impede lending to the private sector – the core sector of the economy

(c) To determine the link and its impact between monetary policy regulation and low credit to the private sector in the Kingdom of eSwatini

(d) To establish the optimal range/threshold(s) for the monetary policy instrument(s) that the Central Bank of eSwatini should aim to stimulate commercial bank lending to the private sector in the Kingdom of eSwatini, in line with the economic growth strategy.

5.1 Conclusions

Conclusion by research objectives

In discussing the study's findings, a systematic approach was employed based on the research objectives and the corresponding research question.

Research Objective 1: To establish the state of commercial bank compliance in the Kingdom of eSwatini

For the first research objective, the results of this study indicate that out of the six CAMELS indicators, commercial banks are compliant to capital adequacy, assets quality, earnings, liquidity and sensitivity. The findings of this study on capital adequacy, assets quality, earnings, and sensitivity are consistent with the Basel Accord concept and CAMELS framework. Management efficiency is found not to be compliant with the CAMELS requirement and Central Bank of eSwatini requirement, which is precisely the same as the former.

The evidence from this study regarding liquidity shows excess liquidity of 22.64 percent. This falls within category 3 of the CAMELS rating system as of 2016, but liquidity was way above the Central Bank of eSwatini requirement of 20 percent threshold; therefore, all commercial banks were compliant. The theoretical implication of the findings is that the Basel and CAMELS Framework in terms of liquidity does not hold for small developing countries. Already the excess liquidity is weighing heavily

on bank credit to the private sector. This study has raised important questions about the Basel and CAMELS framework concept, which assume a one size fit all in terms of the liquidity requirement. In its assumption, the Basel Accord and CAMELS theory ignore the level of development of the banking industry, which varies from country to country. It also ignores the spillover effect of high liquidity on bank credit to the private sector. Implications of emphasising high excess liquidity are that banks become concerned about the possibilities of default on loans, then reduce their lending. The excess liquidity is either kept by the banks as liquid assets, or as cash and deposits or at the central bank as treasury bills or bonds and in other attractive, marketable securities outside the country. Therefore, an increase in bank liquidity coupled with an accommodative monetary stance equates to contractionary monetary policy because it does not support domestic investment; instead, it is invested outside the country. The finding for the Kingdom of eSwatini is similar to Babar and Zeb's (2011) and Sarwar and Asif (2011), who found that banks had poorly emphasised management but stressed the strengthening of capital adequacy for Pakistan.

In terms of compliance to monetary policy instruments, all banks were compliant to requirements set by the Central Bank of eSwatini, including maintaining a margin of 3.5 percent between the discount rate and prime lending rate. Furthermore, the graphical plots of the three variables of concern show that episodes of high low discount rate coupled with high reserve requirement and liquidity ratio resulted to a decrease increase in bank lending to the private sector, and the reverse is true. Overall, this study strengthens the idea of the bank lending channel theory that a contractionary monetary policy stance shrinks commercial banks' deposits and compels them to utilise managed liabilities increasing the cost of loans. The conclusion concerning the hypothesis is that commercial banks are compliant with all prudential and monetary policy regulation measures, except for the management efficiency indicator.

Research Objective 2: To establish monetary policy factors that stimulate bank lending and those that impede lending to the private sector – the core sector of the economy

The second objective was to establish monetary policy factors that stimulate bank lending and those that impede lending to the private sector – the core sector of the economy. The analysis of factors that stimulate bank lending and those that impede lending to the private sector is based on the Likert scale and descriptive analysis.

(a) Discount rate:

This study indicates that 83 percent of the participants agreed that the discount rate is significant in influencing bank lending and interest rates by changing the amount of funds available for banks to issue loans to the private sector. On the other hand, about 83 percent disagreed that the discount rate causes immediate liquidity problems for banks with low excess reserves, thereby influencing lending and

payment systems in the commercial banks concerned. Possible enlightenment for this might be that changes in the discount rate are significant in influencing bank lending by changing the amount of funds available for banks to issue loans to the private sector. The findings are similar to those of earlier studies of Keeton (2001) and Stiglitz and Weiss (2001). Keeton (2001) and Stiglitz and Weiss (2001) provide that through the discount rate/interest rate, the Central Bank can reduce and increase the ability of banks to issue new loans.

Contrary to this finding Ajayi (2012) suggest that the discount rate does not affect bank lending, while Karim *et al*. (2011) advocate that the bank rate is an important instrument to influence credit to the private sector. As expected, the discount rate is negative, which implies a negative relationship between the discount rate and bank credit to the private sector. This finding also indicates that the effectiveness of the Central Bank of eSwatini in controlling money supply and inflation in the Kingdom of eSwatini.

(b) Reserve requirement

The current data highlight that 78 percent of the twenty-three participants disagreed with the statement that the reserve requirements cause immediate liquidity problems for banks with low excess reserves, thereby influencing lending and payment systems in the commercial banks concerned. Around 91 percent of the respondents agreed with the statement that holding some funds in excess reserves provides enhanced liquidity and, therefore, more smooth operation of payment systems (the remaining 9 percent strongly agreed). Around 95 percent of the respondents agreed that the higher the reserve requirement, the fewer funds banks would have to loan out, leading to lower money creation and perhaps ultimately to higher purchasing power of the money. The views that the reserve requirement has a negative relationship with bank lending corroborate Malede (2004) ideas, who established a negative sign. The fact that the views of the senior officials who were interviewed suggest a negative but not an immediate effect implies that an upward adjustment of the reserve requirement is accompanied by a decline in credit since it withdraws money from circulation. Therefore, the lower the reserve requirement, the more the volume of the deposit/available funds that the commercial banks can use for lending. This finding supports the view of Kimani (2013), who found that the reserve requirement has a negative effect on bank credit.

(c) Liquidity requirement

The results of this study suggest that out of the (23) agreed with the statement that the liquidity ratio is used as a tool in monetary policy, influencing the bank lending and interest rates by changing the amount of funds available for banks to make loans. Regarding the statement that the liquidity ratio causes immediate liquidity problems for banks with low excess reserves, thereby influencing lending and payment systems in the commercial banks concerned, around 82 percent of the participants disagreed, and 18 percent strongly disagreed. This finding is consistent with the contributions of Alfon

et al. (2004) and Azman-Saini and Karim (2011), who provides that the higher the liquidity requirement, the lower the proportion of loans offered by the commercial banks. Therefore, while commercial banks are compliant with the liquidity requirement of the Central Bank of eSwatini, its direct effect on bank lending undermines the credibility of the monetary authorities.

(d) Treasury bills

The results of this study suggest that, of the twenty-three respondents, around 86 percent of the participants strongly agreed with the view that OMO/treasury bills are used to regulate money in supply and therefore changes the levels of money available to the bank for lending. The results also show that around 87 percent of the respondents agreed that OMO/treasury bills control the short term market interest rate of base money in an economy thus indirectly controlling the total money supply. Taken together, the views of the participants confirm the suggestion that there is a negative relationship between treasury bills rate and bank credit. It could be argued that, in the Kingdom of eSwatini, commercial banks prefer to part money in treasury bills or government bond or to invest it outside the country. This finding complements Aress (2012), who provides evidence that the 91-day treasury bills significantly negatively affect bank lending to the private sector.

(e) Inflation

The views of all twenty-three respondents (100 percent) disagreed with the statement that inflation tends to influence bank lending by changing the number of funds available for banks to issue loans. Participants were not of the view that inflation is an immediate liquidity problem for banks with low excess reserves and lending. The views of the participants in terms of the relationship between inflation and bank lending to the private sector complement the conclusions of Assefa (2014), Imaran and Nishatm (2013), and Sharma and Gounder (2012), who showed that the relationship between the two variables is negative. The high inflation rates tend to increase the nominal interest rates on loans, which cause the decline in the demand for loans.

(f) Lilangeni/dollar exchange rate

The results show that 74 percent of the twenty-three respondents agreed that the effect of the exchange rate is significant on bank lending to the private sector. Around 87 percent indicated that the exchange rate causes immediate liquidity problems for banks with low excess reserves, thereby influencing lending and payment systems in commercial banks. The views of the senior Central Bank Officials are consistent with the finding of Manyok (2016). Manyok (2016) provides evidence that an appreciation of the local currency tends to exert pressure on the cost of borrowing. In this study, the responses suggest that bank lending is negatively affected by episodes of currency appreciation. Manyok (2016) empirical findings provide a negative association between exchange rates fluctuations and bank performance, including bank credit. Contrary to this finding, Katusiime (2018) argues a positive relationship between

the exchange rate and credit to the private sector. In this context, this finding suggests that for the Kingdom of eSwatini, a shock from the exchange rate may constrain bank lending to the private sector.

(g) Real GDP

The finding of this study suggests that, of the twenty-three respondents, 74 percent believed that real GDP tends to influence bank lending by changing the amount of funds available for banks to make loans. On the other hand, around 52 percent of the respondents disagreed that the higher the real GDP, the higher the charges on loans to the private sector. The remaining 48 percent preferred to be neutral. Thus, the views of the senior officials of the Central Bank of eSwatini confirms the findings of Hofmann (2001) and Calza *et al*. (2001) established a positive relationship between bank credit to the private sector and real GDP. This finding also advances the Keynesian theory, which asserts that investment influences saving and increases the demand for bank credit to the private sector.

Together, the results suggest that factors that impede bank lending are the discount rate, reserve requirement, liquidity requirement, TBR, inflation and exchange rate. The only variable that stimulated bank lending to the private sector is the real GDP. The results further provide that none of the included variables had an immediate effect on the bank lending system; instead, the effects were not after a certain period. These findings suggest that, in general, the effect of the included variables is discount rate (negative), reserve requirement (negative), liquidity requirement (negative), TBR (negative), inflation (negative), real GDP (positive) and exchange rate (negative). Therefore, the null hypothesis is rejected that; monetary policy instruments do not have a significant effect on bank lending – the core sector for economic growth in the Kingdom of eSwatini. Therefore, this study suggests that the Central Bank of eSwatini should consider the implications of all the included variables when setting its policy mix for the lending system. Based on the results, the null hypothesis is rejected, and the conclusion is that the three variables of concern discount rate, reserve requirement and liquidity requirement impeded bank lending to the private sector in the period 2000 to 2019.

Findings of this investigation complement those of Hofmann (2001) and Calza *et al*. (2001), Keeton (2001) and Stiglitz and Weiss (2001). Keeton (2001) and Stiglitz and Weiss (2001), Malede (2004), Kimani (2013), Alfon *et al*. (2004) and Azman-Saini and Karim (2011), Aress (2012), Assefa (2014), Imaran and Nishatm (2013), and Sharma and Gounder (2012), Manyok (2016). Kakarot-Handtke (2014), Tule *et al*., 2015; and Olade, 2015) and Katusiime (2018) who also found a similar behaviour of the effect of the selected variables on the bank lending to the private sector. Although the second objective of this study focuses on the direction of the effect of the selected variables, the findings may well have a bearing on the action taken by the Central Bank of eSwatini to curtail shocks that impact on the lending system.

Research Objective 3: To determine the link and impact of monetary policy instruments on bank credit to the private sector in the Kingdom of eSwatini

The third objective was to determine the link and its impact between monetary policy regulation and low credit to the private sector in the Kingdom of eSwatini. This was analysed by applying the Autoregressive Distributed Lag (ARDL) model. The findings of this study indicate that there is a short and long-run relationship between the variables. Furthermore, these findings suggest that there is a link between selected variables and low credit to the private sector in general.

(a) The lagged variable of bank credit to the private sector

The finding indicates that the coefficient of the lagged variable of bank credit to the private sector is 0.827 (p-value = 0.000) and 0.589 (p-value = 0.009), which is statistically significant in the long-run and short run. This provides evidence that current changes in bank credit to the private sector were linked to the previous year effects. Furthermore, the results show that a unit increase in current lending to the private sector is influenced by 0.827 percent of the previous month's changes in bank credit to the private sector in the long-run and 0.589 in the short run. The results are consistent with the study by Olokoyo (2011), who also established that the current banks' lending performance is significantly and positively influenced by the changes of the previous period.

(b) Discount rate

The current data indicate that, in the long-run, there is a negative relationship between the discount rate and bank credit to the private sector in the Kingdom of eSwatini. The discount rate coefficient is negative 0.02 percent, and this implies that a one percent increase of the discount rate led to a 0.02 percent decline in bank lending to the private sector for zero lag in the period 2000 to 2019. Thus, the discount rate entered the long-run with a correct sign, proving that the central bank discount rate effectively influences lending to the private sector. The *p-value* of this coefficient is $0.02 < 0.05$; therefore, the null hypothesis is rejected, and the researcher concludes that during the above-stated period, the discount rate negatively affected bank credit to the private sector in the Kingdom of eSwatini. The results are in sync with the empirical findings of Olokoyo (2011), who also found a similar trend for the discount rate. In the short run, Similar to the long-run, the coefficient of the discount rate is negative 0.033 (*p-value* = 0.003), and it is statistically significant.

Contrary to the long-run equation, the lagged discount rate is 0.033 ((*p-value* = 0.002), less than a 5 percent significance level but with a wrong sign. The significant coefficient of the discount rate with a positive sign is consistent with the work of Misati and Nyamongo (2010), who also established that the CBR was the main determinant of bank lending rates. Thus, the study concludes that the discount

rate has a significant negative effect on bank lending after a change in monetary policy stance for the zero lag.

(c) Cash reserve requirement

The findings of this study indicate that in the long-run, the coefficient of the cash reserve requirement is negative 0.013 (p-value = 0.101), not statistically significant. This suggests that the cash reserve requirement was not amongst the main drivers of bank credit to the private sector in the Kingdom of eSwatini. The results are in line with the studies of Malede (2014) and Mwafag (2015), who investigated factors affecting bank credit in Jordan and found that the cash reserve requirement was not statistically significant. The finding is also consistent with Chimkono, Muturi and Njeru (2016), who also found that the cash reserve requirement was statistically not significant with a coefficient of negative 0.14, showing a negative relationship with bank credit for Malawi. Meltzer (2003) also found that the reserve requirements had no significant impact on bank lending and investments. This finding agrees with those obtained by Ajayi and Atanda (2012), who provide evidence that the cash reserves requirement had a negative and statistically significant effect on bank lending in Nigeria. In the short run, the coefficient of the reserves requirement maintained a negative sign, and it was not significant only for the first lag. Contrary to this finding, Olusanya *et al*. (2012) found a positive relationship between the cash reserve requirement and bank lending and performance.

(d) Liquidity ratio

The coefficient of the liquidity requirement is 0.008 in the short run and 0.002 in the long-run, both positive and statistically not significant. The fact that it is not significant implies that the high liquidity kept by commercial banks in the Kingdom of eSwatini does not translate to an increase in bank credit to the private sector. This money is either parked either as treasury bills, bonds or invested outside the country. In terms of the positive sign, these results are consistent with findings by Olkoyo (2011), Olumuyiwa *et al*. (2012) for Nigeria, and Malede (2014) in the case of Ethiopia, who provide evidence of a positive but statistically significant relationship between liquidity ratio and credit supply.

(e) Treasury bills

The treasury bills coefficient is 0.004 (p-value = 0.459 for the long-run and 0.009 (p-value = 0.019) in the short term, both statistically not significant. This indicates that both the short and long-run treasury bills rate did not influence bank lending to the private sector in the Kingdom of eSwatini during the period under review. The bank lending theory by Bernanke and Blinder (1995) indicate that the tightening of monetary policy compels banks to reduce credit and securities. The positive sign in this finding contradicts results by Emran and Farazi (2009), who assessed the effect of government borrowing (treasury bills) and bank lending to the private sector in developing found that a $1.00 increase in borrowing by the government resulted to a decline in private sector credit by $1.40.

Furthermore, the results are not consistent with Olweny and Chiluwe (2012) findings who provide evidence of an inverse relationship between treasury bills to private sector investment. In addition, Yosse (2016) also found a negative relationship between treasury bills rate and private sector investment. The causation direction was from treasury bills to private investment. The positive sign of the treasury bill coefficient suggests that there has been an increasing government borrowing trend, though not significant, which improved the interest rates on the domestic money markets. The positive sign also indicates the relatively riskless nature of government borrowing, which commercial banks prefer over private investors. The effect of an accommodative monetary policy stance is that interest rates are automatically lowered across the board, and then commercial banks prefer to park their money in treasury bills than to invest in long-term government bonds.

(f) Inflation

The long-run results show that the coefficient of inflation is 0.003570 and the p-value is 0.7765 in the long-run while the short run coefficient is negative 0.02 with a p-value of 0.39. In the short run, the coefficient has a correct sign but is not statistically significant. In terms of the sign, this finding is consistent with findings by Assefa (2014), Imaran and Nishatm (2013), and Sharma and Gounder (2012), who found a negative relationship between the inflation rate and bank lending. The findings of this study are contrary to Assefa (2014), Imaran and Nishatm (2013), and Sharma and Gounder (2012)'s conclusion that a low inflation rate has a positive impact on bank lending since it lowers the nominal interest rates on loans, which causes the increase in the demand for loans, credit demand remained subdued in the Kingdom of eSwatini. Tomak (2013) for Turkey, Moussa (2016) for Tunisia, and Amino (2014) for Ethiopia established a positive effect of a surge in inflation on bank lending to the private sector. In the long-run, the sign positive contradicts economic theory and ignores the central bank's intervention from time to time. The negative but not significant inflation in the short run show that the monetary policy stance of the Central Bank of eSwatini was effective to contain same within the CMA required bands on 3 to 6 percent, and the levels of inflation were not significant in influence variation on bank lending to the private sector.

(g) Real GDP

The evidence of this study suggests that the long-run coefficient of real GDP is 3.237 and the p-value is 0.043, statistically significant. This indicates that a 1 billion increase in GDP led to a 3.24 percent increase in bank credit to the private sector from 2000 to 2019, *ceteris paribus*. In the short run the real GDP coefficient is 2.505 with a p-value of 0.078, not statistically significant. The long-run finding is consistent with Hofmann (2001) and Calza *et al*. (2001) results, who provide evidence that there is a positive relationship between bank credit to the private sector and real GDP. These findings confirm the notion of the bank lending theory, that an increase in output increasesconfirm the notion of the bank lending theory, that an increase in output increases bank deposits used by commercial banks for

loans to the private sector. The results are also consistent with empirical studies of Guo and Stepanyan (2011) and Olokoyo (2011), who established that a surge in real GDP tends to increase income and people's earnings, which is followed by a hike in volumes of domestic deposits and bank liquidity which then induces commercial banks to lend more to the private sector.

Further, this finding is consistent with Hofmann (2001), who estimated the determinants of private sector credit, and the results exhibit a positive relationship between bank credit and real GDP. The findings complement those of an earlier study by Calza *et al*. (2001), who found a positive relationship between bank credit and the real GDP in the long-run. According to Flamini, McDonald & Schumacher (2009), the real GDP affects several factors directly linked to the supply and demand for loans and deposits. For example, in cyclical downswing such as financial crises, banks may be affected by a surge of NPLs and, consequently, deterioration in bank credit. Conversely, during the cyclical upswing, the demand for credit increases. However, this finding contradicts Amidu's (2014) study, which concludes that the level of economic activity negatively affects bank lending behaviour in a well-developed financial sector with many banks. In this study, it is logical to advance that strategies targeted to stimulate economic activity will automatically boost credit to the private sector.

(h) Lilangeni/Dollar exchange rate

The finding of the exchange rate in this study indicates that the coefficient of the lilangeni/ Dollar exchange rate in the long-run is negative 0.002, and the p-value is 0.428, not significant. In the short run, the lilangeni/ Dollar exchange rate is negative 0.003 with a p-value of 0.586, not statistically significant. Since the long and short run coefficients are not significant, this implies a weak but negative relationship between exchange rate and bank lending to the private sector. The results of this study imply that during the period 2000 to 2019, measures taken by the Central Bank of eSwatini to control inflation were effective to control negative pass-through effects of exchange rate on bank lending. The exchange rate coefficient is not significant but negative; it suggests the need to keep a closer look at exchange rate developments to avoid its movement to the significant zone. The findings complement those of Kashyap *et al*. (2006), who provides that a negative exchange rate may influence banks to withhold credit in fear of increasing the level of NPLs.

Furthermore, the Central Bank of eSwatini to manage the exchange rate to curtail uncertainty that may result in the herding behaviour of commercial banks. As suggested by Chang *et al*. (2000), if banks are uncertain about the future, they mimic the behaviour of the leading bank. Stever and Wilcox (2007) state that commercial banks are also likely to reduce credit due to herding. The effects of herding include the weakening of lending standards, misappropriation of lending resources, asset price bubbles, and high systemic risks which affect the business cycle (Barron and Valev, 2000)

Specification test

The R-squared and adjusted R-squared values are very high at 0.997032 (99.70%) and 0.996886 (99.69%), respectively. This indicates that the predictive power of the multivariate model is high and shows that there was no exclusion of important monetary and macroeconomic predictor variables, which have been significantly influencing bank credit to the private sector over the period under review. The error correction coefficient is negative (correct sign) and highly significant at 0.98. The coefficient of the Error Correction Model ($ECMt_{-1}$) indicates that the economy takes 0.98 percent to return to the equilibrium rate of growth after a shock. It also shows that a disequilibrium of the previous period shocks is quickly adjusted into long-run equilibrium in the current period.

The current data highlight that some of the series used showed signs of not being normally distributed. Harries (1995) provides that non-normality in the residuals is accepted if and only if some of the selected series are weakly exogenous, as is the case in the model for this study. Jaccard and Becker (2009) and Hanna and Dempster (2013) further justify the proceeding using series that are not normally distributed by stating that the assumption of normality can be relaxed if and only if the sample size N is large enough or more than $N \geq 50$. Jaccard and Becker (2009) argument is that for a sample of more than fifty observations, the distribution of ϵ, the central limit theorem exerts pressure that the estimates converge to a normal distribution as N increases. This study utilised monthly data from 2000 to 2019, the of observations are 216, way above the threshold of $N \geq 50$, which implies that the estimates converged to a normal distribution as N increases above fifty observations.

The evidence from this study suggests that there is no serial autocorrelation. The probabilities of the F-statistic (0.096) and the R^2 (0.0862), respectively, are greater than the *p-value* of 0.05. in addition, the Breusch Pagan Godfrey F-statistics p-value is 0.56, and the observed R-squared *p-value* of 0.55 is more than the 5 percent significance level, which indicates the absence of heteroscedasticity in the residuals.

The findings of this study show a bidirectional causal relationship between real GDP and bank credit to the private sector, a strong bidirectional causal relationship between the discount rate and treasury bill rates, causality running from liquidity requirement to lilangeni/Dollar exchange rate. Furthermore, the Granger causality test shows unidirectional causality running from the reserve requirement to the lilangeni/Dollar exchange rate and from inflation to liquidity requirement. Thus, findings of this study advance the notion of Khan and Senhadji (2003), Mubarik (2005), Risso and Carrera (2009) and Hussain and Malik, 2011), that causality can either run from bank lending to the explanatory or the other way around.

The findings of this investigation were further confirmed by the variance decomposition and impulse response function. The variance decomposition confirmed that innovation in the selected variable influenced the variation in bank credit to the private sector at different levels. Findings are in line with Kim (2012), Diebold and Yilmaz (2009), and Klößner and Wagner (2014). The impulse response function also provides evidence that the significant instrument in the lending system is the discount rate. The study also confirms the findings of previous studies on the positive and significant relationship between bank lending and real GDP. These findings are consistent with the bank lending theory and empirical studies of Guo and Stepanyan (2011), Olokoyo (2011), and Gumata and Ndou (2017).

Overall, this study strengthens the idea that there is a need to determine the optimal policy mix or thresholds for the Central Bank Lending system, which is addressed by findings of objective four in this study. Furthermore, the results provide evidence that the discount rate only drives changes in bank lending. The other two variables of concern (reserve requirement and liquidity requirement) are not significant. Therefore, this study concludes that monetary policy instruments link and impact on bank lending to the private sector in the Kingdom of eSwatini. Therefore, the null hypothesis is rejected that there is no link and impact of monetary policy instruments on bank lending to the private sector in the Kingdom of eSwatini.

The findings of this investigation complement the bank lending theory and studies by Hofmann (2001), Calza *et al*. (2001), Khan and Senhadji (2003), Mubarik (2005), Kashyap *et al*. (2006), McDonald & Schumacher (2009), Diebold and Yilmaz (2009), Risso and Carrera (2009) Jaccard and Becker (2009) Misati and Nyamongo (2010), Guo and Stepanyan (2011), Olokoyo (2011), Hussain and Malik, 2011), Olkoyo (2011), Olumuyiwa *et al*. (2012), Kim (2012), Sharma and Gounder (2012), Hanna and Dempster (2013), Assefa (2014), Malede (2014), Wagner (2014), Mwafag (2015), and Klößner and Gumata and Ndou (2017).

Research Objective 4: To establish the optimal range for the monetary policy instrument(s) that the Central Bank of eSwatini should aim at to stimulate commercial bank lending to the private sector in the Kingdom of eSwatini, in line with the economic growth strategy

The fourth objective was to determine the optimal thresholds for credit control instruments in the Kingdom of eSwatini. The aim is to strengthen central bank regulations to stimulate economic growth through the Commercial Bank Lending System. The focus is on the Central Bank Lending system in the Kingdom of eSwatini. Therefore, one of the contributions of this study is to determine the optimal policy mix for the Central Bank Lending system, which will, in turn, stimulate economic growth in the Kingdom of eSwatini.

The researcher followed the research studies of Younus and Akhteruzzaman (2012), Tule *et al*. (2015), and Nazir *et al.* (2017). The quadratic model was used, and the results of this study indicate that the policy mix for the lending system is not optimal. The findings of this study suggest that, in general, the current mix does not complement each other or it is pursued in isolation of the other. The provides evidence that the optimal thresholds or lending system mix of the three monetary policy instruments for the Kingdom of eSwatini are: 5.42 percent for the discount rate, 4.03 percent for the reserve requirement, and 12.48 percent for the liquidity requirement. In addition, this study considered that the mandate of the Central Bank of eSwatini is to maintain inflation within the band of 3-6 percent and 3-7 percent in the CMA and SADC arrangement, respectively. Therefore, the threshold of the discount rate for inflation is found to be 6.44 percent. The range or any point between 5.42 percent and 6.44 percent or above for the discount rate or more has a negative effect on bank credit to the private sector.

The finding of the discount rate threshold (5.42 percent) is in line with Gumata and Ndou (2017), who found that the threshold for credit in South Africa is 7.17 percent and concluded that there is a need to complement the policy rate with prudential tools. In this case, the low level of the threshold compared to South Africa is reflective of the added inflation pressure which emanates from imported inflation. In the context of the Kingdom of eSwatini, this implies that the Central Bank of eSwatini should be willing to add a bit of inflation in the economy to stimulate bank lending to high-yielding private sector investment, which will translate to economic growth in the Kingdom of eSwatini. In this case, the low level of the threshold compared to South Africa is reflective of the added inflation pressure, which emanates from imported inflation. In the context of the Kingdom of eSwatini, this implies that if the thresholds of the three monetary instruments are fixed according to the findings of this study, any point below 5.42 per will influence bank credit to the private sector positive. The findings of this investigation complement those of Hofmann (2001), Calza *et al*. (2001), Maynard and Moore (2006), Ganley (2004), (Borio and Disyatat, 2009), Guo and Stepanyan (2011), Olokoyo (2011) and International Monetary Fund (2018). Based on the quadratic analysis results, we fail to reject the null hypothesis that the monetary policy instruments are not optimal. Thus, the study concludes that the current monetary policy instruments are not optimal to influence bank lending to the private sector in a positive way.

The second variable of concern is the reserve requirement. The finding of this study indicates the turning point for the reserve requirement was 4.03 percent in the period between 2000 and 2019. This indicates that any rise of the cash reserve requirement below 4.03 percent positively affects bank credit to the private sector. This finding also suggests that a rise above 4.03 percent has a negative effect on bank credit to the private sector in the Kingdom of eSwatini. Since the current level of the reserve requirement is 6 percent, above the threshold of 4.03 percent, it has a negative effect on lending to the

private sector in the Kingdom of eSwatini. This finding is consistent with the International Monetary Fund (2018) assessment for Lesotho, a member state of the CMA, where the Kingdom of eSwatini also belongs. The International Monetary Fund (2018) concluded that commercial banks in Lesotho should comply to a 3 percent cash reserve requirement and consider adjusting its minimum liquid asset requirement from 25 percent. Primus (2016) found that a higher reserve requirement had a negative impact on credit in Trinidad and Tobago. There are several implications of the higher reserve requirement in the Kingdom of eSwatini. The higher than the threshold reserve requirement may indicate a bias towards tightening, which can result in higher market interest rates by changing market expectations. Since changes in the reserve requirement are interrelated to other policy changes, expectations about a reserve requirement hike may translate into market interest rates volatility. The high reserve requirement can also have a negative impact on excess reserves and banks' capacity to extend loans to the private sector. Another implication of the higher than the threshold reserve requirement in the Kingdom of eSwatini is that it imposes a tax levy on commercial banks, increasing the cost of credit, which automatically tightens the monetary condition (Borio and Disyatat, 2009). In addition, a high reserve requirement may induce commercial banks to expand their loan-deposit rate spread, passing some of the reserve requirement cost to their customers (Montoro and Moreno, 2011). In line with the International Monetary Fund (2018)'s recommendation for Lesotho, the researcher recommends that the Central Bank of the Kindom of eSwatini consider any point below 4.03 percent for the reserve requirement to complement the discount rate and to stimulate credit.

The third variable of concern in the current policy mix is the liquidity requirement. The findings show that the liquidity requirement threshold is 12.48 percent. Therefore, this evidence suggests that any point below 12.48 percent positively affects bank lending to the private sector. This also shows that above 12.48 percent, the liquidity requirement tends to affect bank credit to the private sector negatively. The liquidity requirement threshold of 12.48 percent is way below the current Central Bank of eSwatini liquidity requirement of 25 percent. In the Kingdom of eSwatini, this confirms the significant interplay between liquidity regulation and credit creation. In maintaining high liquidity the loanable are constrained, which may trigger undesired externalities that are difficult to control by the Central Bank using its monetary policy instruments, such as the prevailing situation of low credit to the private sector. The current finding of this research provides insights that the existing system is biased towards ensuring that the country can meet the CMA target of 3-6 percent, SADC Regional target of 3-7 percent and maintain a higher liquidity buffer. The effect of a high liquidity requirement is that it tends to influence banks negatively in the area of lending to the private sector. In the long-run and during times of financial stress, the higher liquidity requirement may significantly damage the banking industry and cause macroeconomic instability. Therefore, the researcherrefore, the researcher concludes that bank regulation strategies should strive to strike a balance between bank liquidity and

bank credit if the desired outcome is to foster economic growth. Since the banking industry is highly liquid in the Kingdom of eSwatini measures of controlling the risk associated with high liquidity should consider its effect on bank lending.

This finding is consistent with Kamau (2009), who established that in Kenya, the liquidity requirement was very high at 37 percent in 2008 and 39.8 percent in 2009, way above the statutory minimum liquidity requirement of 20 percent, while the levels of credit to the private sector was low and economic growth remain very low. Contrary to Kamau's (2009) finding, Shen *et al*. (2010) provide that the relationship between liquidity risk and NIM is positive. The more liquidity a bank has, the higher the interest revenue. In this study, the results imply that the monetary authorities of the Kingdom of eSwatini should closely monitor the spillover effects of high liquidity. The trade-offs between return and liquidity risk may trigger a shift in investment from short term securities to long-term securities, which increases liquidity risk. Therefore, the researcher of this study ascribes to the notion by Levine (1998) and Uzhegova (2010), that despite that high liquid assets serves as a quick strategy to create cash on short notice, they have the potential to reduce the ability of management to properly identify investment options, thus limiting the capacity to raise finance and reducing bank lending to the private sector. Findings of this study concur with Maynard and Moore (2006), who provides that in Barbados, episodes of high levels of excess reserves/liquidity had a negative relationship to the business cycle. Commercial banks opted to hold excess reserves during the economic slump period. The same sentiments are shared by Ganley (2004), who also established that liquidity can potentially increase domestic consumption activity, which can fuel inflation and resultantly reduce bank credit when the central bank applies price control measures. because of the above arguments, it therefore logical to conclude that, while it remains necessary to safeguard against financial risk associated with external shock, it is crucial for the Central Bank of eSwatini to take into consideration the negative impact on other key indicators such as bank credit to the private sector- the core driver of economic growth. Since the increase in liquidity requirement has not yielded the desired outcome in the Kingdom of eSwatini, the researcher concludes that the problem emanates from the mismatch of the policy instruments. Given the above, it is worth exploring liquidity levels below the 12.48 percent threshold and adjust other discount rate and reserve requirements to the proposed levels. In the context of the Kingdom of eSwatini, banks' liquidity preference indicates that commercial banks are constrained to increase their loans share in their asset portfolio, which tend to low loan-deposit ratio and increase the interest rate spread. By adopting the proposed thresholds for the three variables of concern, the researcher envisages that the Central Bank will be in a position to balance between controlling inflation, encouraging bank credit to the private sector, control bank liquidity and stimulate economic growth.

5.3 Policy Implications

In light of conclusions of this research study provide five policy implications for the Central Bank of eSwatini as the regulator of the banking industry in the Kingdom of eSwatini to consider in order to strengthen the lending system, ensure compliance to regulation measures, encourage bank lending to the private sector and stimulate economic growth.

(i) Firstly, while the study provides evidence that all CAMELS indicator for on-site regulation shows compliance of the banking industry, except for management efficiency, the results suggest a need to closely monitor the performance of the commercial banks' principal officer(s) and board of directors requires, which are currently underperforming and posing a risk in the banking sector. The rating of 3 shows that risk management practices are less than satisfactory based on the bank's activities. The weak management in the Kingdom of eSwatini may imply a low level of competency of its employees in the banking industry, which is likely to affect the banking system as the Kingdom of eSwatini continues to integrate with other banks in the SADC region. Therefore, for the banking industry in the Kingdom of eSwatini to improve its competency, it needs to continue capacitating its employees to position itself to compete better regional and international. The Central Bank of eSwatini can also leverage on an existing exchange programme and peer-learning programme to capacity staff.

(ii) Secondly, the principal theoretical implication of this study is that the Basel and CAMELS Framework in terms of liquidity does not hold for small developing countries. Already the excess liquidity is weighing heavily on bank credit to the private sector. This study has raised important questions about the Basel and CAMELS framework concept, which assume a one hat size fit all in terms of the liquidity requirement. In its assumption, the Basel Accord and CAMELS theory ignore the level of development of the banking industry, which varies from country to country. It also ignores the spillover effect of high liquidity on bank credit to the private sector. Implications of emphasising high excess liquidity ishigh excess liquidity: Banks become concerned about the possibilities of default on loans, then reduce their lending. The excess liquidity is either kept by the banks as liquid assets, or as cash and deposits or at the central bank as treasury bills or bonds and in other attractive, marketable securities outside the country. Therefore, an increase in bank liquidity coupled with an accommodative monetary stance equates to contractionary monetary policy because it does not support domestic investment; instead, it is invested outside the country.

(iii) Thirdly, considering the three credit control instruments, which are also variables of concern in this study, there is evidence that episodes of high low discount rate coupled with high reserve

requirement and liquidity requirement led to a decrease increase in bank lending to the private sector and the reverse is true. This conclusion advances the bank lending channel theory that a contractionary monetary policy stance shrinks commercial banks' deposits and compels them to utilise managed liabilities which increase the cost of loans. Therefore, strategies to stimulate bank lending and economic growth should recognise the need to adjust the three instruments downward.

(iv) Fourthly, this study concludes that out of the three variables of concern (discount rate, reserve requirement and liquidity requirement), only the discount rate is statistically significant both in the short and long-run, suggesting a weak policy mix. Therefore, while the discount rate is significant as a credit control instrument, the Central Bank of eSwatini should also consider actively using the reserve requirement and liquidity requirement to balance its policy mix, to increase bank credit to the high-yielding investments, which will translate to a surge in economic growth.

(v) Finally, the conclusion that the optimal thresholds for the lending system are: 5.42 percent for the discount rate, 4.03 percent for the reserve requirement and 12.48 percent for the liquidity requirement present a new policy mix for the government and Central Bank of eSwatini. This policy mix is envisaged to strengthen the Central Bank of eSwatini's lending system and allow it to effectively increase bank credit, contain inflation within reasonable levels, and stimulate economic growth through the private sector.

5.4 Constraints

(i) Participants were of the view that the Communications Expert of the Bank should only share information on the performance of commercial banks. Some respondents were reluctant to participate, fearing that their jobs might be at stake. To lessen the fears, a copy letter of approval to conduct the interview will be obtained and shared to all participants.

(ii) Access to the senior Central Bank of eSwatini officials who were participants of the survey was a challenge. The targeted officers of the Central Bank are always busy with the Common Monetary Area (CMA), Southern Africa Development Community (SADC) regional integration and continental assignments. Therefore, the researcher had to reschedule appointments to ensure that all targeted officers were interviewed.

(iii) The researcher also encountered challenges of getting high-frequency data for variables such as real GDP, is released annually. In addition, the model used to analyse secondary data requires

more than thirty-two observations to allow for generalisation of the findings. To address this problem, the number of observations for the secondary data is 240, way above the threshold of $N \geq 50$, which implies that the estimates converged to a normal distribution as *N* increases above fifty observations.

(iv) The Reliability and validity of this study's results may be compromised by the model adopted to analyse data. Cronbach's Alpha Coefficient Reliability (internal consistency and stability), which allows for test-retest, as suggested (Boote and Beile, 2005; Mugenda and Mugenda 2008 and Naidoo (2011). All the Cronbach alpha coefficients were found to be above 0.70, implying credibility.

5.5 Limitations of the Study

The limitations indicated in the first chapter of this study were addressed by the researcher to produce creditable results for the study.

(a) Data used for question 1 (2003- 2019) were not the same period compared to questions 2 to 4 (2000 -2019) because the central Bank of eSwatini adopted the CAMELS framework in 2003. The results of CAMELS were supplemented by empirical evidence of the lending behaviour obtained using secondary data of 240 observations.

(b) This study may not have dealt with the endogenous effects of GDP that affects the right and the left-hand side of equations 3 and 4. However, the fact that an impact on bank credit to the private sector significantly contributes to changes in the overall economic growth this limitation was normalised.

(c) The study was limited to the effect on commercial banks; therefore, the effect on microfinance institutions, non-financial institutions, associations and development financial institutions while they also play a role in providing lending, in general, was noted assessed. Since the effect of central bank requirements and monetary policy instruments on microfinance institutions, non-financial institutions, associations and development financial institutions is felt in the short term, the result of this study can be generalised. Out of the twenty-five questionnaires distributed, two were not useful because they were not well answered. Despite this limitation, the twenty-three respondents account for 85 percent of the targeted group, which is reasonably high to allow the researcher to generalise findings.

5.6 The Original Contribution to the Body of Knowledge

This dissertation profiled previous research studies on the determinants of bank lending to the private sector such as Central Bank instruments, macroeconomic factors and studies on threshold determination, but all have not linked these three components into one framework, as this study did. Furthermore, previous studies are limited to the behaviour or determinate, instead of addressing the root cause of the low credit to the private sector and sluggish growth.

This study extends knowledge by adopting a conceptual framework that links the state of compliance, monetary policy, prudential on-site regulation and thresholds of monetary policy instruments in one framework to strengthen the Central Bank Lending policy mix for the Kingdom of eSwatini. Based on the CAMELS framework, this study provides evidence that while commercial banks in the Kingdom of eSwatini are compliant to CAMELS indicators, the thresholds are on the higher side and affect bank lending. The results of the ARDL also show evidence that the monetary policy instruments were not positively influencing bank credit to the private sector in the period under review. Further, this study utilises the linkages to determine the optimal policy mix for the Central Bank of eSwatini, which will positively stimulate bank lending to the private sector and economic growth in the Kingdom of eSwatini. Therefore, unlike the previous studies, this study provides a framework for exploration and strengthening the lending system of the Central Bank of eSwatini and other CMA countries. This composition of the different components in one research study points to the originality of this work that fills the existing gap in the body of knowledge.

While the contribution of the previous studies is noted, it is also necessary to appreciate that this study provides unique, original and different contributions to the body of knowledge in many ways.

(a) This study evidence showed the optimal thresholds of the three monetary policy instruments for the Central Bank Lending system: 5.42 percent for the discount rate, 4.03 percent for the reserve requirement and 12.48 percent for the liquidity requirement in the Kingdom of eSwatini. No research study has generated similar results to strengthen central bank policy mix. Therefore, this is an original contribution to the existing literature on central bank regulation.

(b) While the information on inflation and public debt threshold is well documented, studies on optimal thresholds for monetary policy instruments for bank lending are few in the Kindom of eSwatini. This study, therefore, contributes to available literature by bringing to the fore the importance of aligning monetary policy instruments to stimulate bank lending to the private sector to create a conducive environment for economic growth.

(c) In addition, this research study provides a new insight that in a CMA set-up, an increase in liquidity requirement and reserve requirement while maintaining an accommodative monetary policy states is a contradicting policy stance in the absence of adequate investment instruments. The excess liquidity would find its way to the country where small member states are pegging their currency, in this case, South Africa. Therefore, the increase of the liquidity requirement is not a solution. Instead, it is a cause for concern. Excess liquidity in developing countries that are in the CMA does not translate to lending to high-yielding private sector investment. Therefore, this study is cautioning monetary authorities of the Kingdome of eSwatini, Kingdom of Lesotho and Namibia that increased bank liquidity is tantamount to contractionary monetary policy and a higher liquidity support lower level of domestic activity. This is true since all the CMA countries have high liquidity requirements but bank credit to the private sector and economic growth is relatively low.

5.7 Practical Contributions

(a) The value of determining thresholds for policy is not just its applicability in one country but is its application across many jurisdictions that are at the same level in terms of economic development. For example, the Kingdom of eSwatini is part of the CMA, pegging its currency to the South African rand. The findings of this study will guide the Central Bank of eSwatini to strengthen its bank lending system, particularly its monetary policy instruments mix for the lending system, which is currently misaligned. The thresholds for discount rate (5.42 percent), reserve requirement (4,03 percent), and liquidity requirement (12.48 percent) are scholarly undertaking and a practical business policy intervention in central bank monetary policy regulation not only for the Kingdom of eSwatini but even for the other small CMA countries, Namibia and Lesotho.

(b) Generalisability is largely the extent to which conclusions of a research study based on the sample set from a population can be used to conclude for the whole population. This research study's sample size (for primary data) includes twenty-five staff out of twenty-seven officers from the financial regulation department and financial markets department at the Central Bank of eSwatini. This accounts for 93 percent of the targeted population. In terms of the secondary data, the period is 2000 to 2019, and the data used was monthly and had more than thirty observations (216 observations) which also points to the credibility of the results. The ARDL bounds test requires that the data have more than thirty observations for results to be generalised. Thus, in this case, all the requirements were met. Total observations of the monthly data are 216, above the thirty observations. The researcher, therefore, concludes that the results of this study are relevant even for the other smaller CMA member states (Lesotho and Namibia).

5.8 Recommendations

The policy implication of the findings to the Central Bank of eSwatini is to continue strengthening its monetary policy instrument by attaining a stable level of the discount rate, reserve requirement, and liquidity requirement, which is optimal to stimulate bank credit to the private sector, contain inflation within reasonable levels, ensure sustainable financial sector stability and stimulate economic growth in the Kingdom of eSwatini. The following recommendations are crucial to strengthen the Central Bank Lending system's policy mix and keep the economy afloat.

(a) This study provides that the Central Bank of eSwatini should consider the findings of this study, particularly the thresholds of the three instruments (discount rate, CRR, and liquidity requirement), since they are currently misaligned. This study provides the following thresholds, which will strengthen the lending system in the Kingdom of eSwatini:

- Discount Rate Threshold for Bank Credit = 5.42 percent
- Cash Reserve Requirement Threshold for Bank Credit = 4.03 percent
- Liquidity Requirement Threshold for Bank Credit = 12.48 percent

Fixing any of the three instruments above the recommended thresholds will trigger a decline in bank credit to the private sector. While any point below the threshold is commendable to stimulate bank credit to the private sector and economic growth, the Central Bank should remain vigilant to take appropriate actions to deal will unnecessary inflationary pressures. Further, the Central Bank of eSwatini can aim the range of 3.50 percent to 5.42 percent for the discount rate, 2.5 percent to 4.03 percent for the reserve requirement and 10 percent to 12.48 percent for liquidity requirement if the desired target is to stimulate bank credit to the private sector and economic growth in the Kingdom of eSwatini.

(b) This study also recommends that the Central Bank of eSwatini lower the liquidity requirement and reserve requirement to the proposed thresholds to increase loanable funds required by investors. Balancing these instruments will shift banks' investment from external platforms and domestic treasury bills to high-yielding private sector investment in the domestic economy.

(c) Finally, since the results of this study suggest that the banking industrybanking industry did not meet the management efficiency indicator of the CAMELS did not meet the management efficiency indicator of the CAMELS, this study recommends that there is a need for the Central Bank of eSwatini to continue tightening measures on management efficiency for commercial

banks. Furthermore, the weak management may imply a low level of competency of its employees in the banking industry, which is likely to affect the banking system as the Kingdom of eSwatini continues to integrate with other banks in the SADC region. Therefore, for the banking industry in the Kingdom of eSwatini to improve its competency, it needs to continue capacitating its employees to position itself to compete better regional and international. Majithiya and Pattani (2010) for India suggest that a strong management system demonstrates a solid base for growth and a high level of competency in the banking industry. Therefore, the Central Bank of eSwatini should ensure that commercial banks are compliant with management requirements.

5.9 Suggestion for Research

(a) Since this study assessed only two supply side regulation-specific factors, namely: (i) the prudential regulation (on-site and off-site) and monetary policy instruments, and (ii) macroeconomic indicators such as real gross domestic product (GDP) growth rate, exchange rate and inflation, the research recommends that further study on a similar topic should include the other two supply side categories of bank lending determinants, namely (iii) individual bank-specific factors such as deposits, bank liquidity, investment portfolio, among others; and (iv) factors specific to the banking sector/industry such as market structure, i.e. degree of competition or market concentration.

(b) Further research on a similar topic for the Kingdom of eSwatini should consider all credit providers, namely microfinance institutions, non-financial institutions and associations on a wider geographical scope because they play a significant role in providing lending to the private sector.

(c) The validity of the study could be improved by undertaking a similar abductive approach with additional variables or expanding the research study to assess other member states within the CMA. This may produce additional information on the spillover effects of the current arrangements on bank credit to the private sector.

5.10 Chapter Summary

This last section of the dissertation availed to the reader an introduction to the chapter. The chapter also provided a detailed discussion and conclusions of the findings obtained in chapter four. Specifically, this chapter highlights how the questions articulated in the first chapter were answered, the original contribution of the study and practical contributions to policy implications, recommendations, and suggested areas for further study.

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APPENDIX OF INFORMATION USED IN THE DISSERTATION

APPENDIX 1: INFORMATION ON CONSENT FORM TO PARTICIPATE IN THE RESEARCH STUDY

DBA/ PhD Research Project

Researcher: Samuel Nkosinathi Dlamini (+268 76541395)

Supervisors: Professor Stephen Migiro and Doctor Pfano Mashau

(002732601479)

Research Office: Ms Zikhona 002731-2602784

1.	I have read and understood the information provided about the research survey.	☐
2.	I have asked all questions about the research survey and it was properly explained to me.	☐
3.	Without any pressure, I voluntarily agree to provide the information required for the survey.	☐
4.	I understand that I reserve the right to withdraw in the event I discover that there is risk associated with my participation without serving a notice or providing a reason for my withdrawal.	☐
5.	All the procedures regarding confidentiality have been properly explained to me, including the use of names and anonymisation of all information I will provide.	☐
6	I consent / do not consent to have this interview audio recorded.	☐
7	I consent/do not consent to have this interview video recorded.	☐
8.	The use of the data in research, publications, sharing and archiving has been explained to me.	☐
9.	Select only **one** of the following: I would like my name to appear when this report is published so what I have contributed to this survey is recognised. I do not want my name used in the report.	☐ ☐

I…… (full names of participant) hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participating in the research project. I understand that I am at liberty to withdraw from the project at any time, should I so desire.

Signature of Participant: _____ Date:_____

APPENDIX 2: QUESTIONNAIRE OF THE RESEARCH STUDY

1. Background Information

Study Title: "Strengthening Central Bank Regulations to stimulate economic growth through Commercial Bank Lending System. A study of Central Bank Lending system in the Kingdom of eSwatini."

Section 2: Personal Introduction

I am a doctorate student at KwaZulu-Natal University – School of Business Administration, in South Africa. I am conducting a study on *"Strengthening Central Bank regulations to stimulate economic growth through Commercial Bank Lending System. A study of Central Bank Lending system in the Kingdom of eSwatini."*

The objectives of this study are to:

(a) establish the state of commercial bank compliance in the Kingdom of eSwatini.
(b) establish factors that stimulate bank lending and those that impede lending to the private sector - the core sector of the economy;
(c) determine the link and its impact between monetary policy regulation and low credit to the private sector in the Kingdom of eSwatini;
(d) establish the optimal range for the monetary policy instrument (s) that the Central Bank of eSwatini should aim to stimulate commercial bank lending to the private sector in the Kingdom of eSwatini, in line with the economic growth strategy.

Section 3: Rationale of selection

You have been selected to participate in the study based on your knowledge of the aspects of this study. Your assistance in providing responses to questions in this interview will be greatly appreciated. I would like to assure you that the information you provide will be treated as strictly private and confidential. Your name or personal details are not required. This research will assist the regulator in improving the regulation of commercial banks.

Section 4: Respondents experience, educational background and specific information on monetary policy instruments and macroeconomic instruments

A: General Information

1. How long have you served in the bank?

Less than 1year [ ] 2 to 4 years [ ] 5 to 9 years [ ] 10 years and above [ ]

2. How long have you worked in your Department?

Less than 1 year [ ] 2 to 4 years [ ] 5 to 9 years [ ] More than 10 years [ ]

3. What is your Department?

   Credit [ ] Risk [ ] Audit [ ]

4. What is your level of education? (Tick where appropriate)

   AAT Level 1 [ ] AAT Level 2 [ ] AAT Level 3 [ ]

   Diploma [ ] Bachelors [ ] Master [ ] PHD [ ]

Question 4B: Effects of the bank rate/discount rate on the lending behaviour of commercial banks

5. How often does the Central Bank of eSwatini change the bank rate regulation instruments?

   Once a year [ ] Twice a year [ ] Three times [ ] Four and above [ ]

6. To what extent does bank lending affect the bank lending behaviour of commercial banks?

   Significant [ ] Moderate [ ] Insignificant [ ] Not aware [ ]

7. What has been the bank rate trend in the last 10 years?

   Rising [ ] Steady [ ] Fluctuating [ ] Reducing [ ] Don‘t know [ ]

8. In your own view, do you think the above trend had resulted in an increase or decrease in credit to the private sector of commercial banks in the Kingdom of eSwatini?

   Increase [ ] Decrease [ ]

9. i. If your answer to the question above is decrease, how would you rate the effectiveness of the CBR on lending behaviour of commercial banks in the Kingdom of eSwatini?

Very high [ ] High [ ] Moderate [ ] Low [ ] Negligible [ ]

ii. Please elaborate on the effect.

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……

10. How is the effect of the bank rate by the central bank on lending of commercial banks in the Kingdom of eSwatini?

    Very high [ ] High [ ] Moderate [ ] Low [ ] Negligible [ ]

11. What is your level of agreement to the following aspect of bank rate/discount rate effects on lending behaviour of commercial banks? Your rating must a score between 1 and 5 where, 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree.

	Responses					**Total Responses**
Statement on discount rate	**1**	**2**	**3**	**4**	**5**	**N**
The bank rate/discount rate is used as a tool in monetary policy, influencing the bank lending and interest rates by changing the amount of funds available for banks to make loans with.						
The bank rate/discount rate causes immediate liquidity problems for banks with low excess reserves, thereby influencing lending and payment systems in the commercial banks concerned.						
The higher the bank rate/discount rate, the less funds banks will have to loan out, leading to lower money creation and perhaps ultimately to the higher purchasing power of the money.						
The higher the bank rate/discount rate, the more charges on loan are charged.						
The lower the bank rate/discount rate, the less charges on loans are charged.						

Question 4C: What are the effects of the reserve requirement on the lending behaviour of commercial banks

12. How often does the Central Bank of eSwatini change the reserve requirement regulation instruments?

Once a year [ ] Twice a year [ ] Three times [ ] Four and above [ ]

13. To what extent does the central bank reserve requirement affect the bank lending behaviour of commercial banks?
    Significant [ ] Moderate [ ] Insignificant [ ] Not aware [ ]

14. How has been the central bank reserve requirement trend in the last 10 years?
    Rising [ ] Steady [ ] Fluctuating [ ] Reducing [ ] Don‘t know [ ]

15. In your own opinion, do you think the above trend had resulted in an increase or decrease in credit to the private sector of commercial banks in the Kingdom of eSwatini?
    Increase [ ] Decrease [ ]

16. i. If your answer to the question above is decrease, how would you rate the effectiveness of the CBR on lending behaviour of commercial banks in the Kingdom of eSwatini?
    Very high [ ] High [ ] Moderate [ ] Low [ ] Negligible [ ]

ii. Please elaborate on the effect.

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17. How would you rate the effectiveness of the cash reserve ratio by the central bank on lending of commercial banks in the Kingdom of eSwatini?
    Very high [ ] High [ ] Moderate [ ] Low [ ] Negligible [ ]

18. What is your level of agreement to the following aspect of reserve requirement effect on lending behaviour of commercial banks? Your rating must a score between 1 and 5 where, 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree.
19.

	Responses					**Total Responses**
Statement	**1**	**2**	**3**	**4**	**5**	**N**
The reserve requirement is used as a tool in monetary policy, influencing the banks, lending and interest rates by changing the amount of funds available for banks to make loans with.						

The reserve requirements cause immediate liquidity problems for banks with low excess reserves, thereby influencing lending and payment systems in the commercial banks concerned.						
Holding some funds in excess reserves provides enhanced liquidity and therefore, more smooth operation of the payment system.						
The higher the reserve requirement, the less funds banks will have to loan out, leading to lower money creation and perhaps ultimately to higher purchasing power of the money.						
The higher the reserve requirement, the more charges on loan are charged.						
The lower the reserve requirement, the less charges on loans are charged.						

Qustion 4D: Effects of Liquidity ratio on the lending behaviour of commercial banks

20. How often does the Central Bank of eSwatini change the liquidity ratio regulation instruments?
    Once a year [ ] Twice a year [ ] Three times [ ] Four and above [ ]

21. To what extent does the central bank liquidity ratio affect the lending of commercial banks in the Kingdom of eSwatini?
    Significant [ ] Moderate [ ] Insignificant [ ] Not aware [ ]

22. What has been the central bank liquidity ratio trend in the last 10 years?
    Rising [ ] Steady [ ] Fluctuating [ ] Reducing [ ] Don‘t know [ ]

23. In your own opinion, do you think the above trend had resulted in an increase or decrease in credit to the private sector of commercial banks in the Kingdom of eSwatini?
    Increase [ ] Decrease [ ]

24. i. If your answer to the question above is decrease, how would you rate the effectiveness of the CBR on the lending behaviour of commercial banks in the Kingdom of eSwatini?

Very high [ ] High [ ] Moderate [ ] Low [ ] Negligible [ ]

ii. Please elaborate on the effect.

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25. (i)How would you rate the effectiveness of the liquidity ratio by the central bank on lending of commercial banks in the Kingdom of eSwatini?

Very high [ ] High [ ] Moderate [ ] Low [ ] Negligible [ ]

(ii)Please explain how the liquidity ratio affects the lending behaviour of commercial banks in the Kingdom of eSwatini?

……

……

26. What is your level of agreement to the following aspect of liquidity requirement effects on lending behaviour of commercial banks? Your rating must a score between 1 and 5 where, 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree.

	Responses					**Total Responses**
Statements	**1**	**2**	**3**	**4**	**5**	**N**
The liquidity ratio is used as a tool in monetary policy, influencing the banks' lending and interest rates by changing the amount of funds available for banks to make loans with.						
The liquidity ratio causes immediate liquidity problems for banks with low excess reserves thereby influencing lending and payment systems in the commercial banks concerned.						
The higher the liquidity ratio is set, the less funds banks will have to loan out, leading to lower money creation and perhaps ultimately to higher purchasing power of the money.						
The higher the liquidity ratio is set, the more charges on loan are charged.						

The lower the liquidity ratio is set, the less charges on loan are charged.						

Question 4E: Effect of open market operation /treasury bill rate on the lending behaviour of banks

27. How often does the Central Bank of eSwatini change the open market operation /treasury bill rate instruments?
    Once a year [ ] Twice a year [ ] Three times [ ] Four and above [ ]

28. To what extent does the open market operation /treasury bill rate affect lending of commercial banks in the Kingdom of eSwatini?
    Significant [ ] Moderate [ ] Insignificant [ ] Not aware [ ]

29. What has been the open market operation /treasury bill rate trend in the last 10 years?
    Rising [ ] Steady [ ] Fluctuating [ ] Reducing [ ] Don‘t know [ ]

30. In your own opinion, do you think the above trend had resulted in an increase or decrease in credit to the private sector of commercial banks in the Kingdom of eSwatini?
    Increase [ ] Decrease [ ]

31. i. If your answer to the question above decreases, how would you rate the effectiveness of the open market operation /treasury bill rate on lending behaviour of commercial bank in the Kingdom of eSwatini?
    Very high [ ] High [ ] Moderate [ ] Low [ ] Negligible [ ]

    ii. Please elaborate on the effect.
    ……
    ……

32. (i)How would you rate the effect of the open market operation /treasury bill rate by central bank on lending of commercial bank in the Kingdom of eSwatini?
    Very high [ ] High [ ] Moderate [ ] Low [ ] Negligible [ ]

    (ii)Please explain how the open market operation /treasury bill rate affects the lending behaviour of commercial bank in the Kingdom of eSwatini?

……

……

33. What is your level of agreement to the following aspect of open market operation effects on lending behaviour of commercial banks? Your rating must a score between 1 and 5 where, 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree.

	Responses					**Total Responses**
Statement on OMO	**1**	**2**	**3**	**4**	**5**	**N**
Open market operations (OMO) provides the bank with low risk investments with certainty in pay off and therefore banks may prefer OMO than issuing credit the private sector						
OMO are used to regulate money in supply and therefore changes the levels of money available to the bank for lending						
OMO controls the short term market interest rate of base money in an economy and thus indirectly control the total money supply						

Question 4F: Effects of Monetary Policy speculation/expectation on bank lending behaviour.

34. Do you think uncertainty caused by the expectation of changes in monetary policy stance as a result of inflation and exchange rate is influencing the lending behaviour of commercial banks?

    Yes [ ] No [ ]

i. How would you rate the effect of expectation changes on lending of commercial banks in the Kingdom of eSwatini?

Very high [ ] High [ ] Moderate [ ] Low [ ] Negligible [ ]

35. What is your level of agreement to the following aspect of expectation effects on lending behaviour of commercial banks? Your rating must a score between 1 and 5 where, 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree.

	Responses					Total Responses
Statements	**1**	**2**	**3**	**4**	**5**	**N**
Expectations on policy rate (interest rates) and financial conditions, had a significant influence on bank lending behaviour						
Decision to extend loans to new or existing customers by banks is largely determined by the current and near–term expected state of the macroeconomy						
Investors' spending increases banks' willingness to lend that immediately affects their investment and spending decisions						
When banks are not certain about changes in the monetary policies in South Africa, banks in the Kingdom of eSwatini might be forced to withhold credit in fear that it might result to non-performing loans						

Question 4G: Effects of inflation on bank lending behaviour

36. Do you think uncertainty caused by inflation had been influencing the lending behaviour of commercial banks in the Kingdom of eSwatini?

    Yes [ ] No [ ]

i. How would you rate the effect of inflation on lending of commercial banks in the Kingdom of eSwatini?

Very high [ ] High [ ] Moderate [ ] Low [ ] Negligible [ ]

1. What is your level of agreement to the following aspect of inflation effects on lending behaviour of commercial banks? Your rating must a score between 1 and 5 where, 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree.

	Responses					Total Responses
Statements	**1**	**2**	**3**	**4**	**5**	**N**

The inflation tends to influence bank lending by changing the amount of funds available for banks to issue loans.						
The inflation causes immediate liquidity problems for banks with low excess reserves thereby influencing lending.						
The higher the inflation, the less funds banks will have to lend to the private sector.						
The higher the inflation, the higher the charges on loan to private sector.						
The lower the inflation, the less the charges on loan to private sector.						

Question 4H. Effects of exchange rate on bank lending behaviour

37. Do you think uncertainty caused by exchange rate fluctuation had been influencing the lending behaviour of commercial banks in the Kingdom of eSwatini?

    Yes [ ] No [ ]

i. How would you rate the effect of inflation on lending of commercial bank in the Kingdom of eSwatini?

Very high [ ] High [ ] Moderate [ ] Low [ ] Negligible [ ]

38. What is your level of agreement to the following aspect of exchange rate effects on lending behaviour of commercial banks? Your rating must a score between 1 and 5 where, 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree.

	Responses					Total Responses
Statements	**1**	**2**	**3**	**4**	**5**	**N**
The exchange rate tends to influence the bank lending by changing the amount of funds available for banks to make loans.						
The exchange rate causes immediate liquidity problems for banks with low excess reserves thereby influencing lending and payment systems in the commercial banks.						
The higher the exchange rate, the less funds banks will have for loans to the private sector.						
The higher the exchange rate, the higher the charges on loan to private sector.						
The lower the exchange rate, the less the charges on loan to private sector.						

Qustion 4I. Effects of real gross domestic product on bank lending behaviour

39. Do you think uncertainty caused by variation in real GDP had been influencing the lending behaviour of commercial banks in the Kingdom of ESwatini?

    Yes [ ] No [ ]

i. How would you rate the effect of real GDP on lending of commercial banks in the Kingdom of eSwatini?

Very high [ ] High [ ] Moderate [ ] Low [ ] Negligible [ ]

40. What is your level of agreement to the following aspect of real GDP effects on the lending behaviour of commercial banks? Your rating must a score between 1 and 5 where, 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree.

	Responses					Total Responses
Statements	**1**	**2**	**3**	**4**	**5**	**N**
The real GDP tends to influence the bank lending by changing the amount of funds available for banks to make loans.						
The real GDP causes immediate liquidity problems for banks with low excess reserves thereby influencing lending and payment systems in the commercial banks.						
The higher the real GRDP the less funds banks will have for loans to the private sector.						
The higher the real GDP the higher the charges on loan to private sector.						
The lower the real GDP, the less the charges on loan to private sector.						

Qustion 4J. State of compliance to the CAMELS Indicators.

Capital Adequacy

41. What are the conditions for commercial bank capital adequacy?

42. What are the factors that are considered when evaluating capital adequacy during on-site regulation?

43. Overall what is your comment about the compliance of commercial banks in the past ten years?

Asset Quality

44. What are the conditions for commercial bank asset quality?

45. What are the factors that are considered when evaluating asset quality during on-site regulation?

46. Overall what is your comment about the compliance of commercial banks in the past ten years?

Management Quality

47. What are the conditions for commercial bank management quality?

48. What are the factors that are considered when evaluating management quality during on-site regulation?

49. Overall what is your comment about the compliance of commercial banks in the past ten years?

Earnings and Profitability

50. What are the conditions for commercial bank Earnings and Profitability?

51. What are the factors that are considered when evaluating Earnings and Profit during on-site regulation?

52. Overall what is your comment about the compliance of commercial banks in the past ten years?

Liquidity management

53. What are the conditions for commercial bank liquidity management?

54. What are the factors that are considered when evaluating liquidity management during on-site regulation?

55. Overall what is your comment about the compliance of commercial banks in the past ten years?

Sensitivity

56. What are the conditions for commercial bank sensitivity?

57. What are the factors that are considered when evaluating sensitivity during on-site regulation?

58. Overall what is your comment about the compliance of commercial banks in the past ten years?

APPENDIX 3: RELIABILITY CRONBACH'S ALPHA RELIABILITY TEST

Question 4B

		Questions						
Experts	1	2	3	4	5	6	7	Total
1	1	1	1	1	1	1	1	7
2	3	5	3	3	3	3	3	23
3	5	4	4	5	5	4	4	31
4	4	5	5	5	5	4	5	33
5	1	2	1	1	2	1	2	10
6	1	1	1	2	2	1	1	9
7	1	1	2	1	1	1	2	9
8	5	4	4	5	4	5	3	30
9	4	4	1	2	4	4	3	22
10	1	1	1	1	1	1	1	7
11	1	1	3	1	1	2	1	10
12	4	4	4	3	4	3	4	26
VARIANCE	2.743056	2.6875	2.083333	2.583333	2.354167	2.083333	1.75	

Question 4C

		Questions						
Experts	1	2	3	4	5	6	7	Total
1	1	1	1	1	1	1	1	7
2	3	5	3	3	3	3	3	23
3	5	4	4	5	5	4	4	31
4	3	3	5	3	4	4	3	25
5	1	2	1	1	2	1	2	10
6	1	1	1	2	2	1	1	9
7	1	1	2	1	1	1	2	9
8	5	4	4	5	4	5	3	30
9	4	4	1	2	4	4	2	21
10	1	1	1	1	1	1	1	7
11	1	1	3	1	1	2	1	10

12	4	4	4	3	4	3	4	26
VARIANCE	2.583333	2.243056	2.083333	2.055556	2.055556	2.083333	1.1875	

Question 4D

		Questions						
Experts	1	2	3	4	5	6	7	Total
1	1	1	1	1	1	1	1	7
2	3	5	3	4	3	1	3	22
3	5	4	4	5	5	4	4	31
4	3	3	5	3	4	4	3	25
5	1	2	1	1	2	1	2	10
6	1	1	1	1	2	1	1	8
7	1	1	2	2	1	1	2	10
8	3	3	4	5	4	5	3	27
9	4	4	1	1	4	4	2	20
10	1	1	1	1	1	1	1	7
11	1	1	3	1	1	2	1	10
12	4	4	4	3	4	3	4	26
VARIANCE	2.055556	2.083333	2.083333	2.388889	2.055556	2.222222	1.1875	

Question 4E

		Questions						
Experts	1	2	3	4	5	6	7	Total
1	1	1	1	1	1	1	1	7
2	3	5	3	4	3	1	3	22
3	5	4	4	5	5	4	4	31
4	3	3	5	3	4	4	3	25
5	1	2	1	1	2	1	2	10
6	1	1	1	1	2	1	1	8
7	1	1	2	2	1	1	2	10

8	5	5	4	5	4	5	3	31
9	4	4	4	1	4	4	2	23
10	1	1	1	1	1	1	1	7
11	1	1	1	1	1	1	1	7
12	4	4	5	4	4	3	4	28
VARIANCE	2.583333	2.555556	2.555556	2.576389	2.055556	2.354167	1.1875	

Question 4F

	Questions							
Experts	1	2	3	4	5	6	7	Total
1	2	1	1	2	1	1	1	9
2	3	5	3	4	3	1	3	22
3	5	4	4	5	4	4	4	30
4	3	3	4	3	4	4	3	24
5	1	2	1	1	2	1	2	10
6	1	1	1	1	2	1	1	8
7	1	1	2	2	1	1	2	10
8	5	5	4	5	4	5	3	31
9	4	4	4	1	4	4	2	23
10	1	1	1	1	1	1	1	7
11	1	1	3	1	1	2	1	10
12	4	4	4	3	4	3	1	23
VARIANCE	2.409722	2.555556	1.722222	2.243056	1.743056	2.222222	1	

Question 4G:

	Questions							
Experts	1	2	3	4	5	6	7	Total
1	2	1	1	2	1	1	1	9
2	3	5	5	4	3	1	3	24
3	5	4	4	5	4	4	4	30
4	3	3	4	3	5	4	3	25

5	1	2	1	1	2	1	2	10
6	1	1	1	1	2	1	1	8
7	1	1	2	2	1	1	2	10
8	5	5	4	5	4	5	3	31
9	4	4	4	1	4	4	2	23
10	1	1	1	1	1	1	1	7
11	1	1	3	1	1	2	1	10
12	3	4	3	3	4	3	1	21
VARIANCE	2.25	2.555556	2.020833	2.243056	2.055556	2.222222	1	

Question 4H

		Questions						
Experts	1	2	3	4	5	6	7	Total
1	2	1	1	2	1	1	1	9
2	3	5	5	4	3	1	3	24
3	5	4	4	3	4	4	4	28
4	3	4	3	3	5	2	3	23
5	1	2	1	2	2	1	2	11
6	1	1	2	1	2	1	1	9
7	2	1	2	2	1	2	2	12
8	5	5	4	5	4	5	3	31
9	4	4	4	4	4	4	4	28
10	1	1	1	1	1	1	1	7
11	1	1	2	1	1	1	1	8
12	3	4	3	3	4	3	5	25
VARIANCE	2.076389	2.6875	1.722222	1.576389	2.055556	1.972222	1.75	

Question 4I:

		Questions						
Experts	1	2	3	4	5	6	7	Total
1	2	1	1	2	1	1	1	9

2	3	5	5	4	3	5	2	27
3	4	4	4	3	4	5	4	28
4	3	4	4	4	5	4	4	28
5	1	2	1	1	2	1	2	10
6	1	2	1	1	2	1	1	9
7	1	1	1	1	1	1	1	7
8	5	5	4	5	4	5	3	31
9	4	4	4	5	4	4	2	27
10	1	1	1	1	1	1	1	7
11	1	1	1	1	1	2	1	8
12	4	4	3	5	4	5	5	30
VARIANCE	2.083333	2.472222	2.416667	2.854167	2.055556	3.243056	1.854167	

Question 4J:

	Questions							
Experts	1	2	3	4	5	6	7	Total
1	2	1	1	2	1	1	1	9
2	3	5	5	4	3	1	3	24
3	5	4	4	5	4	4	4	30
4	3	3	4	3	5	4	3	25
5	1	2	1	1	2	1	2	10
6	1	1	1	1	2	1	1	8
7	1	1	2	2	1	1	2	10
8	5	5	4	5	4	5	3	31
9	4	4	4	1	4	4	2	23
10	1	1	1	1	1	1	1	7
11	1	1	3	1	1	2	1	10
12	3	4	3	3	4	3	1	21
VARIANCE	2.25	2.555556	2.020833	2.243056	2.055556	2.222222	1	

APPENDIX 4: DECRIPTIVE STATISTIC CAMELS INDICATORS

	Capital Adequacy	Asset Quality	Management	Earning Ability	Liquidity	Sensitivity
Mean	22.92267	7.786667	2.600000	3.964667	22.63733	2.400000
Median	23.96000	7.200000	3.000000	3.840000	23.88000	2.000000
Maximum	26.27000	9.800000	3.000000	8.600000	29.46000	3.000000
Minimum	15.45000	6.400000	2.000000	1.900000	15.58000	2.000000
Std. Dev.	3.146832	1.273839	0.507093	1.483186	5.300414	0.507093
Skewness	-1.032273	0.581634	-0.408248	2.009865	-0.072824	0.408248
Kurtosis	3.202275	1.799272	1.166667	7.656878	1.204464	1.166667
Jarque-Bera	2.689539	1.746838	2.517361	23.65296	2.028226	2.517361
Probability	0.260600	0.417522	0.284029	0.000007	0.362724	0.284029
Sum	343.8400	116.8000	39.00000	59.47000	339.5600	36.00000
Sum Sq. Dev.	138.6357	22.71733	3.600000	30.79777	393.3215	3.600000
Observations	15	15	15	15	15	15

Source: Survey Findings (2018)

APPENDIX 5: UNIT ROOT FOR VARIABLES USED

Bank Credit

Null Hypothesis: LBCRP has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 1 (Automatic - based on SIC, maxlag=14)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.184482	0.9105
Test critical values:	1% level	-4.001516	
	5% level	-3.430963	
	10% level	-3.139114	

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

Null Hypothesis: D(LBCRP) has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=1)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-20.47223	0.0000
Test critical values:	1% level	-4.001516	
	5% level	-3.430963	
	10% level	-3.139114	

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

Null Hypothesis: LBCRP has a unit root

Exogenous: Constant, Linear Trend

Bandwidth: 6 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-1.270009	0.8923
Test critical values:	1% level	-4.001311	
	5% level	-3.430864	
	10% level	-3.139056	

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

Residual variance (no correction)	0.001867
HAC corrected variance (Bartlett kernel)	0.001030

Null Hypothesis: D(LBCRP) has a unit root

Exogenous: Constant, Linear Trend

Bandwidth: 2 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-21.17064	0.0000
Test critical values:	1% level	-4.001516	
	5% level	-3.430963	
	10% level	-3.139114	

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

Residual variance (no correction)	0.001696
HAC corrected variance (Bartlett kernel)	0.001412

Discount Rate

Null Hypothesis: DR has a unit root

Exogenous: Constant, Linear Trend

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

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.325453	0.8788
Test critical values:	1% level	-4.001516	
	5% level	-3.430963	
	10% level	-3.139114	

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

Null Hypothesis: D(DR) has a unit root

Exogenous: Constant, Linear Trend

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

	t-Statistic	Prob.*

Augmented Dickey-Fuller test statistic		-6.641900	0.0000
Test critical values:	1% level	-4.001722	
	5% level	-3.431062	
	10% level	-3.139173	

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

Null Hypothesis: DR has a unit root

Exogenous: Constant, Linear Trend

Bandwidth: 9 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-2.108915	0.5375
Test critical values:	1% level	-4.001311	
	5% level	-3.430864	
	10% level	-3.139056	

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

Null Hypothesis: D(DR) has a unit root

Exogenous: Constant, Linear Trend

Bandwidth: 9 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-13.96463	0.0000
Test critical values:	1% level	-4.001516	
	5% level	-3.430963	
	10% level	-3.139114	

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

Null Hypothesis: D(LQR) has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=1)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-14.75892	0.0000
Test critical values:	1% level	-4.001516	
	5% level	-3.430963	
	10% level	-3.139114	

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

Cash Reserve Requirement

Null Hypothesis: CRR has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=1)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.940763	0.6296
Test critical values:	1% level	-4.001311	
	5% level	-3.430864	
	10% level	-3.139056	

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

Null Hypothesis: D(CRR) has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=1)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-14.60725	0.0000
Test critical values:	1% level	-4.001516	
	5% level	-3.430963	
	10% level	-3.139114	

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

Null Hypothesis: CRR has a unit root

Exogenous: Constant, Linear Trend

Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-1.943382	0.6282
Test critical values:	1% level	-4.001311	
	5% level	-3.430864	
	10% level	-3.139056	

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

Residual variance (no correction)	0.061353
HAC corrected variance (Bartlett kernel)	0.061636

Null Hypothesis: D(CRR) has a unit root

Exogenous: Constant, Linear Trend

Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-14.60725	0.0000
Test critical values:	1% level	-4.001516	
	5% level	-3.430963	
	10% level	-3.139114	

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

Residual variance (no correction)	0.062732
HAC corrected variance (Bartlett kernel)	0.062728

Liquidity Requirement

Null Hypothesis: LQR has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=1)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.688627	0.7532
Test critical values:	1% level	-4.001311	
	5% level	-3.430864	
	10% level	-3.139056	

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

Null Hypothesis: D(LQR) has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=1)

	t-Statistic	Prob.*

Augmented Dickey-Fuller test statistic		-14.75892	0.0000
Test critical values:	1% level	-4.001516	
	5% level	-3.430963	
	10% level	-3.139114	

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

Null Hypothesis: LQR has a unit root

Exogenous: Constant, Linear Trend

Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-1.686306	0.7542
Test critical values:	1% level	-4.001311	
	5% level	-3.430864	
	10% level	-3.139056	

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

Null Hypothesis: D(LQR) has a unit root

Exogenous: Constant, Linear Trend

Bandwidth: 3 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-14.76187	0.0000
Test critical values:	1% level	-4.001516	
	5% level	-3.430963	
	10% level	-3.139114	

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

Residual variance (no correction)	0.358684
HAC corrected variance (Bartlett kernel)	0.349460

Treasury Bills

Null Hypothesis: TBR has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=1)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.635180	0.2652
Test critical values:	1% level	-4.001311	
	5% level	-3.430864	
	10% level	-3.139056	

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

Null Hypothesis: D(TBR) has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=1)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-15.16101	0.0000
Test critical values:	1% level	-4.001516	
	5% level	-3.430963	
	10% level	-3.139114	

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

Null Hypothesis: TBR has a unit root

Exogenous: Constant, Linear Trend

Bandwidth: 2 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-2.721049	0.2292
Test critical values:	1% level	-4.001311	
	5% level	-3.430864	
	10% level	-3.139056	

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

Null Hypothesis: D(TBR) has a unit root

Exogenous: Constant, Linear Trend

Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-15.15980	0.0000
Test critical values:	1% level	-4.001516	

	5% level	-3.430963
	10% level	-3.139114

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

Residual variance (no correction)	0.190218
HAC corrected variance (Bartlett kernel)	0.191088

Inflation

Null Hypothesis: LINFL has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=1)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.186556	0.4942
Test critical values:	1% level	-4.001311	
	5% level	-3.430864	
	10% level	-3.139056	

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

Null Hypothesis: D(LINFL) has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=1)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-13.69303	0.0000
Test critical values:	1% level	-4.001516	
	5% level	-3.430963	
	10% level	-3.139114	

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

Null Hypothesis: LINFL has a unit root

Exogenous: Constant, Linear Trend

Bandwidth: 5 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-2.507215	0.3244
Test critical values:	1% level	-4.001311	
	5% level	-3.430864	
	10% level	-3.139056	

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

Residual variance (no correction)	0.011820
HAC corrected variance (Bartlett kernel)	0.015471

Null Hypothesis: D(LINFL) has a unit root

Exogenous: Constant, Linear Trend

Bandwidth: 4 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-13.74308	0.0000
Test critical values:	1% level	-4.001516	
	5% level	-3.430963	
	10% level	-3.139114	

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

Residual variance (no correction)	0.012086
HAC corrected variance (Bartlett kernel)	0.013144

Real GDP

Null Hypothesis: LRGDP has a unit root

Exogenous: Constant, Linear Trend

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

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-0.403561	0.9869
Test critical values:	1% level	-4.001516	
	5% level	-3.430963	
	10% level	-3.139114	

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

Null Hypothesis: D(LRGDP) has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=1)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-11.37581	0.0000
Test critical values:	1% level	-4.001516	
	5% level	-3.430963	
	10% level	-3.139114	

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

Null Hypothesis: LRGDP has a unit root

Exogenous: Constant, Linear Trend

Bandwidth: 7 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-0.696217	0.9715
Test critical values:	1% level	-4.001311	
	5% level	-3.430864	
	10% level	-3.139056	

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

Null Hypothesis: D(LRGDP) has a unit root

Exogenous: Constant, Linear Trend

Bandwidth: 5 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-11.76041	0.0000
Test critical values:	1% level	-4.001516	
	5% level	-3.430963	
	10% level	-3.139114	

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

Emalangeni Exchange Rate

Null Hypothesis: LEDOLLAR has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=1)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.948087	0.6257
Test critical values:	1% level	-4.001311	
	5% level	-3.430864	
	10% level	-3.139056	

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

Null Hypothesis: D(LEDOLLAR) has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=1)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-13.60085	0.0000
Test critical values:	1% level	-4.001516	
	5% level	-3.430963	
	10% level	-3.139114	

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

Null Hypothesis: LEDOLLAR has a unit root

Exogenous: Constant, Linear Trend

Bandwidth: 6 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-2.002852	0.5961
Test critical values:	1% level	-4.001311	
	5% level	-3.430864	
	10% level	-3.139056	

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

Residual variance (no correction)	0.257143
HAC corrected variance (Bartlett kernel)	0.271973

Null Hypothesis: D(LEDOLLAR) has a unit root

Exogenous: Constant, Linear Trend

Bandwidth: 5 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-13.55423	0.0000
Test critical values:	1% level	-4.001516	
	5% level	-3.430963	
	10% level	-3.139114	

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

Residual variance (no correction)	0.262234
HAC corrected variance (Bartlett kernel)	0.235744

APPENDIX 6: VARIANCE DECOMPOSITION

Bank Credit to the private sector

Period	S.E.	LBCRP	DR	CRR	LQR	TBR	LINFL	LRGDP	LEDOLLAR
1	0.042748	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.055977	99.65245	0.031141	0.128068	0.015310	0.045859	0.000591	0.056548	0.070036
3	0.064093	98.89909	0.088103	0.405682	0.052704	0.146636	0.000725	0.180837	0.226227
4	0.069790	97.81002	0.156256	0.807785	0.113876	0.292369	0.000631	0.362572	0.456495
5	0.074144	96.46492	0.224068	1.306422	0.199731	0.470089	0.001535	0.589141	0.744091
6	0.077688	94.94225	0.283706	1.874441	0.310514	0.666095	0.004959	0.847563	1.070472
7	0.080719	93.31196	0.330834	2.487868	0.445966	0.867672	0.012206	1.125879	1.417615
8	0.083409	91.63191	0.363954	3.127000	0.605463	1.064147	0.024061	1.413928	1.769539
9	0.085863	89.94701	0.383596	3.776545	0.788111	1.247330	0.040711	1.703619	2.113074
10	0.088148	88.29021	0.391551	4.425191	0.992812	1.411511	0.061792	1.988867	2.438063
11	0.090306	86.68422	0.390263	5.064929	1.218299	1.553213	0.086524	2.265343	2.737207
12	0.092366	85.14358	0.382377	5.690326	1.463164	1.670811	0.113863	2.530162	3.005718

Discount Rate

Period	S.E.	LBCRP	DR	CRR	LQR	TBR	LINFL	LRGDP	LEDOLLAR
1	0.304599	2.453976	97.54602	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.431163	1.244042	96.70703	0.009493	0.001065	1.557843	0.244613	0.045151	0.190765
3	0.532507	0.999355	93.33165	0.014282	0.003594	4.137233	0.795573	0.117335	0.600974
4	0.621631	1.184103	88.84493	0.013178	0.008351	6.990916	1.592048	0.193756	1.172718
5	0.702586	1.498419	84.05877	0.010387	0.016665	9.735099	2.566188	0.263396	1.851079
6	0.777044	1.798408	79.38536	0.009461	0.030315	12.20420	3.658271	0.322156	2.591824
7	0.845877	2.027423	75.01129	0.011945	0.051400	14.34677	4.820258	0.369432	3.361488
8	0.909655	2.172816	71.00484	0.017725	0.082200	16.16573	6.015108	0.406167	4.135412
9	0.968819	2.241885	67.37550	0.025736	0.125032	17.68731	7.214978	0.433865	4.895691
10	1.023746	2.249381	64.10520	0.034572	0.182121	18.94570	8.399397	0.454113	5.629510
11	1.074770	2.211397	61.16444	0.042903	0.255495	19.97582	9.553671	0.468377	6.327894
12	1.122199	2.142630	58.52027	0.049705	0.346910	20.81021	10.66759	0.477926	6.984763

Cash Reserve Requirement

Period	S.E.	LBCRP	DR	CRR	LQR	TBR	LINFL	LRGDP	LEDOLLAR
1	0.249750	0.019657	0.098738	99.88160	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.345694	0.033476	0.054229	99.78060	0.009167	0.012013	0.097921	0.003178	0.009413
3	0.415434	0.118205	0.100073	99.39493	0.026629	0.028959	0.289859	0.010037	0.031313
4	0.471678	0.257764	0.223060	98.79894	0.048980	0.044022	0.541396	0.019960	0.065878
5	0.519426	0.437185	0.409411	98.05518	0.073708	0.054252	0.824591	0.032345	0.113327
6	0.561238	0.643264	0.645960	97.21424	0.099074	0.059081	1.117895	0.046639	0.173847

7	0.598616	0.864849	0.920825	96.31566	0.123964	0.059295	1.405505	0.062349	0.247552
8	0.632516	1.092856	1.223717	95.38935	0.147737	0.056350	1.676472	0.079057	0.334459
9	0.663583	1.320136	1.545987	94.45721	0.170093	0.051939	1.923751	0.096412	0.434475
10	0.692277	1.541254	1.880541	93.53467	0.190968	0.047728	2.143319	0.114129	0.547396
11	0.718934	1.752237	2.221675	92.63213	0.210450	0.045219	2.333407	0.131979	0.672907
12	0.743811	1.950317	2.564876	91.75616	0.228722	0.045678	2.493878	0.149784	0.810588

Liquidity Requirement

Period	S.E.	LBCRP	DR	CRR	LQR	TBR	LINFL	LRGDP	LEDOLLAR
1	0.601291	0.203821	0.039665	62.36751	37.38901	0.000000	0.000000	0.000000	0.000000
2	0.838042	0.154129	0.040693	62.34899	37.16725	0.257569	0.029502	0.000859	0.001013
3	1.012275	0.114020	0.033662	62.12803	36.92782	0.690742	0.101405	0.003014	0.001308
4	1.153297	0.087849	0.026002	61.80110	36.67716	1.186252	0.214004	0.006584	0.001053
5	1.272609	0.078200	0.024462	61.42748	36.41500	1.680127	0.362064	0.011633	0.001042
6	1.376209	0.086162	0.033898	61.04364	36.13931	2.138323	0.538607	0.018177	0.001886
7	1.467734	0.111643	0.057179	60.67196	35.84840	2.544652	0.736158	0.026192	0.003810
8	1.549607	0.153667	0.095517	60.32590	35.54167	2.893385	0.947540	0.035617	0.006710
9	1.623548	0.210637	0.148903	60.01318	35.21959	3.184738	1.166321	0.046369	0.010267
10	1.690832	0.280577	0.216519	59.73777	34.88355	3.422138	1.387027	0.058346	0.014074
11	1.752439	0.361309	0.297063	59.50110	34.53558	3.610581	1.605195	0.071437	0.017728
12	1.809140	0.450610	0.388994	59.30291	34.17808	3.755660	1.817324	0.085525	0.020896

Treasury Bill Rate

Period	S.E.	LBCRP	DR	CRR	LQR	TBR	LINFL	LRGDP	LEDOLLAR
1	0.391585	0.040879	13.24652	0.001386	2.256808	84.45441	0.000000	0.000000	0.000000
2	0.499155	0.897851	21.33555	0.172176	2.995008	74.47136	0.005223	0.023056	0.099774
3	0.567503	2.369148	29.24089	0.403589	3.597151	64.09044	0.004454	0.071367	0.222960
4	0.621878	4.111496	35.95567	0.593138	4.028959	54.84042	0.033311	0.134544	0.302462
5	0.669912	5.828689	41.10651	0.701490	4.309298	47.38445	0.142645	0.202035	0.324884
6	0.714083	7.341084	44.75846	0.733938	4.478212	41.74434	0.369880	0.266393	0.307691
7	0.755187	8.572891	47.16667	0.714338	4.575302	37.64022	0.730259	0.323579	0.276735
8	0.793511	9.514679	48.61918	0.668193	4.631529	34.72008	1.220102	0.372031	0.254199
9	0.829213	10.19130	49.36900	0.615480	4.668562	32.66568	1.823498	0.411670	0.254807
10	0.862442	10.64156	49.61653	0.569158	4.700736	31.22437	2.518346	0.443175	0.286121
11	0.893358	10.90712	49.51290	0.536110	4.737260	30.20815	3.280697	0.467550	0.350210
12	0.922126	11.02710	49.16929	0.518757	4.783968	29.48208	4.087492	0.485885	0.445440

Inflation

Period	S.E.	LBCRP	DR	CRR	LQR	TBR	LINFL	LRGDP	LEDOLLAR
1	0.108599	2.61E-06	0.698687	0.001294	0.072434	0.479762	98.74782	0.000000	0.000000
2	0.148336	0.029751	1.473363	0.068218	0.321913	1.531826	96.53697	0.000709	0.037253

3	0.176751	0.081276	2.269505	0.189786	0.673941	2.752222	93.94408	0.002040	0.087155
4	0.199448	0.140108	2.996382	0.328000	1.092374	3.955460	91.35337	0.003673	0.130637
5	0.218491	0.196937	3.617644	0.462884	1.553288	5.047630	88.95442	0.005367	0.161833
6	0.234883	0.246650	4.126991	0.585600	2.041744	5.991225	86.81978	0.006966	0.181042
7	0.249204	0.287052	4.532467	0.693437	2.548623	6.779783	84.95947	0.008380	0.190784
8	0.261834	0.317776	4.847653	0.786722	3.068313	7.422262	83.35380	0.009571	0.193908
9	0.273045	0.339496	5.087202	0.867084	3.597205	7.934207	81.97143	0.010532	0.192845
10	0.283049	0.353411	5.264796	0.936547	4.132778	8.333076	80.77870	0.011277	0.189413
11	0.292010	0.360903	5.392379	0.997100	4.673072	8.635914	79.74394	0.011829	0.184861
12	0.300066	0.363351	5.480000	1.050507	5.216393	8.858312	78.83923	0.012218	0.179988

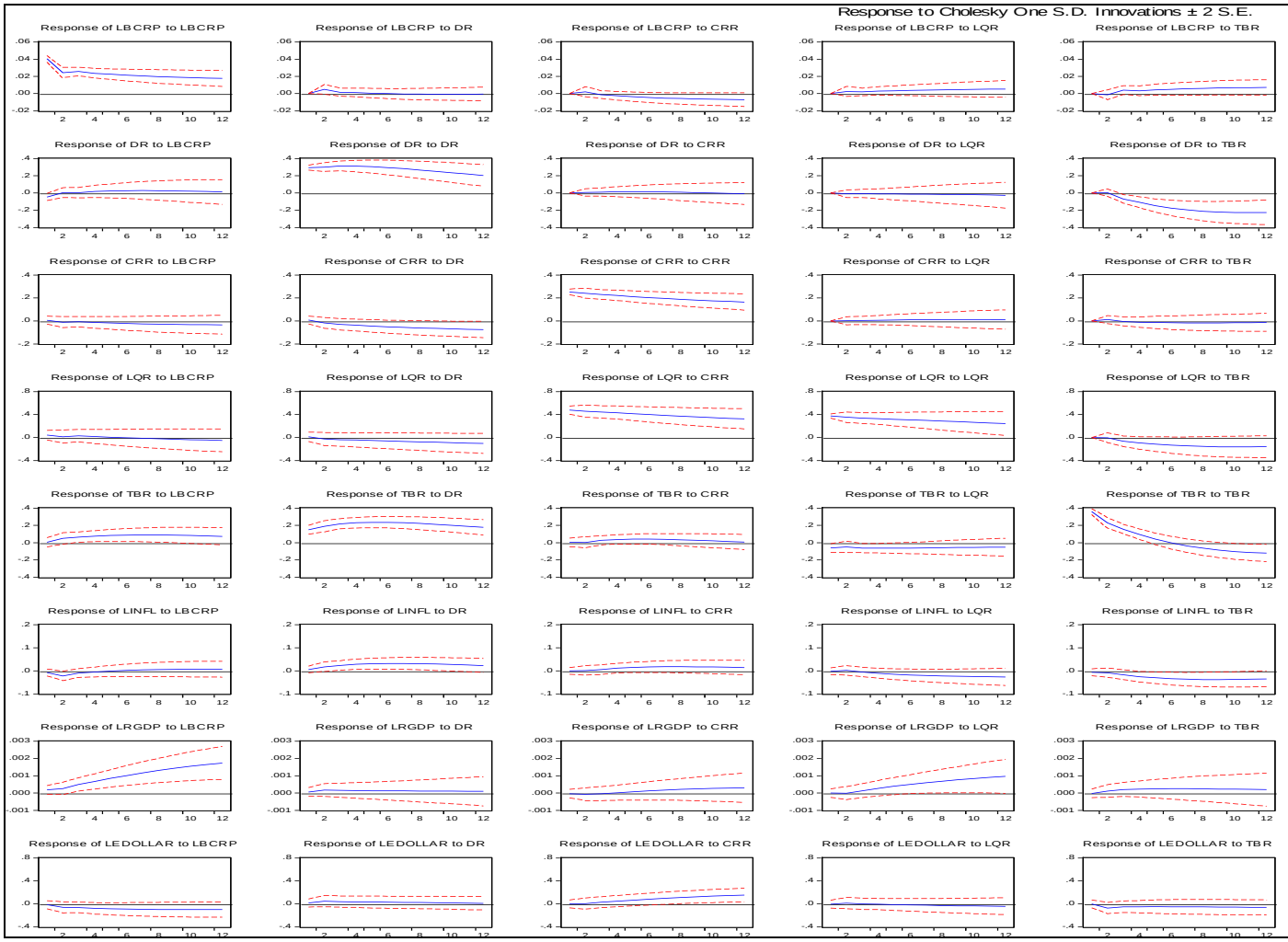
Real Gross Domestic Product

Period	S.E.	LBCRP	DR	CRR	LQR	TBR	LINFL	LRGDP	LEDOLLAR
1	0.001827	2.148244	0.275720	0.054290	0.002368	0.003841	0.421589	97.09395	0.000000
2	0.002599	5.348815	0.148748	0.027540	0.187651	0.167082	1.163566	92.94890	0.007692
3	0.003229	9.024691	0.097763	0.025648	0.580242	0.410768	2.013273	87.83951	0.008108
4	0.003799	12.73031	0.079606	0.044710	1.101846	0.625989	2.861817	82.54971	0.006013
5	0.004335	16.22490	0.073515	0.077732	1.697664	0.777580	3.655942	77.48009	0.012577
6	0.004850	19.40006	0.070629	0.117708	2.332122	0.864776	4.374764	72.80331	0.036637
7	0.005348	22.22321	0.067723	0.158946	2.982953	0.899431	5.014124	68.57099	0.082617
8	0.005834	24.70163	0.063981	0.197393	3.636461	0.895839	5.577648	64.77594	0.151115
9	0.006308	26.86147	0.059487	0.230500	4.284304	0.866706	6.072067	61.38533	0.240139
10	0.006772	28.73627	0.054579	0.256930	4.921452	0.822015	6.504922	58.35757	0.346266
11	0.007227	30.36088	0.049596	0.276242	5.544919	0.769076	6.883517	55.65029	0.465482
12	0.007673	31.76843	0.044805	0.288614	6.152986	0.712979	7.214497	53.22394	0.593742

Lilangeni/Dollar Exchange Rate

Period	S.E.	LBCRP	DR	CRR	LQR	TBR	LINFL	LRGDP	LEDOLLAR
1	0.501795	0.003488	0.006218	0.004203	0.017313	0.029056	0.123984	0.003295	99.81244
2	0.677503	0.173927	0.013485	0.079338	0.052141	0.068392	0.087794	0.003815	99.52111
3	0.796468	0.478129	0.037251	0.285108	0.099810	0.217839	0.063537	0.011941	98.80639
4	0.886681	0.871714	0.064723	0.613928	0.157535	0.430205	0.066141	0.025611	97.77014
5	0.959278	1.319650	0.088974	1.057262	0.223330	0.672364	0.106839	0.043167	96.48841
6	1.019999	1.795361	0.106913	1.606036	0.295768	0.921855	0.192755	0.063325	95.01799
7	1.072220	2.279315	0.117818	2.250828	0.373792	1.163963	0.327173	0.085114	93.40200
8	1.118104	2.757555	0.122330	2.981965	0.456569	1.389455	0.510121	0.107813	91.67419
9	1.159115	3.220413	0.121806	3.789607	0.543397	1.592906	0.739074	0.130897	89.86190
10	1.196291	3.661445	0.117907	4.663836	0.633634	1.771516	1.009632	0.153990	87.98804
11	1.230388	4.076598	0.112360	5.594769	0.726667	1.924278	1.316142	0.176826	86.07236
12	1.261968	4.463567	0.106807	6.572671	0.821882	2.051399	1.652222	0.199221	84.13223

APPENDIX 7: IMPULSE RESPONSE FUNCTIONS



APPENDIX 8: LETTER OF APPROVAL FROM CENTRAL BANK OF SWAZILAND

CENTRAL BANK OF SWAZILAND

GENERAL MANAGER FINANCIAL REGULATION

P.O. Box 546
Mbabane, H100
Swaziland

Phone (+268) 2408 2152 Fax (+268) 24045366 E-mail: MbogiseniN@centralbank.org.sz

P.O. Box 7073
Mbabane, H100
Swaziland

9 March 2017

Dear Mr Samuel Nkosinathi Dlamini (Student No.: 214521623)

RE: REQUEST TO CONDUCT A SURVEY FOR A DOCTORATE IN BUSINESS ADMINISTRATION

This serves to acknowledge receipt of your letter requesting the collection of data as part of the requirement of your Doctorate in Business Administration Dissertation which you are currently pursuing at the University of Kwazulu Natal (UKZN) Graduate Business School and Leadership titled **"Strengthening Central Bank Regulations to stimulate economic growth through Commercial Bank Lending System"**.

The Bank encourages academic research and knowledge development and hereby commits to provide all data and necessary information to support your research. We would be obliged to receive a copy of the study once it has been approved and completed.

Yours faithfully

[redacted]

M. Nkambule
GM, FINANCIAL REGULATION

APPENDIX 9: LETTER FROM HIGHER DEGREE – PROPOSA APPROVAL

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI
Graduate School of Business and Leadership

Student Name:	Samuel Dlamini
Student No.:	214521623
Name of School:	Graduate school of Business & Leadership
Proposed Qualification:	Doctoral Of Business Administration / Doctor Of Philosophy

Title: The impact of strengthening central bank regulations to stimulate economic growth through private sector lending. A study on commercial bank lending system in Swaziland

Panel Decision: The panel has approved the proposal with some minor corrections. Please do the below corrections and submit for ethical clearance.

1) **The title needs to be in line with the research objectives.**

Good luck with your study.

Best regards

[redacted]

Dr Muhammad Hoque
Academic Leader: Higher Degrees and Research
Graduate School of Business & Leadership
University of KwaZulu-Natal (Westville Campus)
South Africa
E-Mail: hoque@ukzn.ac.za

APPENDIX 10: ETHICAL CLEARANCE CERIFICATE - UKZN

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

31 August 2017

Mr Samuel Nkosinathi Dlamini (214521623)
Graduate School of Business & Leadership
Westville Campus

Dear Mr Dlamini,

Protocol reference number: HSS/1205/017D
Project title: Strengthening Central Bank Regulations to stimulate economic grwoth through Commercial Bank Lending System. A study of Central Bank Lending System in Swaziland

Approval Notification – Expedited Application

In response to your application received on 25 July 2017, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol has been granted **FULL APPROVAL.**

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number.

PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

[redacted]

Dr Shenuka Singh (Chair)

/ms

Cc Supervisor: Dr Rosemary Sibanda
Cc Academic Leader Research: Dr Muhammad Hoque
Cc School Administrator: Ms Zarina Bullyraj

Humanities & Social Sciences Research Ethics Committee
Dr Shenuka Singh (Chair)
Westville Campus, Govan Mbeki Building
Postal Address: Private Bag X54001, Durban 4000
Telephone: +27 (0) 31 260 3587/8350/4557 **Facsimile:** +27 (0) 31 260 4609 **Email:** simbap@ukzn.ac.za / ammenm@ukzn.ac.za / mohunp@ukzn.ac.za
Website: www.ukzn.ac.za

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI
Graduate School of Business and Leadership

15 February 2018

To whom it may concern

Confirmation Letter: Student Mr Samuel Nkosinathi Dlamini (214521623)

This letter is to confirm that Mr Samuel Nkosinathi Dlamini (214521623) is a Full time Doctoral Student, at the Graduate School of Business and Leadership and only come as and when there is need to consult supervisors and to attend workshops.

Yours Faithfully

[redacted]

Zikhona Mojapelo

Administrative officer

University of KwaZulu-Natal
Postal Address: Private Bag X54001, Durban, 4000, South Africa
Website: www.ukzn.ac.za

UNIVERSITY OF KWAZULU-NATAL

Graduate School of Business and Leadership
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Tel: +27(0)31 260 2784
Website: www.gsbl.ukzn.ac.za

Founding Campuses: Edgewood Howard College Medical School Pietermaritzburg Westville