KADIR HAS UNIVERSITY
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DETERMINANTS OF BANK LENDING
"EVIDENCE FROM BRICS COUNTRIES"

ABDULLAI AHMED

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DETERMINANTS OF BANK LENDING
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APPROVAL

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DECLARATION ON RESEARCH ETHICS AND

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I, ABDULLAI AHMED; hereby declare

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ABDULLAI AHMED

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Date (06/01/23)

I dedicate this thesis to my late Dad Baba Asuma and late Uncle Rauf...

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DETERMINANTS OF BANK LENDING "EVIDENCE FROM BRICS COUNTRIES"

ABSTRACT

This thesis aims to investigate the determinants of bank lending for the countries forming BRICS, namely Brazil, Russia, India, China, and South Africa. The empirical analysis is performed using a sample of 130 listed commercial banks between 2000 and 2021. While bank-level data is obtained from Thomson Reuters Refinitiv Eikon, country-level data is extracted from the World Bank. The study uses panel data estimation techniques with fixed effects regression models. Study findings show that bank size, capital adequacy ratio, credit risk, the share of deposits and return on asset have a direct influence on bank lending in BRICS countries since all these variables are statistically significant. Larger banks are observed to lend more, and banks with higher shares of deposit, higher capital adequacy ratios, higher return on assets and higher credit risk are observed to lend more. Country-level variables such as gross domestic product per capita, real interest rate, deposit interest rate, and lending interest rate have no direct impact on bank lending. In contrast, banks in countries with higher inflation lend more. This study points out differences in the determinants of bank lending in the BRICS countries versus the rest of the world and offers important policy implications.

Keywords: BRICS, Bank Lending, Panel Data

BANKA KREDİLERİNİN BELİRLEYİCİLERİ "BRICS ÜLKELERİNDEN KANITLAR"

ÖZET

Bu tez, BRICS'i oluşturan ülkeler olan Brezilya, Rusya, Hindistan, Çin ve Güney Afrika için banka kredilerinin belirleyicilerini araştırmayı amaçlamaktadır. Ampirik analiz, 2000-2021 yılları arasında borsada işlem gören 130 ticari bankadan oluşan bir örneklem kullanılarak gerçekleştirilmiştir. Banka düzeyinde veriler Thomson Reuters Refinitiv Eikon'dan elde edilirken, ülke düzeyinde veriler Dünya Bankası'ndan elde edilmiştir. Çalışmada sabit etkili regresyon modelleri ile panel veri tahmin teknikleri kullanılmıştır. Çalışma bulguları, tüm bu değişkenlerin istatistiksel olarak anlamlı olması nedeniyle BRICS ülkelerinde banka büyüklüğü, sermaye yeterlilik oranı, kredi riski, mevduat payı ve varlık getirisinin banka kredileri üzerinde doğrudan etkisi olduğunu göstermektedir. Daha büyük bankaların daha fazla borç verdiği, mevduat payları yüksek, sermaye yeterlilik oranları yüksek, aktif getirisi yüksek ve kredi riski yüksek bankaların daha fazla kredi verdiği görülmektedir. Kişi başına gayri safi yurtiçi hasıla, reel faiz oranı, mevduat faiz oranı ve borç verme faiz oranı gibi ülke düzeyindeki değişkenlerin banka kredileri üzerinde doğrudan bir etkisi yoktur, oysa enflasyonu yüksek ülkelerdeki bankalar daha fazla borç vermektedir. Bu çalışma, BRICS ülkelerindeki banka kredilerinin belirleyicilerindeki dünyanın geri kalanına göre farklılıklara işaret etmekte ve önemli politika sonuçları sunmaktadır.

Anahtar Sözcükler: BRICS, Banka Kredileri, Panel Verileri

TABLE OF CONTENTS

LIST OF TABLES

LIST OF SYMBOLS

α	Alpha
β	The Standardized Beta
%	Percentage sign
**	Significant Correlation.

LIST OF ACRONYMS AND ABBREVIATIONS

BA	Bank Assets
BRICS	Brazil, Russia, India, China, South Afric
C.A.R.	Capital Adequacy Ratio
C.B.T.	Central Bank of Turkey
C.D.s	Certificate of Deposit
Coef	Coefficients
C.P.I.	Inflation (Consumer Price Index)
C.R.	Credit Risk
DIR	Deposit Interest Rate
G.D.P.	Gross Domestic Product
GDPcap	Gross Domestic Product Per Capıta
G.L.S.	General Least Square
I.P.S.	Im–Pesaran–Shin
LIR	Lending Interest Rate
L.L.C.	Levin–Lin–Chu
N.I.I.	Net Interest Income
NPL	Non-performing loans
P	Probability
ROA	Return On Asset
S.M.E.s	Small-medium sized Enterprise
S.O.D.	Share of Deposits
S.S.A.	Sub-Saharan Africa
SVAR	Structural Vector Auto Regressive
T.L.s	Total loans to total Assets
U.K.	United Kingdom
U.S.	United State of America

1. INTRODUCTION

Brazil, Russia, India, and China are called BRIC countries, and the abbreviation was created in 2001 without South Africa. Later South Africa was added to the group in 2010 to complete the list of five nations. The BRICS was made possible in 2001 by Jim O'Neill, an economist; not only that, he created the group and also anticipated that by 2050, the four BRIC economies would take control of the world economy.

The world's top emerging economies are the BRICS. They have been distinguished by fast industrialization and economic progress, particularly after the 2000s. Many major financial firms failed or came apart in the Global Financial Crisis of 2008, prompting the government to intervene. The crisis has demonstrated that bank sector losses can result in tighter lending limits and other negative economic consequences. The financial crisis also affected the global credit markets, endangering the financial stability of all economies. BRICS nations were also part of the numerous countries in the world that were hit by the adverse effect of the credit crisis. In times of economic expansion, financial institutions tend to significantly expand their lending while restricting it in times of recession. The quality and quantity of loans both frequently exhibit cyclical responses. The recession of 2008 exposed the pro-cyclical nature of lending and financial institutions' preparedness to take on riskier assets during credit upturns in many industrialized nations once more, probably more strongly than before.

The banking system is essential for promoting economic expansion. Additionally, banks are vital for communicating monetary policy (Cetorelli and Goldberg 2012). Banks largely dominated the Indian financial sector. They account for the most considerable portion of total financial assets and are intricately tied to other financial system participants. Just like in India, the majority of financial services hugely depend on banks; China is also a nation where businesses rely more on banks than financial markets for their financial needs (Umar,2018). Various studies have indicated that China's spectacular growth has been aided by the development of the financial sector and banking reforms. Following the financial crisis, much has changed notably over the

last ten years due to the lessons countries have learned. Brazil was not an exception from the financial meltdown; hence, Brazil's government has made many banking regulations and reforms to prevent them from experiencing another crisis. According to Staub et al. (2010), Foreign bank entry, widespread merger and acquisition activity, and government banks' privatization significantly influenced the Brazilian banking sector.

A bank evaluates potential borrowers to see whether they are creditworthy or conform to the bank's credit or lending guidelines. Each bank is in rivalry with other banks while making this decision, but they need to be made aware of the credit requirements of their rival banks. In the credit card industry, the relative performance of competing banks offers predictive potential for later lending (Gorton and Ping, 2008).

When the Lehman Brothers collapsed in September 2008, the government of Brazil had considerably expanded bank lending. Brazil obtained more loans and saw better employment results than countries with lower government bank shares. The Government banks made up 9.3% of all bank assets in a sample of 71 industrialized and developing countries in 2007; by 2012, this percentage had increased to 10.0%, with notable regional differences. Within the BRIC nations, government banks accounted for 44% of bank assets in Brazil, the percentage in Russia is 41%, India recorded 74%, and 69% in China (Coleman and Fehler 2015).

Qian et al. (2015) claim that the economic growth of state-controlled banks has recently received a significant financial boost from developing countries. This is because the banking system in emerging economies is experiencing a significant increase in lending. The economies of these countries are growing thanks to bank credit. However, İn these countries, where the government has a strong influence over bank lending, there are quite a few banking problems.

A banking crisis could trigger a worldwide financial slump. The 2008 financial crisis demonstrates the need to have a solid banking system. According to Kishan and Opiela (2000), bank lending is critical to understanding how policies affect the economy. In times of financial strain, when capital objectives imposed by banks' creditors or regulators become stricter, Capital may have a significant role in influencing choices. Many empirical studies have discovered the ramifications of a bank lending channel's

worth; however, some are still being debated. Usually, aggregate statistics are used to examine how monetary policy impacts the proportion of bank credit to total and nonbank credit. Most bank lending channel research has focused on cross-sectional data on banks and specific fluctuations in their balance-sheet items.

Altunbaş et al. (2002) argued that even though there is a strong consensus that banks contribute massively to the transfer of monetary policies, equally, they asserted that there is an extensive dispute on the particular role that banks play. There has been recent theoretical and empirical research on the lending market for the transmission of monetary shocks to actual production (Altunbaş et al., 2002).

Most of the previous studies on bank lending have yet to capture the lending process and the mechanisms in which bank loan supply is regulated in the BRICS nations. In the U.S. and some European countries, factors influencing the growth of loans have been researched. In wealthy countries like the U.S., the U.K., and Europe (Kashyap and Stein, 2000, Fungácová et al., 2014). Numerous studies have been done on the problems with the bank lending method of transferring monetary policy (Altunbas et al., 2002; Kishan and Opiela, 2000). However, the bank lending mechanism for the transmission of monetary policy has not received much attention in Africa (Matousek, and Solomon 2018).

This thesis will address the topic of BRICS bank lending channels and factors that influence loan supply by the commercial banks in the BRICS territory. This research will also look at cross-sectional lending behaviour variations in reaction to changes in the execution of the monetary policy and subsequent output shocks. The theory of the Bank lending channel says that banks can safeguard their lending extension from a disaster that may occur when they (banks) have enough money (well capitalized) because they have easy access to the non-depository fund. The bank capital impact is enormous for institutions that rely on unregulated sources of the fund than for credit cooperatives.

Since the Basel Capital Accord in 1988, how bank capital affects lending behaviour has been a heated issue of discussion. On the balance sheet, bank capital is considered

unimportant (Friedman, 1991; Van den Heuvel, 2003). Bank capital has only lately been evaluated within the "credit channel" framework (Kishan and Opiela, 2000).

In times of financial hardship, when capital goals imposed by banks' creditors or regulators become stricter, Capital may become a critical factor in banks' decisions (Leonardo and Ibanez, 2011). According to Van den Heuvel (2002), Bank capital has a bearing on lending if two criteria are met. The first is that failing to meet the minimum capital prerequisite is expensive, and banks work to reduce the risk of future capital deficiency. The second is because it is difficult for banks to quickly issue equity, especially during times of crisis due to agency problems and other related issues in the industry.

The remaining sections of the thesis are organized as follows: Section 2 surveys the literature, both theoretical and empirical, and Section 3 elaborates on the data and methodology used. Section 4 will discuss the data analysis. The study results, discussions and policy recommendations are presented in Section 5, and the conclusion covers section 6.

2. LITERATURE REVIEW

This section provides an overview of some significant concepts and previous research studies related to the research topic. This section of the thesis has divided the literature review into two main components; the first part is the theoretical literature review, and the second component is the empirical literature review.

2.1 Theoretical Literature Review

2.1.1 Loan Supply

Both the Bank's Internal factors (bank-specific) and the external factors (market structure and macroeconomic) are used in studies to try to understand what influences commercial banks' lending decisions. That is the supply side and the demand side. The following indicators, such as bank size, liquidity position, Capital, earnings, profitability, and bank's credit worthiness, are all components of bank-specific variables, which are internal determinants and under the control of the bank's management. While the internal variables are elements that impact the supply side, the external variables are factors that also represent the demand side. External drivers are factors outside the control of the bank's management; these indicators include market structure and market competitiveness, as the legal and regulatory framework. Macroeconomic variables such as gross domestic product, inflation, and interest rate, among others, are external factors that can influence the demand for loans and are not in the control of bank management.

2.1.2 The Lending Channel

Gertler and Bernanke (1995) defined the "bank-lending channel" as the credit sub-channel that uses intermediaries. They argue that the balance-sheet channels of financial institutions that are not banks, such as (insurance firms, venture capitalists, currency exchanges etc.) and financial intermediaries are two via which the credit channel of

monetary policy functions. However, they argued that several fundamental ideas, including the significance of bank capital, are still under dispute. They proposed three contradictory theoretical concepts to examine how such a channel works:

The following are the proposed theories. According to Bernanke and Blinder (1988), and Van den Heuvel (2002), the first theory is the traditional bank-lending channel with Capital. The second hypothesis proposed by Van den Heuvel (2006), is the bank capital channel of monetary policy, while the third theory is the "A revised bank-lending channel", (Disyatat, 2011). These models provide diverse predictions about how a monetary policy shock might affect banks' liability structures and lending under various capital ratios (Jacobsen and Halvorsen, 2016). The three unique theories are presented in detail below.

2.1.3 The Traditional Bank-Lending Channel

As mentioned earlier, the traditional lending channel was presented by Bernanke and Blinder (1988). The lending channel explains the straightforward relationship between monetary policy, bank reserves, and total deposits. Banks are experts in resolving informational issues and other credit market frictions, and they continue to be the primary source of intermediate credit in most countries. There is a typical relationship between monetary policy, bank deposits and bank reserves within the lending channel (Bernanke and blinder, 1988). Banks are experts in resolving informational issues and other credit market frictions, and they continue to be the primary players where exchanges occur, thus in most countries, one of the functions of the bank is the intermediation of credit.

Small and medium enterprises depend on banks for loans and may not be completely cut off from acquiring loans if the supply of bank loans is disrupted for any cause. They will, however, virtually definitely suffer charges associated with searching for a new lender, establishing a credit connection, and other expenses. For that matter (Bernanke and Gertler (1995), argued that external financing premiums will rise and actual activity will fall if there is a reduction in bank credit availability relative to other loan sources.

According to the bank lending channel theory, monetary policy strongly influences the supply of bank loans and, consequently, the overall economy. If reserve requirements are possible, contractionary money policy restricts the number of reservable deposits that banking institutions may take. A rise in bank reserves suggests that banks can keep making more deposits until the reserve requirements are once again met. An increase in bank reserves would reduce banks' funding costs more than traditional effects would suggest if equity financing is more expensive than deposits. If expanding securities inventories can only partially meet increased financing demand, bank loan supply will move to the outside. Furthermore, if bank loans are more expensive than nonbank credit, increased bank lending is presumed beneficial to natural growth (Halvorsen and Jacobsen, 2016).

2.1.4 The Bank-Capital Channel of Monetary Policy

According to the channel of bank capital doctrine, monetary policy exerts a level of influence on bank equity capital, which will go along to have an influence on the lending banks extend, (Van den Heuvel 2002). The bank-capital channel presented by Van den Heuvel (2006) made three assumptions; the first is risk-based capital requirements. By and large, bank capital plays a significant role in managing bank assets and liabilities, which has likely grown since the 1988 Basle Accord's risk-based capital rules were enacted. Numerous reasons, including the execution of these laws, have been identified as the cause of the 1990–1991 recession's perceived credit crunch (Van den Heuvel, 2006). Another point Halvorsen and Jacobsen (2016) made is the failure of the Millers theorem of the imperfect equity market. In an era when banks are increasingly able to issue non-reservable liabilities, capital adequacy requirements enable us to investigate the role of bank lending in monetary transmission. Heuvel van den Heuvel (2006). Banks are considerably exposed to interest-rate risk, according to the third assumption. Van den Heuvel (2006) identifies the third model as a critical element and refers to it as the maturity change banks undergo. Compared to the bank's non-equity liabilities, bank loans are often believed to have longer maturities. This negatively affects bank profits, which will eventually cause the bank's capital adequacy to decline. It may have a long-lasting impact on bank lending if banks cannot quickly

issue new shares (Van den Heuvel, 2006). Thus, it will impact bank lending if it cannot issue new equity.

2.1.5 The Revised Bank-Lending Channel

The bank lending channel is a section of the monetary transmission mechanism that has undergone extensive study and much consideration during policy discussions. However, since the significant work of Bernanke and Blinder (1988), the channel's conceptual foundations have stayed mainly intact. According to Halvorsen and Jacobsen (2016) the modern world, the policy adopted by a nation to attempt to control inflations or interest rates, among others, can have a massive impact on banks' balance sheets which alters their funding costs (interest rate) and, due to that lending can be affected, just as it does in the conventional bank lending channel. However, when there is a change in monetary policy, there will be an adjustment in the needed rate of return for uninsured creditors rather than a change in the deposit amount.

According to Disyatat (2011), the bank lending channel has been altered to better reflect financial industry trends over the previous decade. It more explicitly explains the requirements that must be satisfied for the channel to stay operational in an environment where banks are significantly more reliant on wholesale funding and monetary policy is not conducted using a quantity-centric view of policy execution. These are some conditions for the channel to continue to be relevant: firstly, the process operates through wholesale funding instead of depository funding. Another point we should be aware of is that banks are also borrowers. Under this context, they are subject to the same external-finance premium that applies to consumers and nonfinancial businesses in the vast credit channel (Halvorsen and Jacobsen, 2016).

The structure helps to resolve several aspects of post-scientific evidence with the theory and sheds new light on others by focusing on intrinsic variations in external finance financing costs that reflect changes in bank wellness rather than changes in bank balance sheets' quantitative and compositional makeup. While the traditional view of the bank lending channel suggests its relevance is fading, the channel's relevance, as described in this research, appears to be increasing (Disyatat, 2011).

The transmission mechanism's emphasis on bank balance sheet strength implies that the current interest rate, not only what banks predict it to be in the future, matters as much as it affects the amount of leverage and banking system risk. Moreover, changes in the state of the banking industry at the same time as monetary policy shocks can amplify or lessen their effects. This might allow for more vigorous policy responses during an upswing and a downturn. The current financial meltdown around the globe is a robust example of how actual and perceived changes in bank balance sheet strength can affect the real economic system (Disyatat, 2011).

2.2 Empirical Literature Review

By analyzing the impact of bank-specific and country-level factors in this connection, the notion that monetary policy decisions affect overall economic conditions has been examined in several scientific studies. Some of the earlier research on bank lending from developing and emerging nations will be reviewed in this project.

In this review, first, we examine the results of various research that show these factors substantially impact the issuance of lending in the private sector. The capacity for domestic debt growth influences the resilience of the financial system.

Christensen (2004) examined 27 countries in the Sub-Saharan African (S.S.A.) nations between 1980 and 2000. He finds that, By the end of the 1990s, the proportion of domestic debt to G.D.P. had risen from 11% in the 1980s to 15%. The household debt load is still modest in comparison to foreign debt. Therefore, a 0.15 percent decline in lending to the private sector is caused by an increase in domestic debt relative to overall money of 1%.

Ladime et al., (2013) researched the variables influencing Ghana's bank lending practices in 2013. using Ghanaian 17 banks between 1997 and 2006, they assert that the amount of lending during the current period is positively correlated with the amount of lending during the previous period; they also argued that bank size, Capital, and banking industry concentration have also correlated positively with bank lending. Thus, they discovered that the size of the bank and the makeup of its Capital have a direct and positive impact on the behaviour of bank lending, in addition to finding evidence for the

central bank's adverse effects on lending rates and exchange rates. In contrast, the amount of borrowing during the current period is negatively correlated with macroeconomic indicators such as (the exchange rate, central bank rate (discount rate), and the inflation rate). They also find that both the interest rate, inflation and exchange rate can increase the cost of borrowing.

The study of (Amidu 2014) uses data from 264 banks within 24 Sub-Saharan African (S.S.A.) nations to analyze the significant factors influencing bank lending in the region. The main finding is that the financial sector has been reformed in an environment where banks are free to operate; the banking market structure affects the credit distribution in S.S.A. Additionally, evidence supports a connection between banks' financial stability and bank credit. He also finds that bank loans to the private sector influence the bank-specific variables sampled statistically; thus bank size, management efficiency, activity restrictions, growth of bank assets, entry restrictions, the central bank's regulatory capacity, and G.D.P. growth are all factors to consider. Excess liquidity, market concentration ratios, credit risk, initial capital requirements, and contractionary monetary policy, however, show statistically negative on bank loans.

Assefa (2014) demonstrated in the article that sort to find the factors that examined bank loan growth in the non - government sector in Ethiopia. He states that the study's findings have significant long-term effects on bank credit to the privately owned sector, including internal deposits, foreign liabilities, real lending interest rates, gross domestic product, and inflation. On the other hand, the author argues that commercial banks' short- or long-term lending to the non-public sector is mainly unaffected by capital requirements. Additionally, economic or domestic deposit growth has little impact on commercial banks' short-term lending to the private sector.

Abiola (2014) investigate how credit risk management affects the performance of Nigerian commercial banks. A seven-year analysis was carried out using the financial reports of seven commercial banking firms (2005– 2011). The findings demonstrated that credit risk management significantly impacts Nigerian commercial banks' profitability.

Olokoyo (2011) investigated the variables that affected commercial banks' lending practices in Nigeria from 1980 to 2005. According to the regression study's findings, commercial banks' deposits impact their lending practices. Additionally, it was found that the model was significant, and its estimators met expectations.

Olusanya et al. (2012) use a co-integration analysis to examine the factors influencing commercial banks' lending decisions in Nigeria between 1975 and 2010. The model's output demonstrates a positive relationship between the number of deposits, the gross domestic product (G.D.P.) at current market rates, and the ratio of cash reserve requirements.

Malede (2014) analyzed Ordinary Least Square (O.L.S.) using financial information from eight Ethiopian commercial banks over seven years, from 2005 to 2011. While deposits, investments, required cash reserves, or interest rates have no impact on bank lending, the study offered evidence for the impact of size, credit risk, G.D.P. ratio, and liquidity on commercial bank lending.

Shen et al. (2009) explore the connections between bank size, lending authority, loan officer incentives, bank competition, and institutional arrangements in China. Their findings showed that enhanced local lending power, increased competition, well-structured incentive programs, and improved law enforcement significantly impacted commercial banks' lending decisions to small and medium-sized firms (S.M.E.s) more than overall bank assets. Further investigation led them to conclude that lending to S.M.E.s will grow if an institution has more power over loan approval. Competitions can also improve lending to small and medium firms. Furthermore, remuneration of the loan manager, if connected with loan quality, can lead to lending to S.M.E.s, and last but not least, poor law enforcement will also lead to less S.M.E. credit.

According to Viviana Fernandez (2005), borrowing costs for businesses rise when they depend heavily on bank credit for outside funding. Directly issuing debt on public debt markets would bring down borrowing costs, boost business demand for loans, and result in a slight rise in steady-state output over the long run. Macroeconomic factors and bank-specific features have a more significant effect on lending than the bank market structure (Vo 2018).

In Turkey, Tomak (2013) looks at how market-based variables like interest rates, rates of inflation, and G.D.P., as well as bank-level indicators like size and access to funds, affect banks' lending practices. Using quarterly data from 15 commercial banks and three state banks from 2003 to 2012, Tomak (2013) discovered that size, total liabilities, the proportion of bad loans to total loans, and inflation rate influence the performance of commercial loans in Turkey. Thus, the size of the bank, total liabilities, the ratio of non-performing loans to total loans (NPL), and the rate of inflation all impact how well a bank's business loans perform. The general use of corporate loans may also be influenced by ownership structure. The results show that private banks outperform state-owned commercial banks in terms of lending performance.

In their study on bank loans with Chinese characteristics, Warren Bailey et al. (2011), there is an existence of substandard long-term performance when firms that are not performing are more likely to secure bank loans; this revelation was discovered after research conducted in a state banking system on inside debt, they appear to be given to keep struggling companies afloat. Around bank loan announcements, stock values for Chinese borrowers generally drop dramatically. Furthermore, these adverse announcement impacts are amplified for borrowers with numerous R.P.T.s, subpar performance in the ensuing period, substantial government ownership, no foreign class shares, loans from local bank branches, or debt repayment loans.

(Montoro and Suarez 2015) They have contributed to the knowledge of some basic credit movements during the 2008 global crisis. Banks could use a higher ratio of capitalization, liquidity, and bank efficiency to curb the effects of the credit crisis. They believe that international banks and those that had the most significant loan growth prior to the crisis were the ones who slashed the most lending. Furthermore, critical macroeconomic factors such as overall currency mismatches and external debt ratios have contributed to understanding bank lending behaviour.

As a result, macro-prudential policies that assure sustainable forms of credit growth and control both currency mismatches and foreign debt must be recognized. Chinese banks rely heavily on business considerations and quality when determining their lending policies. Evidence from Chinese private businesses to grease the wheels of bank lending, Chen et al. (2013) discover substantive empirical evidence that corruption

causes private businesses in China to obtain bank loans by using an E.T.C. as a cover for corruption throughout the loan-making process. Businesses that perform better economically are given more unpaid loans through bribery, and these companies also pay more in payments. We thus discover that a weak institutional framework and commercial lending rules can coexist.

Alkhazaleh (2017) studied the financial reports of thirteen banks from the years 2010 to 2016 to explain the impact of some factors suggested as determinants of bank lending in Jordanian commercial banks. The study's most important findings are that lending levels are statistically significantly impacted negatively by credit risk and liquidity and positively by return on assets, bank size, inflation, money supply, and G.D.P. growth. (Chernykh and Theodossiou2011) looked into Russian banks. They argued that the bank's ability to offer more long-term loans is impacted by capital availability, size, and accessibility to long-term liabilities. It also showed that banks are hesitant to issue loans with three-year repayment terms.

Saleh and Afifa (2020) analyze empirical data from an emerging economy to assess how bank profitability has changed over nine years (2010– 2018) regarding credit, liquidity, and Capital. They used the G.M.M. techniques to generate the econometric panel data for this study. The results show that bank capital variables, liquidity risk, and credit risk all impact bank profitability. For domestic and international bank management, it is essential to comprehend the Basel rules' significance because following them can increase a bank's productivity, profitability, and security.

Abdul Adzis et al. (2018), using a sample of 27 banks from 2005 to 2014, look at how macroprudential policy measures implemented in 2010 affected the lending activities of Malaysian commercial banks. The findings, based on random effects estimates, demonstrate that bank size and deposit volume positively influence Malaysian commercial bank lending. In contrast, lending activities are negatively impacted by liquidity. Again, they did not find convincing evidence of macroeconomic factors, such as gross domestic product (G.D.P.), loan rate, or cash reserve requirements, that may affect Malaysia's commercial bank lending activities.

Sarath and Pham (2015) use two-stage least square estimators and a micro-level panel data set of 39 commercial banks in Vietnam. Their results suggest that while equity growth affects lending practices in state-owned banks, deposit growth and liquidity constraints significantly impact loan supply in private banks. However, it is discovered that the banks' non-performing loan rate, which represents the likelihood of loan default, has little impact on the supply of loans.

2.2.1 Monetary Policy on Banks' Lending

The availability of financial intermediation credit, mainly commercial bank loans, can be changed by monetary policy (which focuses primarily on money, currency, and interest rates), changing the external finance premium and its effects on borrowers' balance sheets.

Banking institutions are specialists in resolving informative issues along with other credit industry frictions, so they remain the crucial source of intermediate credit in many countries. Consumers relying on banking companies, just like the small and medium specifications business, might only partially be taken off from the personal loans that are supplied by banking companies even though there is loans resource has been hampered for several reasons. When the supply of personal loans is hindered, those borrowers can easily experience charges that are linked to finding a new lender. As a result, a cut downward inside credit bank availability, like other lending sources, is expected to improve the external loan premium while decreasing the natural process. Bernanke and Gertler (1995), dispute that banks may be in a position to reduce imperfect information and expensive contract enforcement caused by simply credit market tensions whenever they utilize their knowledge and expertise working with small and medium-sized borrowers, increasing the provision of intermediated loans. Kashyap and Stein (1994, 2000) manufactured similar claims.

Since banks are crucial in resolving informational issues in the credit markets, many borrowers are bank dependent. What is the process that drives bank lending, then? What is the process? Some fundamental presumptions are put forth by Bernanke and Blinder (1988). First, they believed banks would find it challenging to quickly replace lost

deposit reserve forms with new stock issuance or certificates of deposit as alternative funding options. Bank-dependent customers need help to replace loans with other funding sources, such as dividends maintained as retained earnings, commercial paper, stock sales, or corporate bonds. Before the 1980s, the first premise was correct for the United States.

Furthermore, those presumptions are notable for the reasons listed below. First, according to Bernanke and Blinder, banks' ability to raise loanable money was constrained by the Federal Reserve's continued implementation of marginal reserve requirements on large C.D.s as late as 1980. Another factor is that liabilities markets were much less liquid and underdeveloped than now. In emerging countries, there is a problem with high-interest rates, excess liquidity, and increased lending proposals.

Gunji and Yuan (2010) examine how monetary policy affects bank lending using 22-year-old Chinese bank characteristics. Their dataset shows that lenders' responses to monetary policy are only sometimes reliant on Capital and that banks with higher liquidity levels and larger bank sizes are less hindered by it when it comes to lending. According to their findings, less good institutions have higher capital costs when monetary policy tightens, which results in a decline in deposits, making successful banks frequently less responsive to changes in policy. Gunji and Yuan's work (2010) is consistent with Kashyap and Stein, who investigated the bank lending channel using a quarterly dataset for U.S. institutions. Their investigation reveals that banks with lower total assets tend to reduce loans significantly more when monetary policy is stricter, so banks must reduce their loans if deposits decline due to tight money unless they find alternative funding sources. The logical conclusion is that highly capitalized banks should be able to quickly correct this discrepancy, even though a tight monetary policy causes deposits to decline.

The following is what Kashyap and Stein (2000) discovered after their study of the monetary transmission mechanism; Monetary policy changes have a more significant effect on lending at small banks since their balance sheets are less liquid. From 1976 through 1993, the dataset was given by the commercial bank in the United States, protected or covered by insurance) Additionally, they assert that because they can replace a decline in deposits with liquid assets, monetary policy (money supply) does

not affect banks. According to Kishan and Opiela (2000), a bank's size is one of the factors influencing its ability to raise outside Capital and sustain loan growth during difficult times. They also consider its Capital. In their study of bank size, bank capital, and the bank lending channel, which divides banks into six asset sizes and three capital leverage ratios for each size group, they conclude. The literature review found that while tiny, undercapitalized banks' massive time deposits are resistant to the same strategy, their loans are the most vulnerable to monetary policy.

Sichei and Njenga, (2012) use yearly bank-level size, Capital, liquidity, and foreign ownership Panel data from 2001 to 2008 to empirically examine how Kenyan bank loans and monetary policy are transmitted. The main conclusion from their research is that Kenya's bank lending channel is built on bank capitalization and liquidity. Less liquid balance sheets and low total Capital to risk-weighted asset ratios are the banks most severely impacted by monetary policy. Large banks with insufficient Capital and liquidity typically account for 82% of all bank loans, making the bank lending channel crucial in Kenya. Kenya's monetary policy has several consequences on banks and borrowers because of the bank lending channel. Additionally, bank credit may serve as a weak ground for Kenya's monetary policy and an essential indicator of economic activity.

The impact of Turkish bank lending on monetary and fiscal policy was studied by Aydin and Deniz (2012). They showed that tightening monetary policy caused a more significant decline in lending for liquidity-constrained banks and that when the government imposes fiscal restraint, the impact of crowding out shrinks more quickly for banks that already specialize in retail banking. They concluded that loans denominated in home currency depend heavily on the bank lending channel for monetary policy and fiscal policy transmission. Additionally, Banks will offer more short-term loans when the impact of liquidity restrictions and retail banking concentration on credit with short maturities is lessened.

Buch et al. (2015) reported in their work that the supply of bank loans decreased domestically and internationally during the economic meltdown. " Real-sector lending decreased, and the global banking system became more fragmented. Their findings also showed that banks place various restrictions on loan availability when the situation is

more uncertain. Lending by banks with greater capitalization and liquidity buffers is unaffected, however. Smaller, less liquid banks are more affected by the monetary policy because it is harder for them to recover from the liquidity losses brought on by its tightening.

Dwumfour et al. (2022) identify how lending channels in Africa interact with changes in the rate of money in circulation; they estimated the cost-efficiency rankings of 447 commercial banks using the stochastic net frontier approach. They find concrete proof that loan growth is once again boosted by rising cost efficiency. The results also show that institutions that are cost-effective are less receptive to monetary policy changes. Bank cost efficiency suggests that, despite the literature's emphasis on bank size, capitalization, and liquidity, bank efficiency is just as crucial for comprehending how monetary policy affects bank lending. As a result, there is no strong channel for bank borrowing.

According to Ehrmann et al. (2003) research on factors influencing monetary policy in the Eurozone, the degree of a bank's liquidity is the primary determinant of how a bank's liquidity strongly reacted to the tightening of money. The smaller a bank's proportion of liquid assets in total assets, the more aggressively it decreases lending in reaction to tighter monetary policy. The bank's size, however, has little impact on how it reacts to changes in the money supply. They also contend that the presence of liquidity buffers in some banks reduces the effectiveness of the bank lending channel.

To evaluate the effectiveness of monetary policy considering the updated capital requirements (via the bank lending channel). Nachane et al. (2006) research on bank lending practices and Basel II uncover that depending on whether banks are subject to risk-based capital constraints, monetary policy may not be able to affect bank lending successfully. The creditworthiness of bank loans and securities, as well as the liquidity of the bank balance sheet, all influence how appropriately monetary policy affects bank lending. The relative liquidity of the banks will also influence constrained banks' responses to changes in monetary policy on their balance sheets and the creditworthiness of their loans and securities.

Siregar et al. (2010) claim that the prolonged slowdown in lending that followed the financial crisis has been attributed to political unrest and shortcomings in the legal, judicial, and administrative institutions. For East Asia countries to successfully compete for loans from foreign banks, they need to improve their financial institutions. They also show how bank lending from industrialized nations to the East of Asia is frequently influenced by lender and borrower characteristics. The relationship between bank size, Capital, and the banking lending channel was investigated by (Kishan and Opiela 2000). With three capital leverage ratios assigned to each group, they divided banks into six asset-size groups. They discovered that small, undercapitalized banks' loans are the most sensitive to monetary policy. Small, undercapitalized banks' substantial time deposits are resistant to policy. These statistics support the idea that small, undercapitalized banks will not be able to obtain additional funding during the contractionary period.

Ji Wu et al. (2011) contend that the reduction of lending and increased interest rates by multinational banks when doing business overseas tend to curb their business from contractionary monetary policy shocks that can easily affect the private banks in the host nation. He argued that some home countries' macroeconomic and financial situations could influence the lending practices of multinational banks in their country. One factor contributing to the lending practices of multinational banks is the increase in bank deposits. Furthermore, international banks lower their lending during financial crises more than local banks.

Gambacorta and Marques-Ibanez (2011) believe that before the global financial distress, some new factors affected the monetary policies mechanism in the United States of America and Europe. These variables include the market funding pattern and how banks conduct their business (bank business models). They argued that variables like core capital levels could prevent lending more in times of crisis. Furthermore, overreliance on market funding and non-interest funding revenue streams can severely prevent loan growth during the crisis. However, they believe that the traditional bank-specific indicators, such as the liquidity position of the bank, bank size and Capital, could have explained better how the new mechanism through which the bank lending channel works. The variety of fee-based activities, including investment banking, drastically

determines the transmission mechanism. Banks with a considerable percentage of highly valued but unreliable non-interest earning operations stiffened their lending restrictions to borrowers during the crisis.

Carrera (2010) uses 22 commercial banks and the Structural Vector Auto-Regressive (SVAR) method to examine Peru's eight-year bank lending channel. The study's findings indicate that liquidity and bank size are positively linked. In addition, monetary policy may impact smaller, less liquid institutions as opposed to larger, more liquid ones. Additionally, he discovers a negative coefficient for the monetary indicator. Another point of observation is that while the exchange rate was found to have a negative coefficient, the gross domestic product growth rate has remained positive. Currency rates have a negative effect, suggesting that banks become more involved in foreign exchange trading and lessen their lending to the private sector as they fall.

According to Herrmann, Sabine and Mihaljek (2010), show that The decline in cross-border lending less impacted central and eastern Europe during the economic crisis in 2008 than other emerging markets outside Europe, Thanks to their closer economic and monetary ties with creditor countries and the relatively stable banking systems they have.

Brooks (2007) investigates the loan supply reaction of Turkish banks based on Central Bank of Turkey (C.B.T.) balance sheet factors, including size, liquidity, and Capital, using the financial instability that occurred in May and June 2006 as an exogenous shock that led to a significant tightening of monetary policy. Depending on its financial status, Turkey's banking industry intensifies the power of monetary policy. According to the data, only banks with less liquid balance sheets are significantly impacted by monetary policy. In a case study on how banks in the following nations (France, Germany, Italy, and Spain) responded to rigid monetary policy, Favero et al. (1999) examined balance-sheet data. There need to be more facts that bank loans drastically increased according to monetary tightening in 1992 in any of the four European countries where the research was conducted. They find significant variations in the behaviour that allow banks of all sizes to safeguard loan supply from liquidity problems.

Altunbas et al. (2002) asserted that de Bondt (1998) was the first to look for signs of the lending channel across multiple European countries using disaggregated bank data. Like the strategy Stein and Kashyap (1995) used, he investigates whether modifications in the administration of monetary policy (short-term interest rates) between 1990 and 1995 resulted in vital variations in how European banks responded. As a backup for the direction of monetary policy, de Bondt (1998) includes changes in money market rates in his interactive regression models.

In general, but not in France, Italy, the U.K., or any other countries they looked into, they learned persuading evidence of a bank lending network in Germany, Belgium, and the Netherlands. However, when a "monetary condition index" is used to appraise the attitude of monetary policy, the bank lending channel does appear to exist in Italy and France.

Carlson et al. (2013) study looks at the consequence of bank capitalization on bank lending by contrasting loan growth variations with capital ratios at combined sets of banks, centred on geographic location, size, and various firm characteristics. Because it is more sensitive in low-capital ratio situations, their research suggests a non-linear link between capital ratios and lending. Additionally, they believed there was a tangible link between capital ratios and bank lending during and immediately following the current financial crisis, but not elsewhere. Finally, they contend that banks with contracting loans have a stronger relationship with capital ratios and loan growth than those with increasing loans.

Data from 19 Chilean banks that were active between January 1999 and December 2002 were compiled by Alfaro et al. (2003). Banks provided loans to households at that time primarily through consumer and mortgage loans and businesses in the manufacturing and financial services sectors, which together made up 13 and 26% of all loans. According to their size, liquidity, and efficiency, they learned that different banks respond differently to monetary shocks. A tightening monetary policy will have the most significant impact on banks with fewer liquid assets.

3. METHODOLOGY

This section thoroughly summarizes the study design, the research setting, and the measurement tools employed. This section will also highlight bank-level variables and country-level characteristics of the data I utilized and how they are obtained. The thesis uses the longitudinal approach to assess bank lending in the BRICS countries (panel data). According to Wooldridge (2010), this approach is the most appropriate for analyzing cross-sectoral differences for a given period. Bank-level-level data is extracted from Refinitiv. Data on all commercial publicly listed banks in BRICS are downloaded, and I focus on banks with all the data for the main variables in the analysis. This filtration leaves a sample of 130 listed commercial banks. The sample consists of 130 listed banks in the BRICS regions (Brazil, Russia, India, China, and South Africa), ranging from 2000 to 2021, twenty-two (22) years period. The dataset is analyzed with Stata 16 software, there is no missing data, and thus, the panel is strongly balanced.

3.1 Research Design

We use equation 3.1 as the estimation technique to study the lending behavior of all banks in this research.

$$TL_{i,t} = \alpha + \beta_1 size_{i,t} + \beta_2 CAR_{i,t} + \beta_3 CR_{i,t} + \beta_4 SOD_{i,t} + \beta_5 NII_{i,t} + \beta_6 ROA_{i,t}$$
$$+ \beta_7 GDPperCap_{i,t} + \beta_8 LIR_{i,t} \beta_{16} + \beta_9 CPI_{i,t} + \beta_{10} DIP_{i,t} + \beta_{11} RIR_{i,t}$$
$$+ \varepsilon_{i,t} \ldots\ldots\ldots\ldots (3.1)$$

Where…

T.L.- represents the total bank loans to total assets.

Size - represents bank size (bank assets)

C.A.R.- represents the capital adequacy ratio.

S.O.D.- represents bank's share of deposits.

N.I.I.- denotes the non-interest income of the banks.

ROA- Return on asset

C.R.- Banks credit risk.

C.P.I.- means the inflations measured by the consumer index.

G.D.P.- represents gross domestic product per capita.

LIR- the lending interest rate

D.I.P.- represents the deposit interest rate.

R.I.R.- represents the real interest rate.

This thesis utilizes a simple linear panel data regression model in equation 3.1 to empirically study the possible predictors (determinants) of commercial banks' lending in BRICS nations. In this case, we regress a bank-level dependent variable (TLi,t) that shows the level of lending for bank "i" in time "t" against various bank-specific and macroeconomic parameters indicated on the model equation. To determine the bank lending proxy by total loans to total assets (TLit), this study employs the share of total loans (such as bank loans, advances, and overdrafts) in total bank assets. In this context, a bank's total loan to total assets is a loan made by a bank to a private company that is not in the financial sector. The variables are chosen considering previous empirical studies that account for the widely recognized determinants of bank lending.

3.2 Research Variables

In this section, we present the bank-level and country-level determinants analyzed as potential bank lending determinants in BRICS countries. We use the following bank-level determinants in our regressions. Capital Adequacy Ratio (C.A.R.) is obtained by dividing equity to total assets, while the credit risk (C.R.) ratio is the proportion of non-performing loans (NPL) to total loans. Bank SIZE (B.A.) is the natural logarithm of total assets. Share of Deposit (S.O.D.) is the deposit-to-total-asset ratio. Non-Interest Income (N.I.I.) is the revenue generated from non-core activities by banks and financial

institutions (loan processing fee, late payment fees, credit card charges, service charges, penalties, etc.) as a share of total income. It plays a vital role in its overall profitability,

This thesis uses the following country-level characteristics: G.D.P. per capita is calculated by dividing the gross domestic product by the midyear population in current U.S. dollars. The G.D.P. per capita evaluates the economic growth and is the levels of all goods and services manufactured, multiplied by their prices, and then added form collectively. The consumer price index measures inflation. The bank rate that usually meets the private sector's short- and medium-term credit needs is known as the lending interest rate (LIR). Deposit interest rate (DIR) is the amount commercial banks charge for demand, time, or savings deposits. The lending interest rate (R.I.R.) has been modified using the G.D.P. deflator for accounting for inflation.

4. DATA ANALYSIS

This section discusses the data and the respective sources that this thesis used and other measurement issues. The bank-level data is from the Thomson Reuters Refinitiv Eikon (formerly known as DataStream Eikon), while country-level data is obtained from the World Bank.

This thesis uses an annual panel dataset of 130 commercial banks in the BRICS regions (Brazil, Russia, India, China, and South Africa) after removing observations with missing variables from 2000 to 2021, a twenty-two (22) year span. In our sample, China has the most banks (55), followed by India (35), Brazil (18), Russia (12), and South Africa (10). The countries are all developing countries. We build the variables by calculating their financial ratios before entering them into the statistical program for estimation.

Prior to running an econometric model, Griffiths et al. (1993) propose that non-stationary series be differenced. Following the test results of Levin–Lin–Chu (L.L.C.) and Im–Pesaran–Shin (I.P.S.) on the panel data set, the null hypothesis for both tests is accepted. Therefore, we compute the first difference for all the variables and re-run the test. The results prompt to reject the null hypothesis of these tests and confirm that the dataset is ready for econometric modelling. To remove outliers, I winsorize variables such as the share of the deposit, total loans to total assets, capital adequacy ratio, non-interest income, credit risk, bank size and return on Assets.

The figures are provided as ratios and in U.S. dollars. The macroeconomic factors are obtained from the world development indicators of the World Bank database. The overview of the variables utilized in the analysis and their detailed summary statistics are provided in Table 4.1 and Table 4.2 below.

Table 4.1 Definition of Variables[1]

Names of variables	Descriptions
Panel A: Dependent Variable	
Total loans	The share of total loans in total assets
Panel B: Bank-level variables	
Bank size	The natural logarithm of total assets
Capital adequacy ratio	the percentage of a bank's risk-weighted credit
Credit risk(NPL)	The share of non-performing loans in total loans
Share of deposit	Deposit to total assets
Non-interest income	Fees derived from secondary activities of a bank outside the core business as a share in total income
Return on asset	The ratio of net income to total assets
Panel C: Country-level variables	
Inflation	Percentage rise of prices of goods and services
Gross domestic product per capita	G.D.P. per capita is the G.D.P. divided by the population.
Lending interest rate	The rate central banks offered to domestic banks.
Deposit interest rate	Total deposit divided by the total assets
Real interest rate	Are rates that have been observed after accounting for inflation.

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[1] The list of variables and their concise descriptions are displayed in this table. Panels A and B specify the dependent variable and bank controls variables, respectively, while Panel C list the macroeconomic variables.

Table 4.2 Summary Statistics[2]

	N	Mean	min	max	Std. Dev.
TLs	1071	1.041	0.000	5.94	.569
CAR	1267	1.114	0.000	12.659	1.351
CR	1111	1.506	0.032	26.851	2.913
SOD	1258	1.01	0.304	2.298	.241
BS	1658	8.529	2.698	10.684	1.056
NII	1642	-.136	-43.980	30.212	7.566
ROA	1223	.976	-10.909	15.059	2.2
GDP	2470	8.088	6.094	9.678	.972
CPI	2789	.921	-4.361	21.201	1.243
LIR	2859	35.715	4.350	67.085	13.816
DIR	2055	11.735	1.500	21.970	4.308
RIR	2600	17.824	-12.856	48.504	12.284

4.1 Dependent Variable

This study's dependent Variable is the ratio of total loans to total assets. Table 4.2 highlights the descriptive statistics utilized in the analysis. The average for T.L.s is 1.041 and a standard deviation of 0.569. The minimum and the maximum values are (0.000) and (5.94), respectively.

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[2] The table shows summary statistics of bank variables and country-level characteristics. The table provides information on the determinants of bank lending evidence from BRICS using a sample of 130 publicly listed banks for 2000-2021. TLs represent total loans to total assets computed as a ratio, and the values are in percentage. CAR is the capital adequacy ratio calculated as a ratio, and the values are in percentage; CR represent the credit risk computed as a ratio, and the values are in percentage; SOD denote the share of deposits calculated as a ratio and the values are in percentage, NII is the non-interest income and ROA denote return on assets, NII and ROA were computed as a ratio. The values are in percentage. BS represent the bank size (bank assets) calculated using the natural log. GDP represents gross domestic product per capita and is calculated using the natural log. CPI represent the consumer price index(inflation) in percentage, LIR means lending interest rate in percentage, and DIR denotes deposit interest rate in percentage. RIR denote real interest rate in percentage. There were missing data because some banks in the BRICS did not report for some years.

According to thesis research in the BRICS nations, the loans that the commercial banks granted in Brazil, Russia and South Africa were relatively too small compared to the loans extended in China and India. Among the reasons that could result in these issues are; internal and external political and economic crises in Russia; the global financial crisis could be one reason, and another reason is that the annexation of Crimea had had some negative impact on the Russian economy most recently the war with Ukraine has also influenced the low volume of their loan issuing due to the number of sanctions Russia is currently facing from the western world and other parts of the globe.

South Africa also had some unrest; the may riot in 2009 post the global crisis could be the reason for the low loan grant in South Africa. On the contrary, China and India have issued more loans than the rest of the members of the group. The financial crisis did not hit the Asian countries so much like the way it affected the western world; this could be the reason for the high volume of issued loans in both countries. Population wise could also be a contributing factor for China and India to offer those massive loans.

4.2 Independent Variables

Bank Size is crucial to any bank's lending activities since it supports lending operations and is a critical factor in determining bank credit risk. Bank efficiency is crucial to understanding how monetary policy affects bank lending. Undercapitalized banks' loans respond most to monetary policy; for that matter, undercapitalized small banks cannot obtain additional funding during the contractionary process (Kishan and Opiela, 2000). The bank size has been calculated as the natural logarithm of total assets.

Bank size plays a critical role in how banks extend their lending. Shen et al. (2009) believe that improved law enforcement, increased competition, strengthened local lending authority, and well-designed incentive programs had a more significant impact on commercial banks' lending decisions to S.M.E.s than on total bank assets. The total amount of assets of banks in the BRICS nations based on this study ranges from a minimum of -28.647 billion USD to 24.33 billion USD averaging 0.715% with a standard deviation of 4.55 %, as shown in Table 4.2.

Credit risk is the probability that a borrower may be less likely to satisfy its commitment entirely or partially on the stipulated date. Thus, credit risk includes the probability that a counterparty may entirely default on its commitment and will only make payments in part or beyond the scheduled period. Commercial banks have always taken on substantial credit risk through their lending portfolios. Banks are working hard today to limit their credit risk exposure appropriately. However, Nonbank financials and nonfinancial industries are working to end the credit risk because they consider it as a minor component of their business.

Furthermore, many credit risks are not easily protected in the financial environment. Organizations are frequently obliged to take on credit risk exposure that they would like to avoid. In the study sample, the credit risk has a mean value of (1.506%) and a standard deviation of 2.913%. The minimum value is (0.032), and the maximum is (26.851).

Capital Adequacy Ratio: Capital shows the financial capacity of a bank and a hedge against loans that are defaults and liquidity drains. Bank capital is linked to credit expansion. It can also show how banks influence economic shocks. Banks that are big in terms of Capital may have a better opportunity to protect their lending from the economic crisis due to their easy access to non-deposit funding. The influence of bank capital can be exerted more on banks that rely on unprotected external funding sources than credit cooperatives. In the study sample, the average capital adequacy ratio is 1.114%, with a standard deviation of 1.351%; the minimum and maximum values are (0.000) and (12.659), respectively, as shown in Table 4.2.

Non-Interest income is any money received by banks from sources other than their main day-to-day activity of financial intermediary (accepting deposits and disbursing loans) or from their assets. Non-interest income can include net revenue from fees, asset trading, stocks, and insurance services; total income comprises both interest and non-interest income. Credit risks are expected to decrease for banks with diverse non-interest revenue sources (Gamze 2018). The sample's non-interest income runs from -43.980% to 30.212%, with a mean of -.136%. And the standard deviation of 7.566.

ROA: the return on assets has been calculated as the net income of total assets. Net profit divided by average assets is referred to as the return on assets ratio.it is also a profitability indicator. Banks' ROA performance is expected to improve due to efficient fund allocation (Wu et al. 2007). The sample's return on assets with a mean value of 0.976 %. And the standard deviation of 2.2.

Share of Deposit: Short-term lending by commercial banks to the private sector is unaffected by domestic deposit growth or economic expansion (Assefas, 2014). Some home countries' macroeconomic and financial conditions, such as a rise in bank deposits, influence foreign banks' lending practices in host nations. During financial crises, overseas banks lend less than domestic banks (Ji Wu et al, 2011). The mean deposit share value is 1.01%, with a standard deviation of 0.241.

Inflation: According to Huybens et al. (1999) theoretical model, bank performance and loan activity tend to grow in the presence of inflation; nevertheless, some thresholds exist. Inflation influences bank credit risk, which can be beneficial or harmful depending on the state of the economy. Higher inflationary pressures can hinder banks from making numerous loans and reduce bank credit risk. Sticky wages diminish a borrower's real income, making debt repayment more difficult (Nkusu, 2011). Inflation was reported to have a mean value of 0.921%, standard deviation of 1.243% in the table.

G.D.P. Per Capita: G.D.P. is economically measured by the quantity of all goods and services produced. Bank capital affects how banks respond to economic shocks. Bank-specific characteristics selected statistically impact bank loans to the private sector, therefore bank size, central bank supervisory authority, and G.D.P. growth. Management effectiveness, bank asset growth, and so on. Amidu (2014).

The gross domestic product is divided by the midyear population to determine G.D.P. per capita. This represents the total gross economic value that all local suppliers added to the overall economy, excluding any product taxes and subsidies that were not counted. The figures are in U.S. $. Real G.D.P. per capita growth: this improves borrowers' financial situation and ability to repay loans and is often correlated with lower bank credit risk (Salas et al., 2002; Nkusu, 2011). By dividing the Gross domestic

product by the mid-year population, the Gross domestic product per capita is estimated. The yearly percentage growth rate of G.D.P. per capita is used to calculate real G.D.P. per capita. Table 4.1 illustrates that G.D.P. per capita in the BRICS countries ranges from -11.040% to 20.775 % between 2000 and 2021, with a mean of 1.307% and a standard deviation of 3.817%.

Lending Interest Rate: The loan rate is the bank rate that typically satisfies the private market's short- and medium-term financial needs. The borrower's creditworthiness and the purpose of the loan are often used to separate this rate. Comparison is challenging because these rates are subject to different conditions and circumstances in every nation. The availability of intermediate credit, particularly loans from commercial banks, can influence the external finance premium and its repercussions on borrowers' balance sheets as one component of monetary policy. Lending interest rates have an average value of 35.717% and a standard deviation of 13.816%.

Deposit Interest Rate: Another element that drives credit conduct at many institutions is the deposit rate paid by commercial banks for demand, time, or term deposits. The average deposit interest rate is 11.735%, and the standard deviation was reported to be 4.308%.

Real Interest Rate: The G.D.P. deflator calculates the real interest rate after accounting for inflation. It can also influence bank lending. The mean value for the real interest rate is 17.824%, with a Standard deviation reported to be 12.284%.

Table 4.3 The PairWise Correlation Output[3]

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1)dca	1.00												
(2)dcri	0.156*	1.000											
(3)sod_	0.206*	0.036	1.000										
(4)dbs	-0.021	-0.009	0.018	1.000									
(5)dnii	0.007	0.012	-0.009	0.036	1.000								
(6)roa	0.003	0.015	-0.043	0.043	0.057	1.000							
(7)GDp	0.016	0.029	-0.033	0.038	0.000	-0.009	1.000						
(8) cpi	0.012	0.021	0.028	-0.023	-0.019	-0.041	0.010	1.000					
(9)GDP	0.016	0.029	-0.033	0.038	0.000	-0.009	1.00*	0.010	1.000				
(10)cpi	0.012	0.021	0.028	-0.023	-0.019	-0.041	0.010	1.00*	0.010	1.000			
(11) lir	0.376*	0.316*	-0.074*	-0.047	0.004	0.168*	-0.025	0.309*	-0.025	0.309*	1.000		
(12)dir	0.321*	0.384*	-0.087*	-0.090*	-0.016	0.056	0.081*	0.240*	0.081*	0.240*	0.717*	1.000	
(13)rir	-0.017	0.072*	-0.001	-0.044	-0.034	-0.023	-0.042*	0.104*	-0.042*	0.104*	-0.078*	-0.163*	1.000

[3] From table 4.3, it is noticed that real interest rate and lending interest rate are highly correlated. Also, the real interest rate is highly correlated with deposit and lending interest rates. Thus, I introduce these variables one at a time in the regressions. The rest of the variables are not highly correlated, as seen in the table above. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

5. RESULTS AND DISCUSSION

This section of the thesis will focus on the findings and discuss some policy implications of the factors that affected lending in the BRICS nations. The thesis topic has been researched in two major continents. North America and Europe have extensively researched the factors that influence lending in their respective countries; some of the countries are the U.S.A., the United Kingdom, Italy, etc. Some countries in the Emerging markets also conducted some research related to the topic of this thesis; however, to the best of my knowledge, this thesis is the first to combine all the BRICS nations to determine the influence of bank lending in that regions. The type of methodology deployed in this thesis also influences the results. From a practical point of view, the findings of this thesis provide valuable research implications and offer a better guideline to bank managers, government and customers.

Fixed-effects and random-effects linear generalized least squares (G.L.S.) regression models were estimated to find the association between bank lending proxy for total loans to total assets and the independent variables. For the sample of 130 publicly traded banks in the BRICS countries between 2000 and 2021, the regression is carried out using annual panel data estimation to distinguish between the fixed and random effects; the Hausman test was used.

The regression model assumes no correlation between explanatory variables and the error term. The model can suffer from the endogeneity problem if such a correlation exists. Hence it is critically important to run the Hausman test to decide the appropriate model to use between random and fixed effect models. Based on the outcomes of the Hausman test, the fixed effect model is the best.

Fixed effect estimation models. The Dependent Variable: Total loans to total assets (T.L.s); the independent variables are Capital adequacy ratio (C.R.A.), credit risk (C.R.), the share of deposit (S.O.D.), bank size (B.S.), non-interest income (N.I.I.), return on assets (ROA), gross domestic product per capita (G.D.P.), inflation (C.P.I.), real interest rate (R.I.R.), lending interest rate (LIR), deposit interest rate (DIR).

Table 5.1 The Fixed Effect Estimation Model Outputs[4]

Variables	M1	M2	M3	M4	M5	M6
CAR	0.086***	0.075***	0.074***	0.075***	0.075***	0.001
	(7.90)	(6.23)	(6.19)	(6.22)	(6.27)	(0.13)
CR	0.008	0.02***	0.021***	0.02***	0.22***	0.006
	(1.56)	(3.23)	(3.35)	(3.22)	(3.45)	(0.98)
SOD	0.633***	0.878***	0.89***	0.878***	0.872***	0.365***
	(7.969)	(9.99)	(9.94)	(9.97)	(9.94)	(4.28)
BS	0.001	0.004**	0.003**	0.004**	0.004**	-.001
	(0.50)	(1.95)	(1.93)	(1.95)	(1.95)	(-0.56)
NII	-.001	-0.001	0.000	-0.001	-0.001	-0.003
	(-0.65)	(-0.60)	(-0.19)	(-0.51)	(-0.69)	(-1.38)
ROA	-.011	-0.017**	-0.02***	-0.017**	-0.018**	-0.004
	(-1.41)	(-2.26)	(-2.63)	(-2.21)	(-2.24)	(-0.71)
GDP		0.001	-0.001	0.001	0.001	0.002
		(0.41)	(-0.39)	(0.42)	(0.34)	(1.04)
CPI		0.042	0.038	0.041	0.079	0.089*
		(0.95)	(0.53)	(0.92)	(1.58)	(1.92)
RIR				0.002		
				(0.33)		
LIR					-0.168	
					(-1.58)	
DIR						-0.104
						(-1.24)
Constant	0.29***	-0.17	0.054	-0.19	0.114	0.624***
	(3.60)	(-0.17)	(0.26)	(-0.18)	(0.87)	(5.83)
No.Of obs.	377	335	335	335	335	241
R square	0.311	0.421	0.484	0.421	0.426	0.108
Model	FE	FE	FE	FE	FE	FE

[4] The table provides information on the determinants of bank lending evidence from BRICS using a sample of 130 publicly listed banks for 2000-2021. T statistics in parentheses * $p<0.10$, ** $p<0.05$, *** $p<0.010$. M1, M2, M3, M4, M5, M6 denote model 1, model 2, model 3, model 4, model 5 and model 6, respectively. Bank size and G.D.P. per Capital are computed using the natural logarithm. The rest of the variables are in ratios.

Table 5.1 details the estimation results in the fixed effect model on the effect of the explanatory variables on bank lending proxy total loans. Model 1 uses only the bank controls (thus T.L.s, C.A.R., C.R., S.O.D., BS, N.I.I. and ROA). Total loans to total assets (T.L.s) is the dependent Variable. In the second model, country control variables are added; they include the gross domestic product per capita (G.D.P.) and the inflation (C.P.I.). Model 3 added time-fixed effects by adding time dummies into the model. Model 4, model 5 and model 6 included additional country controls added one by one in each model because they are highly correlated. Model 4 includes real interest rate (R.I.R.), model 5 adds lending interest rate (LIR), and model 6 adds deposit interest rate (DIR). Among the models, five variables are statistically significant, which will be elaborated on in the following paragraphs.

To begin with the bank size, from table 5.1 in all reported models, the bank size is statistically significant. The coefficient of the third model is (0.003) and statistically significant at 5 percent while the second model has a coefficient of (0.004) and is significant at 5 percent. The impact is also economically significant. For example, for model 2, a one percent increase in bank size (assets) leads to an increase of 0.4% of bank lending in the BRICS regions. This demonstrates that larger banks are increasingly cautious in their lending practices. According to Kishan and Opiela (2000), a bank's size influences the bank's ability to raise outside Capital and sustain loan growth during difficult times. While large banks have more resources for loan evaluation and processing (Wu et al. (2007), asset quality is a significant concern during an economic crisis as more borrowers default on their loans and the number of non-performing loans rises. Thus, banks must always adhere to sound lending standards. They should actively monitor asset quality and actively deal with non-performing loans to reduce losses and the effect on their soundness and ability to lend. This finding aligns with Tomak (2013) and Alkhazaleh (2017). Bank regulators in the BRICS region should review the asset quality to identify the credit risk, since asset quality impacts performance.

The following Variable to consider is the capital adequacy ratio (C.A.R.). We find that capital adequacy is positive and significantly impacts loan supply in the BRICS countries. We observe in Table 5.1 that C.A.R. is positively and significantly associated

with bank lending. Model 2 shows that one percent increase in capital adequacy ratio leads to an increase in bank lending by 7.5%. Our study shows that banks with higher Capital lend more, consistent with the study of Chernykh and Theodossiou (2011), which finds capital adequacy positive and significant.

Due to the failure of Basel II in the 2008 global financial crisis, Basel III, which was introduced afterwards, requires banks to increase the level of their Capital to be able to absorb losses due to non-performing loans; with high Capital, banks can absorb many losses hence continue to operate safely. When there are massive non-performing loans, big banks can use their Capital to payout depositors. According to Berger and Bouwman (2013), the likelihood of medium- and large-sized banks surviving banking crises is increased by higher Capital; however, the regression results in their work are significant for large banks. Theoretically, high capital adequacy ratios allow banks to be profitable. A bank with sufficient Capital can also absorb potential loan losses, preventing bank failure and "run" insolvency (Abiola and Olausi, 2014). Therefore, banks with more Capital will be able to adjust to shocks more quickly than banks with low levels of Capital. The central bank in the BRICS regions should pay attention to the capital requirements of the commercial banks because mismanagement of Capital from the commercial banks may put the banks into serious trouble since the value of the capital adequacy ratio shows a significant influence on lending in the BRICS countries. They should also assess managerial effectiveness and increase investor confidence in capital investments.

Next, we observe that the share of deposits is statistically significant and positive in all models in Table 5.1. For instance, in model 2, a one percent increase in the share of deposits results in an 87.8 % increase in bank lending. A higher bank deposit enhances bank lending to customers who demand loans. The loans are extended to the customer at a specific interest rate in the view that they will fetch the bank some attractive revenue once are fully repaid. Banks frequently raise the deposit interest rates they offer when they need more deposits to attract more customers. Banks operate by receiving deposits and lending them to an investor with an interest rate that can bring them returns. Customer deposits are essential for bank lending because they provide the majority of the building blocks for banks to make loans and make money (Rose& Hudgins, 2013). BRICS nations are still developing. Thus bank loans are of paramount importance in

facilitating different economic activities. Banks with more deposits can lend more because they have more funding sources. This result is also in line with the findings of Sarath and Pham (2015), Olokoyo (2011), and Abdul Adzis et al. (2018); hence to increase more lendings, banks in the BRICS regions should be able to generate more deposits from customers. The study then recommends that commercial banks concentrate on increasing deposit mobilization to improve their lending performance and develop crucial, strategic and financial plans.

Furthermore, the bank-level Variable that recorded a statistically significant and positive coefficient is credit risk. According to Bessis (2002), credit risk is crucial because a small number of significant customer defaults can result in significant losses and eventual insolvency. From model 2, it is observed that one percent increase in credit risk leads to a 0.2 % increase in bank lending, which is consistent to the findings of Idowu Abiola (2014), which shows that the profitability of Nigerian commercial banks is significantly impacted by credit risk management. Therefore, a lower volume of credit risk will lead to a higher level of lending in the BRICS countries. Therefore, banks must develop a strong credit risk management strategy and impose the appropriate penalties for loan payment defaults to increase credit availability.

Last but not least, the bank-level Variable that recorded a statistically significant and negative coefficient is the return on assets. In most models, return on assets recorded a negative but highly significant value. For instance, in model 2, a one per cent increase in the return on assets leads to a 1.7% decline in bank lending. This is consistence with the study of Alkhazaleh (2017). The return on assets measures the profitability of the bank; the results show that as the bank increase in profit, then the level of lending falls slightly; therefore, the bank administrators in BRICS countries should consider measures that can lead to an increase in lending, the managers in the banks should be more risk takers. Banks managers can still lend if they can get more profit; however, they should reduce non-performing loans by using strict credit analysis principles to increase their profitability.

The only country-level Variable that was recorded as statistically significant and positive is the inflation (C.P.I.), from table 5.1 in model 6. A one per cent increase in inflation leads to an 8.9% increase in lending. High inflation can result in economic

hardship. Doan (2020) asserted that inflation's lending rate and loose monetary policy stimulate economic growth in the short term; in the long run, however, inflation will slow economic growth and raise bad debt if the money supply continues to rise. Our study finding is in line with the study of Chowdhury and Kalyan (2012).

The country-level variables, such as the G.D.P., real interest rate, lending interest rate, and deposit interest rate, are insignificant and hence have no direct influence on lending in the BRICS region from 2000 to 2021.

6. CONCLUSION

This section provides the conclusion of the thesis and the policy recommendation to the government and the bank managers in the BRICS nations. Lending can boost a country's economic growth if allocated to the right people or organizations. Financial institutions frequently increase lending during periods of economic expansion while limiting it during a recession. This thesis aims to look into the factors that influence bank lending in the BRICS nations of Brazil, Russia, India, China, and South Africa.

The study combined the five BRICS nations to determine the association between the independent variables and the bank lending proxy for total loans to total assets; fixed-effects and random-effects linear generalized least squares (G.L.S.) regression models were developed. Based on the Hausman test, the fixed effect model is more appropriate. Regression analysis is conducted using annual panel data estimates for 130 publicly traded banks in the BRICS nations from 2000 to 2021.

The general results show that bank size is positive and significant, capital adequacy, credit risk, the share of deposits, and return on assets are positively and statistically significant, and they also have an impact on lending in the BRICS nations. Bank capital plays a significant role in managing bank assets and liabilities. These three variables' positive and statistical values (C.R., C.A.R. and S.O.D.) are consistent with the traditional lending channels. Bank size is consistent with the traditional lending channels. It has been observed that between 2000 and 2021, the BRICS region's lending is not directly impacted by G.D.P., the real interest rates, lending interest rates, or deposit interest levels because the reported values are not significant. However, inflation has been noted to have a slight influence on lending.

Periodic asset appraisal should be conducted to identify the credit risk involved. Also, to boost the investors' confidence, bank managerial activities should be taken seriously so they can have confidence when investing their Capital. Effective plans should be in place so banks in the BRICS nations can encourage depositors to make more deposits. This is because a large deposit volume will increase the money available to banks for lending and public advances. More defaults can collapse banks; therefore, the banks should impose appropriate measures to ensure that customers will not default on their

credit. Policymakers are urged to lend more since they can generate more income and make profits, and inflation should be controlled at the single digit to encourage more lending.

This thesis advices the policymakers and regulators in the BRICS countries to focus on bank size, capital levels, return on assets, the level of deposits, credit risk and inflation to control bank lending.

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