



NEAR EAST UNIVERSITY  
INSTITUTE OF GRADUATE STUDIES  
BANKING AND FINANCE PROGRAM

**IMPACT OF MONETARY POLICY ON THE SIZE OF  
BANK CREDIT A CASE STUDY OF IRAQ**

NECHIRVAN ABDI RAOUF

MASTER THESIS

NICOSIA  
2021

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MASTER THESIS

THESIS SUPERVISOR  
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2021

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We as the jury members certify the “impact of monetary policy on the size of bank credit a case study of Iraq’ prepared by the Nechirvan Abdi Raouf defended on 20/01/2021 has been found satisfactory for the award of degree of Master

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## DECLARATION

I Nechirvan Raouf, hereby declare that this dissertation entitled 'impact of monetary policy on the size of bank credit a case study of Iraq' has been prepared myself under the guidance and supervision of 'ASSOC.Prof.Dr.Turgut Tursoy' in partial fulfillment of the Near East University, Graduate School of Social Sciences regulations and does not to the best of my knowledge breach and Law of Copyrights and has been tested for plagiarism and a copy of the result can be found in the Thesis.

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## **ABSTRACT**

### **IMPACT OF MONETARY POLICY ON THE SIZE OF BANK CREDIT A CASE STUDY OF IRAQ**

This thesis titled impact of monetary policies on the size of bank credit is objectively a topic that seeks to investigate how the case study Iraq is managing volume of bank credit and having a financially thriving economy with the rising inflation in the country. The feasible problem and challenge of the financial system of Iraq is how find equilibrium in managing inflation while sustaining bank credit at optimal levels to promote economic buoyancy. The aim is to conduct an empirical investigation on how monetary policy has impacted the size of bank credit of Iraq while having fundamental objectives in examining the relationship between size of bank credit and monetary policy metrics and how effective these policies are on size of bank credit. The research approach is deductive and the type of method taken for this study is quantitative while the sampling technique is non-probability and purposive for Iraq as a case study. Trend analysis was used to look at independent variable and the fluctuations over the observed period. Statistical means of regression was employed to determine the relationship between bank credit and other variables of GDP, lending rate, inflation rate, money supply and liquidity reserve requirement over a period of 11 years from 2007 to 2018. The results show that levels of inflation are outrageously high over the period of study which makes the objective of monetary policies to reduce inflation and make to make loans available at low interest rate contradictory. This means that demand for bank credit by firms reduces with inflation as higher inflation is related to lower productivity. Broad money has demonstrated direct influence and control in driving the size of bank credit within the economy. The study recommended that interest rate should be sustained at an optimal level that is targeted at bank credit regulation.

As a result, the effects should also be carefully observed to avoid externalities or excess effect on other monetary objectives.

**Keywords:** Bank credit, Monetary policy, Iraqi Banks, Interest rate, Money supply.

## ÖZ

### **IMPACT OF MONETARY POLICY ON THE SIZE OF BANK CREDIT A CASE STUDY OF IRAQ**

Para politikalarının banka kredisinin büyüklüğü üzerindeki etkisi başlıklı bu tez, objektif olarak Irak'ın banka kredisi hacmini nasıl yönettiğini ve ülkede yükselen enflasyonla birlikte finansal olarak gelişen bir ekonomiye sahip olduğunu araştırmayı amaçlayan bir konudur. Irak finansal sisteminin uygulanabilir sorunu ve zorluğu, ekonomik canlılığı artırmak için banka kredisini optimal seviyelerde tutarken enflasyonu yönetmede dengenin nasıl bulunacağıdır. Amaç, para politikasının Irak'ın banka kredisinin büyüklüğünü nasıl etkilediğine dair ampirik bir araştırma yapmak ve banka kredisinin büyüklüğü ile para politikası ölçütleri arasındaki ilişkiyi ve bu politikaların banka kredisi boyutu üzerinde ne kadar etkili olduğunu incelemede temel hedeflere sahip olmaktır. Araştırma yaklaşımı tümdengelimlidir ve bu çalışma için kullanılan yöntem türü niceldir, örnekleme tekniği ise olasılık dışıdır ve bir vaka çalışması olarak Irak için amaçlıdır. Trend analizi, bağımsız değişkene ve gözlemlenen dönemdeki dalgalanmalara bakmak için kullanıldı. Banka kredisi ile GSYİH, borç verme oranı, enflasyon oranı, para arzı ve likidite rezerv gereksinimi gibi diğer değişkenler arasındaki ilişkiyi 2007'den 2018'e 11 yıllık bir süre boyunca belirlemek için istatistiksel regresyon araçları kullanıldı. Sonuçlar, enflasyon seviyelerinin Para politikalarının enflasyonu düşürme ve düşük faiz oranından kredi sağlama amacını çelişkili kılan çalışma dönemi boyunca aşırı derecede yüksek. Bu, yüksek enflasyon düşük verimlilikle ilişkili olduğundan, firmaların banka kredisi talebinin enflasyonla birlikte azaldığı anlamına gelir. Geniş para, ekonomide banka kredisi büyüklüğünü yönlendirmede doğrudan etki ve kontrol göstermiştir. Çalışma, faiz oranının banka kredi düzenlemesine göre en uygun seviyede tutulması gerektiğini önermektedir. Sonuç olarak,



dıřsalılıklardan veya diđer parasal hedefler üzerinde aşırı etkiden kaçınmak için etkiler de dikkatle gözlemlenmelidir.

**Anahtar Kelimeler:** Banka kredisi, Para politikası, Irak Bankaları, Faiz oranı, Para arzı

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## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 Background to the Study**

The monetary crisis in Iraq is a problem that has raised numerous inquiries and academic works into possible reforms and monetary policies that can guarantee monetary stability through banking interventions (Mishra, 2018). Reforms upon reforms, series of monetary policies have been embarked upon but the challenges of monetary system in Iraq still persist (Hussein & Mustafa, 2017). Central bank of Iraq has been in charge of regulating the stock of money so as to achieve equilibrium in the system. This role is based on the use of monetary policies which is targeted towards achieving; increased size of bank credit, price stability, balance of payments favorability, full employment equilibrium and exchange rate stability (Mishra, 2018). All these targets have been the priority of the Central bank with a diligent and meticulous view to maintain a low inflation rate. By this, inflation rate policies have dominated central bank's monetary policy focus based on the assumption that these are the essential tools of achieving monetary and credit creation stability. In order to maintain price stability and healthy balance of payment, monetary authorities and depended on instruments such as liquidity ratio, interest rate, credit ceilings, selective credit requirement etc. have been employed (Jonson, 2015). While it is understood that monetary policy actions are taken by the central bank of any country as the apex financial institution by regulating the actions of the banks within the system, it is however,

necessary to take a review of the monetary policy used over time in Iraq as a background to this study.

The original Iraqi National Bank was founded in 1947 with a starting capital of 5million Iraqi Dinar. It was the center of the Iraqi Central Bank established according to law 72 of 1956. Monetary policy was limited by two factors in the last fifty years (Hussein & Mustafa, 2017).The effect of fiscal policies and the rentier nature of the Iraqi economy. Thus money supply into circulation was linked to government expenditures but coordination between fiscal and monetary policy remained weakly synergized. In the 1960s, the authorities reduced the role of the private sector, commercial, industrial and banking in the regulation of monetary system (CBI, 2010). Commercial bank transactions were concentrated, till 1980's in one government bank, Rafidain (CBI, 2010). Further on, another government bank was established, Alrasheed in 1991 licenses were given to establish private banks (Hussein & Mustafa, 2017). During this period, the 1990's, narrow money supply increased from 24.6 billion to 20.7 Trillion Iraqi Dinar in March 2008(CBI, 2010). The rate of exchange declined from 4 ID to the dollar to 1216 ID in April 2008. Inflation rose from 6.3 in 1990 (1993=100) to levels of hyper-inflation during the 1990's which characterized the period of sanctions. Government expenditures increased from ID 17.5 billion to 33.5 Trillion in Dec. 2007(CBI, 2010).

The Iraqi monetary system has been faced with some challenges despite numerous trend and initiatives instituted by the government to improve the stability and the efficiency of the monetary system in meeting up with financial objectives (Hardy, 2017). The yearly inflation rate was about 5.5% in April2008 while unemployment alarmingly attained 50% in recent years. The real sector experienced a decline in productivity (Musa, 2012). Negative interest rate incited people to hold foreign currency giving rise to monetary substitution (CBI, 2010).



## **1.2 The Iraqi financial sector and bank Credit**

The monetary policy aims at strengthening the monetary sector given the precedence that the percentage of the lent credit to GDP was only about 7% during 2007(CBI, 2010). Private sector contribution to lending does not exceed 24% and the rest is extended by government banks. Spread is 8 percent signifying weakness in intermediation. Central bank independence and tendency for modernization (CBI, 2010). The new law No. 56 of 2004 gave the bank its independence. CBI does not receive instructions from government to ensure isolation and independence of actions of decisions, actions and operations (CBI, 2010).

The monetary policy employed the following rules to establish stability in the financial market which included maintaining regular daily foreign currency auctions to build confident level of reserves of \$44 Billion in December 2009(CBI, 2010). It also ensured the availability of standing facilities. This is to regulate the liquidity from two angles- deposits and lending. The lending had primary, secondary and the last resort lending while the deposits were in Iraqi dinars and US dollars. In July 2007, the CBI established cash reserve requirements of 75% for Government sector and 25% deposits for the private sector to be modified as required (CBI, 2010). The CBI allowed surplus banking reserves in order to monitor and regulate liquidity. The CBI used policy options for liquidity management such as auctions in treasury bills for 91 days, 63days and 28 days with interbank lending (CBI, 2010).

The most popular monetary stability weapon used was the credit rationing guidelines which primarily set the rates of change for the components and aggregate commercial bank loans and advances to the private sector. The sectoral allocation of bank credits in Central bank guidelines was to stimulate the productive sectors and thereby stem inflationary pressure. Minimum cash requirements were stipulated for the banks on the basis of their total deposit liabilities, but since cash ratios were usually lower than those voluntarily maintained on their credit operations.

### **1.3 Statement of the Problem**

Over the years, the objectives of monetary policies have remained the attainment of internal and external balance of payment. The monetary management instruments such as credit ceilings, selective credit controls, administered interest and exchange rates as well as prescription of cash reserve requirements and special deposits are used to moderate all undesirable trends in the financial system which include size of bank credit and the limit of bank credit size in fulfilling the objectives of credit availability for both private and business purposes.

While it is clearly evident that numerous policies in Iraq have targeted hyperinflation in the economy, it is also a daunting challenge to the central bank of the country to arrest inflation while ensuring that bank credit size increases for financial prosperity and proper economic management (Kapp, 2003). Hence, it is a challenge for the Iraqi central bank to maintain low inflation rate while trying to balance size of bank credit at equilibrium. (Kapp, 2003)

The research problem identified for this paper is the establishment of the use of monetary policy towards controlling bank credit. Monetary policy has been the traditional method of controlling and governing the flow, volume and impact of money on an economic system. While that traditional function is independently carried out by the central financial authority within the system, it is also important to note that cost of banking operations, interbank operations and transactions, maintenance and expansion of banking institutions are independent factors that also affect the size of bank credit at the loanable disposal to customers. It is therefore essential to study and disintegrate the independent impact of monetary policy variables and instruments on the size of bank credit.

In the same vein, it is observed that monetary policies have direct impact on macro-economic objectives and goals. However, it is noteworthy to ascertain whether these policies have direct impact and control over the availability and determination of bank credit size. Despite the various

monetary policies that have been adopted by the CBI over the years, inflation still remains a major threat to size of bank credit in Iraq.

#### **1.4 Research Questions**

The questions this research work intends to answer are as follows:

What are the monetary policies used by the monetary authority in Iraq?

What relationship is established between these policies and size of bank credit in Iraq?

What policy or tool of monetary stability is useful in regulating the size of bank credit?

#### **1.5 Research Aim and Objectives**

The broad objective is to conduct an empirical investigation on how monetary policy has impacted on the size of bank credit of Iraq. Specifically, the following are the objectives;

- (i) To examine the relationship between interest rate and size of bank credit.
- (ii) To examine the relationship between broad money and size of bank credit.
- (iii) To examine the relationship between liquidity reserve requirement and size of bank credit
- (iv) To examine the effect of these policies on size of bank credit.

#### **1.6 Research Hypothesis**

The hypothesis to be tested in this research work is;

Hypothesis i

Ho: there is no relationship between interest rates and size of bank credit.

H<sub>1</sub>: there is relationship between interest rates and size of bank credit.

Hypothesis ii

Ho: there is no relationship between broad money and size of bank credit

H<sub>1</sub>: there is relationship between broad money and size of bank credit

Hypothesis iii

Ho: there is no relationship between liquidity reserve requirement and size of bank credit

H<sub>1</sub>: there is relationship between liquidity reserve requirement and size of bank credit

Hypothesis iv

Ho: there is no effect of monetary policies on size of bank credit.

H<sub>1</sub>: there is effect of monetary policies on size of bank credit

### **1.7 Methodology**

A regression model will be stated based on the variables used for this study as presented in the hypothesis. It is through this model that the impacts of monetary policies on bank credit size will be analyzed. The methodology deals with the model specification, data requirements and sources of data. The model comprises of a number of alternative monetary policy instruments. However, the empirical implementation of the model will use Ordinary Least Square (OLS) econometric technique on data covering 20years (1995-2015) in Iraq. The data for the study will be obtained mainly from secondary sources, particularly from the Central Bank of Iraq and other publications. This study makes use of econometric approach in estimating the relationship between selected monetary policy components and bank credit size.

### **1.8 Significance of the Study**

There is the need to check why some monetary policies recommended have not achieved their designed objectives The significance of this study is to establish the relationship between monetary policies such as interest

rates, money supply, liquidity ratio and size of bank credit. To establish historical nexus between monetary policies and size of bank credit. This study is also aimed at answering cogent questions as to why some monetary policy tools and their implementation have failed to culminate into regulation of optimum size of bank credit. This study is significant because it also reveals the efficiency of the combination of two or more monetary policies on size of bank credit.

### **1.9 Operational Definition of Terms**

**Monetary policy** refers to a combination of measures designed to regulate the value, supply and cost of money in an economy, in consonance with the expected level of economic activity. For most economies, the objectives of monetary policy include price stability, maintenance of balance of payments equilibrium, promotion of employment and output growth, and sustainable development.

**Bank Credit** This term refers to the total amount of loans advanced by banks to economic units. This is the amount of money made available by banks as lender too borrowers (Callado Muñoz and Utrero González, 2013). It is means of mobilization of funds from the surplus unit of the financial system to the deficit units as loanable funds for consumption, production or business engagements (kristijadi et al., 2013).

### **1.10 Chapter Organization**

The first part of this research works states the purpose and significance of this research which includes the relationship between monetary policies and size of bank credit with the impacts of monetary policies on availability of bank credit. Chapter two takes a review of existing and related literatures on the nexus of monetary policies, theories of monetary economics. It further identifies empirical issues associated with the research work as well as creating a conceptual framework of the whole study. Chapter three was dedicated to the research methodology. It clearly outlined the variables and their sources as well as stating the efficient and convenient technique of estimation of the co-existing

relationship between the dependent and explanatory variables chosen to analyze the impacts and relationship between them both. Chapter four was focused on the presentation of data for the variables used. It primarily presented a trend description of the variables before running an appropriate OLS estimation which included series of tests like analysis of variance and correlation to further analyze the relationship between the explanatory and explained variables. The study also examined the effects of monetary policies on the volume of bank credit in Iraq using four explanatory variables.

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

In order to establish a link between the study and other related work in this field, this chapter presents a review of some of the available literature on monetary policies and size of bank credit. Research findings and experiences of many countries revealed that monetary policy is a factor to be reckoned with in explaining size of bank credit. Many definitions and concepts have been given and described with regards to monetary policy by different researchers. Theoretical assertions were developed in the field of monetary policy in nexus to bank credit size by scholars evidencing the role and serving as a cursor for further research on the topic.

#### **2.2 An Overview of the Iraqi Financial sector and Monetary Policies**

Many a number of policies have been issued out by the Iraqi Central Bank as a part of their formidable strategy to monetary policy. This strategy is hinged on two essential factors. First of this factor is to stimulate the banking sector and the financial agencies in a way that credit provision is expanded in the system and financing is made easier to increase GDP which will tackle macroeconomic challenges like economic stagflation and unemployment. The second arm of these factors is to target the hyperinflation in the economy through price indicators used by the apex bank and to attain a harmonious model for the balanced development of the economy.

The Iraqi Central Bank Governor, Ali Mohsen Ismail was reported to have initiated administrative and policy reforms through management approach to implement monetary policy in Iraq that is focused on sustainability of general low price levels. This will allow for stability of the economy and pave way for economic development through favorable increase in foreign exchange.

The current challenge of the monetary policy in Iraq is the unfavorable decline in dollar sales from the finance ministry as a result little forex earnings gained from crude oil revenue. The monetary system is being adjusted to have a demand for local produced commodities and drive for more foreign exchange. Money supply in the money market remained a target for the central bank for increase and the rise in broad money is driven by the volume of demand that is being affected by the drop in foreign income generation from oil that has incapacitated the federal government in terms of expenditure in the economy.

Hence, strict attention is being paid to the control of broad money. The higher the insensitivity towards broad money supply, the higher the propensity to inflation that could further damage the inflation impact on the economy. Thus the policy makers at the central bank aims to achieve a balanced economic and financial development through contractionary and expansionary monetary policy strategies.

Theoretically, the central banks achieves this contractionary monetary stance when it wants to mop up excess money supply and expansionary monetary stance in a scenario and this is done through interest rate or other instruments such as cash reserve requirements. The contractionary monetary stance has a positive impact on the value of the currency because higher interest rates will incite new capital inflow to the economy, normally because higher interest rates are a sign of a stable and growing economy which makes investors get the profits on capital that that have been ploughed into the banks in the system.



The expansionary monetary stance has a negative effect on the value of the currency, capital availability incites inflation of general price levels, which negatively declines the purchasing command of the local currency, because low interest rates imply that investors are recouping smaller profits in return for their capital invested in the economy,. In such a scenario, investors will tend to divert their investments in other economies, which will eventually lead to devaluation of the local currency.

In the same vein, it reduces the amount of bank credit made available by banks to borrowers which are carried out by adjusting the minimum reserve requirements of banks. This constricts the actions of the central bank because they will have to align to policies that are conservative and that will avoid shocks on the stability of price levels and exchange rate. At the same time, they will eschew reduction in sales of foreign currency because artificial scarcity of foreign currency leads to rise in value of such currency, hence depreciating the value of the local currency that will be unbearable for the economic agents and investors. Congruently, it will lead to higher demand for foreign currency and it will deplete local reserves.

In the Iraqi system, floating exchange rate is practically discouraged because the dollar currency source is restricted to the government coffers owing to the predicament of the economy and the mono cultural dependence on oil in the country. The central bank are of the opinion that these economic and financial problems are dependent on the Dollar currency being used because economic related finances and transactions such as importation security, political activities, environmental safety and crude oil transactions are dollar dependent. It is perceived as reported that the central bank was able to attain the objectives including inflation reduction to as low as 2%, gradual price stability over the years. For the latter to have been attained, it implied that monetary policies have been inflationary-targeted so as to remove leakages in the economy as a result of government spending and social expenditures that are inflation-induced

and incorporated. Lowering general price levels became the vision and the monetary aim of the central bank of Iraq. A number of disadvantages have been alluded to inflation which is counter-productive for the entire financial system as well as economic agent. One of them is the brewing of uncertainty and lack of confidence in investments in the economy. This has a negative effect because it debars and discourages people from investing and reduction in investment or spending ratio leads to less demand for bank credit in the entire system.

### **2.2.1 The stability of the exchange rate of the local currency**

An acceptable level of stability and monetary balance is expected and demanded for there to be a stable and favorable exchange rate of the Iraqi currency and to stay clear off the challenges embedded in the instability through changes in the currency value.

Stimulated economic growth and development, there is an expected rise in the gross national product and a balanced growth for all the sectors of the economy. In a case where monetary policy objectives are achieved, economic stability will ensure increase and circulation of money supply to the market in a case of recession or tighten the flow of money in periods of inflation. This will ensure collaborative development across all sectors encountering instability and will eventually induce investment quotas in those areas. The banking sector and the financial markets have a role to play in the financial stability and the sustainability of government related public finances. Their role is to regulate transfer of capital between the financial market and the currency being held by economic agents as savings in order to have control of fund movement within the Iraqi system. The investment market remains a viable market indicator for marking progress in the economy and the investment market is in turn affected negatively by non-protection and lack of certainty. Apparently, in times of stability, it could be said that the central bank was applying the weapons of monetary policy to attain the stability in the financial and investments market.

Iterating the monetary goals and macroeconomic objectives of the central bank of Iraq, we can say the following achievements were made by the Iraqi central bank;

### **2.2.2 Stabilizing the exchange rate of the Iraqi dinar:**

Negatively, there have been significant levels of reduction in income from crude oil in dollars which dowsed to about two-thirds in recent times. Despite this drop, the exchange rate was managed and pegged with n relevant gaps in the black market and the official banking exchange rate. In 2016, a regulation was made to grant financial institutions and corporate bodies to buy dollar to regulate the dollar rate to dinar. These regulations enhanced the banking practices, the organizational growth, technical capacities and maintenance of foreign reserves to maintain favorable exchange rate against the dollar. The foreign reserve at the end of 2015 was 53.7 billion dollars while it drooped in 2016 to 45.3billion dollars and rose to 46.5billion in 20017. This indicates a successful attempt in maintenance of the foreign reserves despite fall in the world crude-oil revenues.

### **2.2.3 Cover imports of private and public sector in foreign currency**

one of the achievements of the monetary goals is the rise in purchasing power of the citizens to the extent that they have the propensity to import based on the meager salaries and pensions whether for immediate private consumption or for public commercial purposes without being affected by inflation

### **2.2.4 Economic growth Stimulation**

In recessionary periods, the central bank of Iraq in a bid to ameliorate the imminent challenges of unemployment, falling government spending and the problematic security problems supported lending projects of private sectors, real activities with 5 trillion in Iraqi dinar to four main sectors; industrial, agriculture and real estate and infrastructure. Of the most decisive actions Iraq took in the banking sector was that it doled out and allocated 1.5 trillion Iraqi dinars for private banks to support

SMES and micro businesses as a means of credit financing through microfinance bank unit.

Subsequently, used the central bank to reimburse and remunerate farmers, suppliers and contractors with over 5 trillion dinars. This affected the private sector and the banking sector. Hence, the government agreed to issue bonds and disbursed by central bank in coordination with government banks.

The secondary aim was to support the banking sector and further strengthen them in cases of fall in government revenue that will lead to drop in government expenditure. In scenarios of financial crises, the banks will leverage on this back up and support from the government and the difficulty of fall in national income and emergency economic situations. The central bank played a pivotal role in relieving the financial stress of 2016 that there was a backdrop in revenue to as low as 50% which was not sufficient to cover salaries of workers. The central bank however bailed out by purchasing treasury transfers worth 16 trillion dinars for that one year period issued by the Finance ministry. This initiative allowed the banks to purchase these treasury instruments using their 50% minimum reserve requirements with central bank to buy remittance worth more than 4 trillion Iraqi dinars.

To avoid further distress and economic instability the central bank bailed out the government by funding the national budget indirectly to the tune of 15 billion dollars. This funding was used to finance oil production and exportation, settle out debts of international companies and further support the IMF Standby Credit Program SCP since 2015.

The central bank fulfilled the mandate in the Standby Credit Program SCP by minimizing inflation effects and maintaining general price level at low rate that will correspond to exchange rate meant to ration the foreign reserves of the country. This initiative was poised at strengthening the coordination of local banks and finance institutions against further economic leakages that may arise as a result of terrorism financing, money laundering and removing restrictions placed on foreign exchange

through international auditing firms. The following actions were also carried out by the central bank in supporting the financial system of Iraq.

- Augment the deficit budget by complementing the deficit with purchases of remittances in cases where funding support ceases.
- Supporting the IMF model for financial and economic policies on recuperating the financial system and the entire economy by formulating policies to resuscitate the state budget to withstand the financial distress and regulate the public spending quotas and further optimize local income generation.
- Development of financial indicators and control of public debt and targets related to the development of particular ceilings
- To set up a singular account that will be run by the Ministry of Finance and Central Bank on the public treasury in order to manage funds movement and monitor allocation of funds
- In the discovery of trillions disbursed in numerous sub accounts of the ministry of finance and central bank that are not employed for government priorities the unification of all accounts into a singular account curbed these excesses.

### **2.3 Theoretical Background**

The theoretical framework of this paper is geared towards having a proper understanding of the concept of monetary policy; how monetary policy tends to affect price stability, exchange rate and interest rate and measures designed to regulate the value, supply and cost of money in a financial system to match with the level of financial activities. The topic is a subject of monetary economics and financial analysis which introduces the rationale for understanding theories relating to the subject from the perspective of monetary economist. Views of monetary economics such as Keynesian, and the Fisherian theory of money will be reviewed in this part as a basis for comprehending the role and the function of monetary policies to bank credit size and rationing.

### **2.4 The Keynesian and Post Keynesian Theory on Bank Credit**

The New-Keynesian theory provides ample elaboration of how the credit size may fluctuate. It outlines the scope of information channel between lenders and borrowers (Asensio, 2017). It states the inability of banks as the lending institution not having perfect information about the risk and returns of the borrower's investment project, and the borrower having perfect knowledge of the profit/loss and risk exposure of the investment project better than the lender (Asensio, 2017). The information asymmetry between lenders and borrowers has induced lenders to use interest rate as an insurance or risk cover to cope with adverse selection risk in the bank credit approval (Pilkington, 2005). It also states that interest rate may induce the borrower to embark on investments with higher rates of return and greater risk that is not originally stated in the loan contract and hence, raise the initial risk (Jayadev and Mason, 2015). The New-Keynesian theory informs that banks' returns on credit depend on the probability of loan repayment by borrowers. If the interest rate charged on the borrower shows the initial risk is too high, it will reduce the overall bank returns/profit on credit (Jayadev and Mason, 2015). As a result, banks show lower propensity to lend to borrowers with the level of default risk that is greater than expected level, and therefore credit size is reduced (Haruna, 2019). However, the New-Keynesian theory eluded the probability of the borrowers having imperfect knowledge of the riskiness and returns of the investment projects. The Post-Keynesian theory accounts for this and argues that both lenders and borrowers do not have perfect knowledge of the riskiness and returns of the investment project (Haruna, 2019). The Post-Keynesian theory argues that the information asymmetry is not important in practice because the borrowers, like the lenders, do not know with certainty about the riskiness and returns of the investment project. This is contrasted to the New-Keynesian theory, which assumes that only the lender is uncertain about the riskiness of the borrower. The proponents of the Post-Keynesian theory argue that both lenders and borrowers are subject to the imperfect knowledge about the risk and possible outcomes of the investment project (Currie, 2016). The Post-

Keynesian theory also develops further the New-Keynesian theory in explaining the existence of bank credit rationing by accounting the impacts of changes in macroeconomic condition on the borrowers' credit merit (Kishan & Opiela, 2000). According to the Post-Keynesian theory of bank credit availability, banks assess the creditworthiness of the borrowers not only by assessing the borrower's loan refund history and financial standing, but also incorporate the existing macroeconomic conditions (Deleidi, 2017). The Post-Keynesian theory also argues that the financial environment of a start-up investment is different from the previous investments made (Deleidi, 2017). Moreover, the proponents of the Post-Keynesian theory also suggest that both the lender and the borrower will have different future expectations and therefore have asymmetric expectation about the investment projection (Currie, 2016). In this case, the lender is perceived to be more risk-disinclined than the borrower due to the rationale that debtors are more confident about the returns of the investment and the value of collateral than the lender (Kishan & Opiela, 2000). Lenders will provide funds to fulfil the credit demand, and ration all the loan demands that are not creditworthy (Kishan & Opiela, 2000). Lenders constantly evaluate the borrower's financial condition which is subject to frequent valuations of the credit risk (Kishan & Opiela, 2000).

### **Comments on the New Keynesian and Post Keynesian Theory**

The above theoretical contribution of how the credit size fluctuation may exist from the perspective of the Post Keynesian and New Keynesian theory. Commentarily, the price mechanism as explained by the Neo-classical economics doesn't always fit the picture of reality. Indeed, banks will not always raise the interest rate to fulfil the credit demand of borrowers along with the perceived riskiness of the borrower. When banks envisage that credit lent becomes more risky, then rationally, banks reduces propensity to lend, at least not obliging full amount of credit demand, due to the great chance of default. The concept of information

asymmetry highlighted by the New Keynesian theory brings objectivity, in that the borrower may have reasons to conceal the real returns and the entirety of information on the intended investment to the lender, motivated by the rationale to obtain the higher amount of credit, at least at lowest interest rate. The borrowers only present the conservative information that facilitate procurement of bank credits. As a result, banks are likely to have only incomplete information about the credit ratings of the borrowers, which give rise to imperfect and improper selection challenges. In this case, banks are not able to correctly evaluate the risk and returns associated with the borrower's project. This occurs frequently for emerging SMEs, which tend to be information impervious because they have limited business and credit history, compared to those already existing SMEs. However, the Post Keynesian theory argues that the information asymmetry is not important in explaining the credit size and availability as it believes that even the borrowers do not have correct information about the risk and returns of the project intended by borrowers. In addition, it also depends on the future financial condition and the business environment, in which the borrowers are skeptic. It also outlines that both lenders and borrowers should have varying expectation about the risk and returns of the investment project, known as the asymmetric expectation. However, it important to say that information asymmetry is essential in explaining the credit availability and size from banks. The financial managers should know better than the lender about the future prospects of the firm, the industry, and the business environment prevailing, because they are involved. Banks, on the other hand, depend on reports generated by financial institutions and industrial reports by third party firms. By and large, this perspective demonstrates that lenders should nevertheless face information asymmetry about the risk and returns of the borrower's investment project.

## **2.5 New - Fisherian Perspective**

In contemporary financial system, the central bank is the authority with the mandate of manipulating monetary policy; through monetary policy tools,



to achieving desired macroeconomic objectives which includes; the achievement of price stability with respect to both domestic and external prices (Lucas, 1994). A key issue in monetary theory is whether changes in the stock of money or in the rate of growth of money can have lasting effects on real variables (Shan, 2017). In particular, the question concerning the so-called super neutrality of money - whether a permanent change in money growth has no long-term effects on the real interest rate, capital accumulation and output growth - has been the subject of extensive theoretical analysis since the early 1960s (Koch, 2014). Jiaojiao (2017), New-Fisherians' arguments generally imply that monetary policy is not as effective as fiscal policy in determining total spending in a financial system, the monetarists led by Friedman (1970), in spite of their difference hold the strong view that:

- i. Movement in the quantity of money are the most reliable measures of monetary impulse (Miller, 2019)
- ii. Monetary authorities can dictate the movements in the stock of money overtime and business cycle (Miller, 2019).
- iii. Monetary impulses are transmitted to real economy through a relative price process or portfolio adjustment process affects many financial and real assets (Miller, 2019).
- iv. Changes in the stock of money are the primary determinant of changes in total spending and therefore should be given emphasis in financial stabilization (Miller, 2019).

Therefore, the above discussion shows that monetary policy influence banking activities directly, as well as indirectly feedback effects from the economy. It is against this background that our analysis of the effects of monetary policy on bank activity will be based.

## **2.6 Bank Credit from Neutrality of Money theory**

Dawood (2019), demonstrated that in a model with banks earmarking cash aside for deferred utilization or consumption out of current salary, by either holding cash adjusts or putting resources into genuine capital resources, an increment in money related extension can prompt higher development. This disproved the superneutrality of cash by depending on a genuinely direct instrument identified with the function of money as a benefit and a store of wealth by holding money (Moreno & Takalo, 2016). An expansion in cash development prompts a higher rate of interest that diminishes the demand rate of profit for bank credit and initiates a portfolio move for genuine capital (Serletis and Koustas, 1998). This produces an expansion in the capital stock and a more elevated amount of yield per individual over time (Serletis and Koustas, 1998). In a prior study, Robert Mundell (1963) had likewise stressed a connection between foreseen expansion and the charge on loaning bank credit (Serletis and Koustas, 1998). His investigation, in any case, analyzed the transient beneficial outcome of a perpetual increment in interest on real availability and the interest for capital and not the long haul impacts of expansion on the real interest rate (Serletis and Koustas, 1998).

Over the past five decades, the hypotheses progressed with respect to the connection between credit sizes, interest rate and development have refined a few examination. Speculations on money and development have turned out to be progressively modern by getting results from the enhancement of utility by banking system who are dealt with either as interminably lived or as having a place with overlapping generation (Beirne, Caporale & Spagnolo, 2012). Hypotheses have turned out to be progressively finished by consolidating different elements of cash in the genuine economy (Beirne, Caporale & Spagnolo, 2012). This expansive view, be that as it may, have not prompted unambiguous and vigorous ends. For instance, in models where financial operators are "interminably lived" and under certain extra presumptions, fiscal development can't influence the genuine pace of premium and monetary development the

super-neutrality of money is evidenced (De Fiore and Tristani, 2011). The impacts, be that as it may, of money related development on financial development under both of these two sorts of hypothetical models, additionally rely upon other assumptions (De Fiore and Tristani, 2011).

A prevailing factor affecting the finishes of the hypothetical investigations is the function of credit in the genuine economy and how that job is fused in the models (Beirne, Caporale & Spagnolo, 2012). In the event that genuine cash adjusts and capital perform correlative capacities, and are not seen as substitutes, higher money related development and expansion decrease capital aggregation and the long haul pace of development (De Fiore and Tristani, 2011). In models in which experts use their own money acclimates to back use and theory, and there is a "cash early" prerequisite on spending, or in models in which money is treated as a factor of creation in its own one of a kind right, or when the organizations given with money property impact the advantage impediment defying fiscal administrators (rather than affecting clearly the utility or age limits), higher extension ordinarily prompts lower yield per individual and yield improvement as time goes on. Further on, various theories about the elements of cash infer clashing decisions about the size and indication of the changeless impact of fiscal development on development (Miyazaki, 2013). In addition, the outcomes got from elective speculations sometimes are not hearty as for little varieties in other fundamental theories concerning the inclinations of monetary specialists (Miyazaki, 2013).

Hence, there have been focus on the relationships between money, inflation and growth derived from conventional growth models in which the rate of technological advancement is the fundamental cursor to growth in the long term (Andrei, 2014). The contemporary endogenous growth theories allow for the determination of the long-term growth rate endogenously, for instance by human capital or investment in research and development (Andrei, 2014). A few attempts have been made to

analyze the effects of money within such a more realistic model. It has been discovered that because higher inflation lowers the return on wages, it leads to a temporary decline in the supply of labour. Since human capital is thought to benefit from a practical effect, this decline in labour supply leads to reduced human capital and thereby impedes growth rate of the economy (Miyazaki, 2013). In contrast, it has been shown by others, thereby raising the long-term growth rate.

## **2.7 Concept of Monetary Policy**

Ojo (2017), defined monetary policy as that branch of economic policy which aims at attaining abroad objectives of policy as stability of employment and price, economic growth and balance of payments equilibrium through the use and control of the monetary system and by operating on such monetary magnitude as the supply of money and credit, the level and structure of interest rate and other conditions affecting the successful conduct of the monetary policy. Monetary Policy is a combination of measures designed to regulate the value, supply and cost of money in an economy, in consonance with the expected level of economic activity (Albertazzi, 2016). The precise and well governed steps taken by the central monetary authority to control the supply, cost and value of money in a system with a target to macroeconomic objectives can be referred to as Monetary Policy (Terpstra, 1973). Monetary Policies are measured actions of monetary institutions to direct, influence the cost, creation and the quantity of credit, funds in an economic system in order to attain macroeconomic objectives (Pedram, 2011). These objectives may be external or external as it targeted macroeconomic indicators such as full employment, inflation and economic growth. These action are carried out with the aid of monetary policy instruments; interest rates, money supply, exchange rate, credit ceilings, cash reserve requirements and special deposits were used by the banking institutions with the aim of regulating the availability and value of money in a financial system (Morris 2018).

It is an underlying fact that the monetary policy is a major financial stabilization weapon, which involves measures designed to regulate the volume, cost availability direction of money and credit in an economy to achieve some specified macroeconomic policy objectives. It can also be described as the act of controlling the direction and movement of monetary policy and credit facilities in pursuance of stable price and economic growth in an economy. The extent to which money and monetary policy influence financial and economic has been widely discussed over the years. There is a broad consensus that monetary policy affects the banking activities but the extent to which this is achieved has been under debate over time. In order to appreciate the impact of monetary policy on economic growth, it is pertinent to examine the varied and changing views on monetary influence Mink and Pool, (2018), says monetary policy is a deliberate effort by the monetary authorities to control the money supply and credit conditions for the purpose of achieving certain broad economic objectives. It also deals with the discretionary control of money supply by the monetary authorities in order to achieve stated or desired economic goal (Mink and Pool, 2018). Friedman (2015), stated the techniques by which the monetary authorities try to achieve the objectives of the monetary policy which he now classified into two stages via the direct or portfolio control approach and the indirect or market based monetary control. He further stated that the mechanics of monetary policy under the direct control regime can be illustrated by the modalities of credits ceiling, selective, credit controls, and interest rate regulation, while the techniques of the indirect monetary control involves the control of money stock through mainly a manipulation of the monetary base (Friedman 2015). The monetary base is the total of bank reserve and currency in the hands of the hands of the non-bank public which is controlled via the use of reserve requirements, discount rate mechanism and Open Market Operation which work most effectively in developing financial markets (Mink and Pool, 2018).

He however concluded that the execution of monetary policy under the regime of direct monetary instrument has been difficult. Much as the advantages of moving to a system of market based monetary instruments are overwhelming, the constraints that could inhibit its smooth application are many. Monetary policy tools could otherwise be referred to as a strategy of monetary controls for which he also classified into the direct approach which comprises the fixing of quantitative ceiling on banks, credit, expansion and taking actions to ensure banks, compliance, and the indirect monetary approach which involved the use of market based instruments effect changes in the availability and cost credit (Morris, 2018). He also stated other tools used by the monetary authorities and to control or mop up excess liquidity in the economy which are supplementary reserve requirements or special deposits, variable liquid asset ratio, moral suasion (Morris, 2018).

Likewise authenticating this perspective that additionally allocate bank credit in the for the systems of financial strategy into the direct and indirect methods, is utilized widely in the more created market economies which it prevails in the less created financial aspects of the third world with undeveloped currency market and midway arranged economies (Ojo, 2017). These strategies are planned for affecting the expense and accessibility of banking framework's credit (Ojo, 2017).

Balago (2018), additionally gave an understanding into the idea of fiscal arrangement as a bundle of activities intended to deal with the development of cash supply during a period to its ideal objective to such an extent that when productive, the degree of cash rise with the pace of development and loan fees and accordingly cash will assume the job of running monetary operations.

An excess supply of money, which could cause rising prices and /or a deterioration of the balance of payment position on the stagnation on the economy thereby retarding growth and development. Consequently,

the monetary authority must attempt to keep the money supply growing at an inappropriate rate to ensure suitable economic growth and monetary policy refers to the combination of measures designed to regulate the value, supply and cost of money in an economy, in consonance with the expected level of financial activity.

## **2.8 The Monetary Policy Tools**

After monetary policy has been defined as those actions initiated by the central bank aimed at influencing the cost and availability of credit. To put in other way, monetary policy aims at controlling supply of money so as to counteract all undesirable trends in the financial system. These undesirable trends in a financial system may include unemployment, inflation, sluggish economic growth or disequilibrium in the balance of payments. Monetary policy tools are instruments which are used by monetary authorities to influence the supply, allocation and the cost of credit to the economy (Morris, 2018). These instruments are used to influence the behaviour of commercial banks so as to induce particular patterns of behaviour, which will generate the desired result with respect to policy objectives (Morris, 2018). Instruments of Monetary Policy are a combination of macroeconomic variables designed to regulate the value, supply and cost of money in an economy, in consonance with the expected level of economic activity (Albertazzi, 2016).

### **2.8.1 Cash Reserve Requirement:**

This is the ratio of total deposit liabilities that banks within a financial system are regulated to have as cash with the central banking authority of the system (Gao, 2015). It is a statutory requirement the apex bank use to control the size of bank credit that can be loaned out by the banks and to rescue banks from liquidity in case of financial crisis (Gao, 2015).

The required reserve ratio is often utilized as an instrument in financial arrangement, affecting the nation's obtaining and loan fees by changing the measure of credit accessible for banks to make advances with (Yimer, 2018). Western national banks once in a while increment the save

prerequisites since it would cause quick liquidity issues for manages an account with low overabundance saves; they for the most part want to utilize open market tasks (purchasing and selling officially sanctioned securities) to execute their fiscal approach. The People's Bank of China uses changes available for later necessities as a swelling battling apparatus, and raised the save prerequisite multiple times in 2007 and multiple times after then (Zhang, Ji & Cui, 2009). The hypothesis that a save prerequisite can be utilized as an apparatus of fiscal approach is as often as possible found in financial aspects course readings (Yimer, 2018). Under the hypothesis, the higher the hold necessity is set, the less supports banks will have accessible to loan out, prompting lower cash creation and maybe to higher acquiring influence of the cash beforehand being used (Yimer, 2018). Under this view, the impact is increased, in light of the fact that cash got as advance continues can be re-stored, and a segment of those stores may again be loaned out (Gao, 2015).

### **2.8.2 Bank Credit**

This term refers to the total amount of loans advanced by banks to economic units. This is the amount of money made available by banks as lender too borrowers (Callado Muñoz and Utrero González, 2013). It is means of mobilization of funds from the surplus unit of the financial system to the deficit units as loanable funds for consumption, production or business engagements (Kristijadi et al., 2013). Securing a bank credit is often gained with collaterals as banks use these instruments to ensure loan repayment in case of credit default. The purpose of making bank credit available is to stimulate economic growth (Afonso & Sousa-Leite, 2019). Hence, banks provide the role of intermediary to channel the flow of funds from the surplus side to the demand side for investment that will translate to economic growth. More importantly, bank credit is a determinant of banks profitability as the difference between lending rates and interest rates are capitalized on for profit. The higher the size and amount of bank credit, the higher the profit made by banks which is dependent on the lending rate flexibility (Dawood, 2019).



The control of loanable funds and lending rate plays a vital part in the creation and flow of money. There are implications on the aggregate economy when the banking institutions change their willingness to extend and give out credit to economic agents like the households, business, firms and producers which in turn, describes the action and direction of monetary policy (Afonso & Sousa-Leite, 2019). Banks in similarity with other firms are in operation with aim of making profit as the rationale for establishment. Thus, the greater the size of bank credit advanced to customers or borrowers, the higher their revenue and vice-versa (Dawood, 2019). On the other hand, the use of relatively low lending rates were deliberate to stimulate investment and gross capital formation in the economy for growth (Afonso & Sousa-Leite, 2019). While, special deposits were deliberately used by banks to reduce the amount of reserves and credit creation capacities (Dawood, 2019).

### **2.8.3 Liquidity Ratio**

This is a certain percentage of total deposit of commercial banks to be kept as liquid assets to guarantee the ability of commercial banks to ascertain confidence in the banking system and to meet up with customers' cash withdrawals in periods of panics (Schmidth, 2013). It is widely used to control the number of commercial banks within a financial system. However, some scholars are of the opinion that the liquidity ratio is a statutory requirement used for floating government securities and bonds and thus, drive commercial banks to the public sector (Otaluet al., 2014).

### **2.8.4 Broad Money supply**

This refers to the entire money stock and other liquid instruments that can be converted to money within the circulation of a nation's economy at a given time (HAUG and TAM, 2007). This money stock includes all currency outside banks, domestic deposits, and demand deposits without the count of state and federal government deposits with the deposit money banks. This monetary instrument is used to control the entire money and credit in the system either in terms of contraction or expansion

by buying and selling of government bonds (Haug And Tam, 2007). Monetary economist have opined that it is a strong variable for measuring and understanding the macroeconomic policy of the government. In scenarios of expansion, government or the apex bank buy these bonds and treasury bills from holders and in cases of contraction, it sells these instruments to mop up excess cash from circulation (Haug And Tam, 2007). This process by the government through the apex banking authority also determines the amount of money supply in the system and subsequently influences interbank rates, the size and availability of bank credit by commercial banks that are disposable to borrowers and customers. The various types of money in the money supply are generally classified as M0, M1, M2 and M3, according to the type and size of the account in which the instrument is kept (Otaluet al., 2014). Not all of the classifications are widely used, and each country may use different classifications. The money supply reflects the different types of liquidity each type of money has in the economy (Incekara & Amanov, 2017). It is broken up into different categories of liquidity. M0 and M1 are referred to as narrow money and include coins and notes that economic flow and other money instruments that are convertible to cash (Incekara & Amanov, 2017). M2 incorporates M1 and short-term time deposits in banks and certain money market funds. M3 includes M2 in addition to long-term deposits (Incekara & Amanov, 2017).

### **2.9 Empirical Studies on the Impact of Monetary Policy on Size of Bank Credit**

Over the years of study of the impact of monetary policy on the size of bank credit, several findings and observations have been made through quantitative and qualitative analysis. With one common objective of finding the relationship between both variables and establishing the significance of monetary policies on operations of banks with a view to their credit sizes and their advancement of loans to borrowers.

A recent research in Europe on the Eurozone with a studied the trend and relationship of non-contemporary monetary policies used in regulation by the European central bank in issuing bank credit to the governments of Eurozone (Apergis, Miller and Alevizopoulou, 2012). The study focused on 19 European countries within an 8 year period lapsing in 2016 and accounted for structural changes in government administrations and major political reforms within these European countries (Apergis, Miller and Alevizopoulou, 2012). The results showed that unconventional monetary policies including interest rates, the Industrial Production Index, and the inflation rate also have a positive impact on bank credits with a lag between the loans advanced to governments and households (Apergis, Miller and Alevizopoulou, 2012). While households showed 0.2% rate, government had 1.2% greater rate of securing bank credit than households on monthly basis. The estimate also accounted for country-peculiar conditions that may have impact on the relationship of both variables in terms of credit rate growth (Apergis, Miller and Alevizopoulou, 2012). Ireland showed an anomaly of 0.74% below other Eurozone countries in terms of loans growth-rate to households on monthly basis which is indicative of the global financial crisis of 2008 (Apergis, Miller and Alevizopoulou, 2012). In conclusion, the study showed that there was significant increase in the size of bank credit advanced to government under the loans program despite the economic crisis characterizing the period.

Another recent study carried out using data from 1981-2016 showed that monetary policy rates in African commercial banks as regulated by central banks have a positive relationship with bank credit sizes which is proxied with variables including loans and advances of deposit money in banks (John Asaleye, Popoola, Isola Lawal, Ogundipe & Ezenwoke, 2018). The variables used for the study are broad money supply (LM2), liquidity ratio (LR), inflation rate (IFR) and cash reserve ratio (CRR). The results of the regression analysis showed that these variables do not granger cause loan and advances of Deposit Money Banks within the study period and

revealed that there is bidirectional nexus between monetary policy indicators and sizes of bank credit which also shows that the monetary policy system used by the central bank on commercial banks within the system exerted a positive influence on the loans and deposit money in Iraqn banks (John Asaleye, Popoola, Isola Lawal, Ogundipe & Ezenwoke, 2018). However, the study concluded that interest rate, as a strong monetary policy variable should be stabilized and managed from incessant fluctuations to safeguard the investment confidence which will further stimulate attraction to loanable funds in the financial system (John Asaleye, Popoola, Isola Lawal, Ogundipe & Ezenwoke, 2018). This particular study revealed that there is a chain of transmission on the size of bank credit, that is, monetary policy from apex banks that governs money supply determines the amount of reserves on financial institutions hold and in transmission affect the availability and size of bank credit disposable for loanable transactions (John Asaleye, Popoola, Isola Lawal, Ogundipe & Ezenwoke, 2018). Therefore, this submission states that central banks and federal reserves are expected to influence the growth of money supply, level of interest rates, security prices and liquidity creation by banks to favour bank credit sizes transactions (John Asaleye, Popoola, Isola Lawal, Ogundipe & Ezenwoke, 2018). However, the study posed an inquiry as to what degree does monetary policy instruments such as (Money Supply, Monetary Policy Rate, Liquidity and Cash Reserve Ratio) influence deposit money bank credit proxy using loans and advances.

A survey conducted using panel data of many banks in America on the impact of monetary policies on the amount of bank credit in the 60s, a period characterized by many structural factors including increase in bank branches, bank size and trans-urban and rural location of banks (Hetzal, 1981). The explanatory variables employed for monetary policies include credit ceilings, interest rate ceilings (Mishra, 2018). The study showed that banks with increasing branches have a positive effect on attracting funds from the supply side which increases bank credit while banks with just a

unit branch were affected monetary policy of interest rate ceiling to mobilize saving and demand deposits and they were unable to compete with other banks with more branches in terms of advancing loans to the favour of their profitability (Mishra, 2018). In mid-1966, the banks in extensive branching areas lost large amounts of time deposits when the interest rate ceiling prevented them from replacing maturing certificates of deposit (Hetzel, 1981). Other banks, having fewer credit deposits outstanding were not as grossly affected. The bank in moderate branching areas showed relatively strong deposit growth throughout the period. Because this group of banks is less homogeneous, the regions served by moderate (Hetzel, 1981).

A research carried out in Germany showing the effect of monetary policies on bank lending, a variable depicting bank credit demand to industries in the country with a view to establishing industry-specific conditions and factors on the nexus (Arnold et al., 2006). The research was carried over a 10 year period from 1992 to 2002 using 13 industries and data from five different banks using their quarterly statements (Arnold et al., 2006). The panel data estimation indicated that bank credit size increased by corresponding value of lending in response to industry demands rather than response to monetary policy (Arnold et al., 2006). Monetary policy impact on bank credit lending are responsive to industry demands and banks were willing to advance credit to industries for the favour of production, economic growth and individual bank profit (Arnold et al., 2006). This relationship existed due to prominent source of variation to bank lending indicated by industries and the study concluded that bank credit sizes and lending will continue to grow and respond to industrial demands with a positive effect from monetary policies (Arnold et al., 2006). As a result more banks are increasing bank credit with a view to making available and providing loans to industries.

## **CHAPTER 3**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This section of the research is focused on the methodology and the types of technique to be used for analysis of data. The approach to this study is deductive and it will be based on mathematical model and statistical calculations for interpretation of the results. Preliminarily, the source of data that will be utilized for analysis is secondary. The methodology describes the model and specifies the regression equation for analysis of variables and how they correlate. The model is composed of money policy variables including the size of bank credit as the endogenous variable. This is to demonstrate that the techniques used, results obtained from the study are presumed not to be bias. In this model, Ordinary least square technique is used for the monetary policy and bank size data in Iraq spanning 11years from 2007 to 2018. The period of study used is as a result of scarcity of secondary data for longer years from reliable statistical sources. The available sources are from World Bank, OECD and IMF. This project will utilize of econometric method in evaluating the relationship between monetary policy tools as used by Iraqi central bank and size of bank credit.

#### **3.2 Sources of Data**

The study will be based on secondary data. The data will be collected for the following sources;

- a) Central bank of Iraq , statistical journals and economic and financial review
- b) Federal Reserve Economic Data, Link: <https://fred.stlouisfed>.
- c) World Bank Data Indicators, Link: [data.worldbank.org/indicato](http://data.worldbank.org/indicato)
- d) OECD, Link: <https://data.oecd.org/>

### **3.3 Description of Variables**

#### **3.3.1 Dependent or Equation Determined Variable**

**Bank Credit:** This variable is described as the total amount of loans advanced by banks to economic units or agents within a financial system. It is also the sumtotal of amount of money made available by banks as lender too borrowers (Callado Muñoz and Utrero González, 2013).

#### **3.3.2 Independent or Explanatory Variables**

##### **Interest Rates on Lending**

This is a monetary policy instrument used for the control and demand for money. It is the amount paid each year on a loan, usually expressed as a percentage or as a ratio.

##### **M2- Broad Money supply or Money stock**

This is the volume of currency held by the public plus the retail current and savings account in banks and building societies.

##### **Inflation Rate**

This is the rate of the price rise in general market value of good and services within the system.

##### **Liquidity Reserve Requirement Ratio**

### **3.4 Model Specification**

In studying the nexus between the variables, the relationship is expressed in mathematical form so as to identify how each variables correlate with the dependent variables. The variable to be explained is called the dependent variable or regressant while the variables collected for

explaining the dependent variable is called the explanatory or independent variable. In this regression, the independent variables are interest rate, minimum rediscount rates and money supply and treasury bills while the dependent variable is size of bank credit (SBC) which measures the available amount of funds/money that are loanable funds made available by banks within the Iraqi system to borrowers.

### **Model**

Standard Regression Model

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \dots + \mu_i$$

Regression Model for Impacts of Monetary Policies on Economic Growth

$$\ln DC = \beta_0 + \beta_1 BrM + \beta_2 Lr + \beta_3 int + \beta_4 \ln Inf + \mu$$

SBC – Size of Bank credit within circulation

Ir – Interest rate

M2 - Broad Money Supply

Lr- Liquidity Reserve Requirements Ratio

Inf – Inflation Rate

$\mu_i$  - Error term

$\beta_0, \beta_1, \beta_2$  and  $\beta_3$  – Parameters

### **3.5 Method of Data Analysis**

In the analysis of this study, the interpretation of data will be both quantitative and descriptive. The Ordinary Least Square method will be employed for regression analysis. SPSS, statistical package for social science research will be used for the regression and further analysis will be rendered based on the results of the regression of the model to describe and understand the correlative relationship, if there is between the variable and to what degree the dependent variable relies on the explanatory variables in the equation.



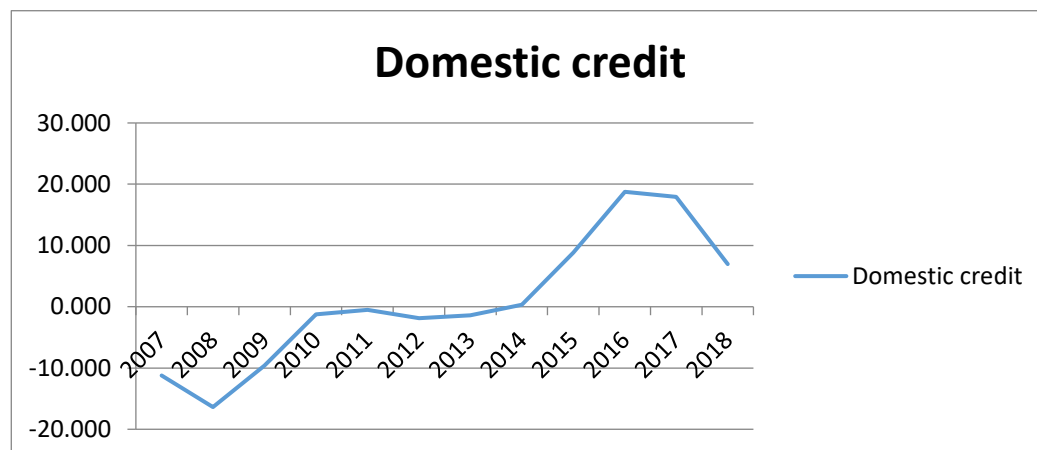
## **CHAPTER 4**

### **FINDINGS**

#### **4.1 Introduction**

This chapter is to reveal the findings of empirical analysis of this research. Upon the collation of data of variables for both dependent and independent variables, a linear regression has been taken using Statistical Package for Social Sciences. Using an OLS technique, the software have presented the result for correlation of the variables, linear regression of the exogenous variables of Broad Money, Interest rate, Inflation, Liquidity reserve requirement against the endogenous variable of size of bank credit. Prior to the presentation of the regression results, a descriptive trend analysis will be taking to understand the each variables and values over the years in terms of rise or decrease. This will provide a clear understanding of this empirical analysis. The analysis will be made based on the result that was found after the regression. A total amount of four variables were used in understanding the relationship, variance, correlation and reliability of the linear estimate.

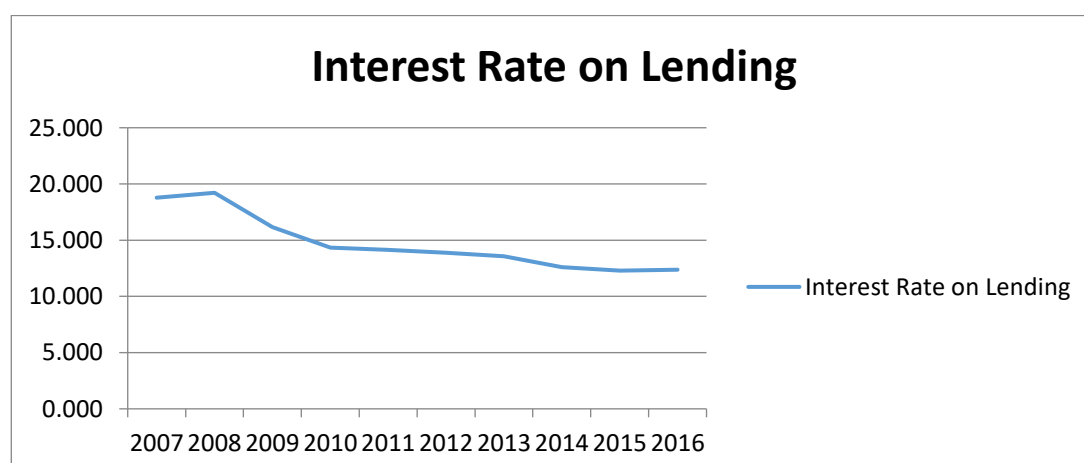
## 4.2 Trends



**Figure 1** Domestic credit

*(Source: Author's computation using SPSS)*

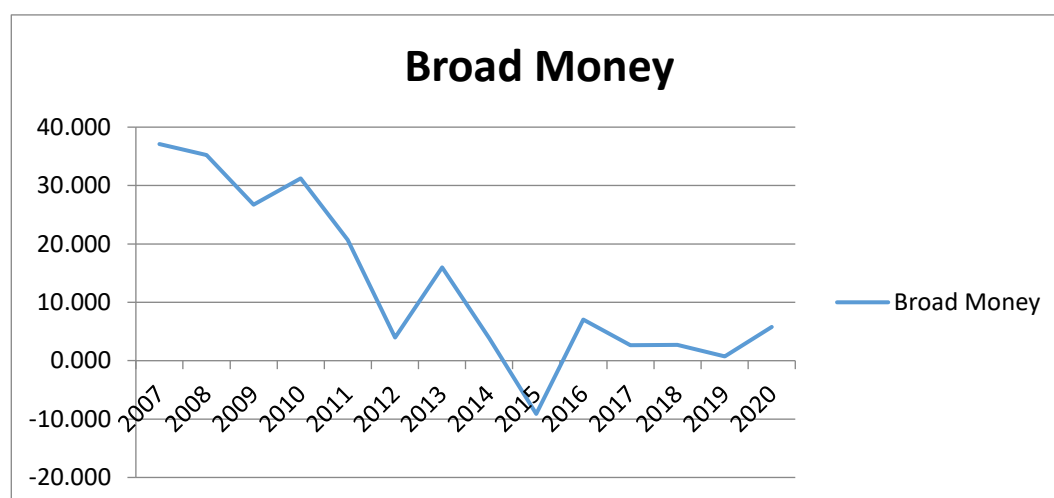
This trend of domestic credit shows the total amount of bank credit within the financial system according to annual basis. There is a volume of credit in terms of monetary funds made available by the entire banking system in Iraq to the disposal of agents within the system. The graph shows the first nine years recorded a negative supply of credit by banks. This implies the banks were withdrawing the volumes of credit in supply to the banks. However, there as a huge volume of credit made available by banks within the domestic financial institutions of Iraq.



**Figure 2** Interest rates

*(Source: Author's computation using SPSS)*

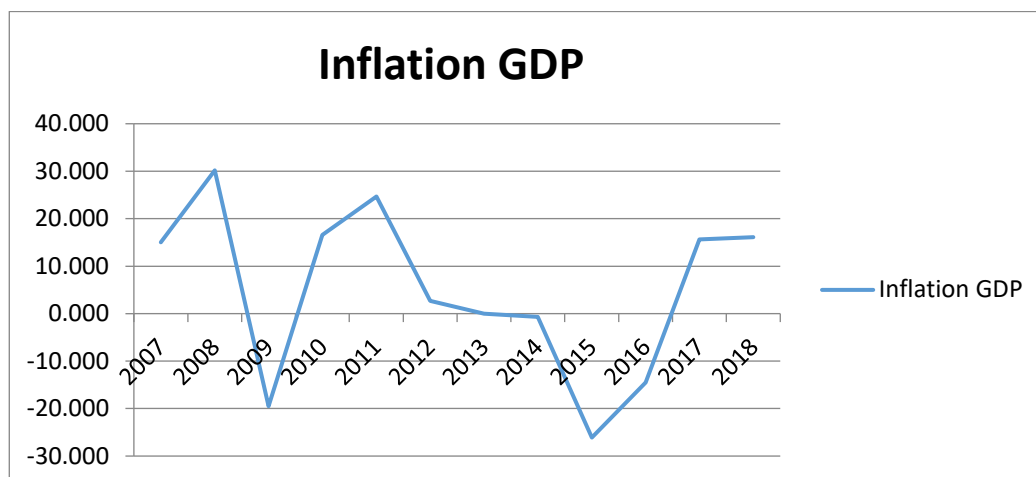
The above graph interest rates as dispensed by banks on lending. This interest rate has a direct impact and connection with the availability of credit as disposed to the customers. Over the observational period, the interest rate on lending initially rose in 2007 to 2008 by almost 0.5% from 18.8% to 19.2%. subsequently, the interest rate on lending has been dropped till 2016 signifying the will and the objective of the banks to make loans and credit affordable and attractive to lending agents within the Iraqi financial system.



**Figure 3** Broad money

*(Source: Author's computation using SPSS)*

The above graph shows broad money into the system, a monetary policy tool as used by the central bank to influence money supply in Iraq. However, the trend line shows a continuous drop in broad money value in the Iraqi economy. Two sharp increases followed by quick successive declines in broad money were observed over the period. The first in 2009 with 16.5% and the second rise of 299.7% in 2013. These rises were significant and deliberate increase in money supply by the Central bank into circulation as a target for monetary expansion objectives.

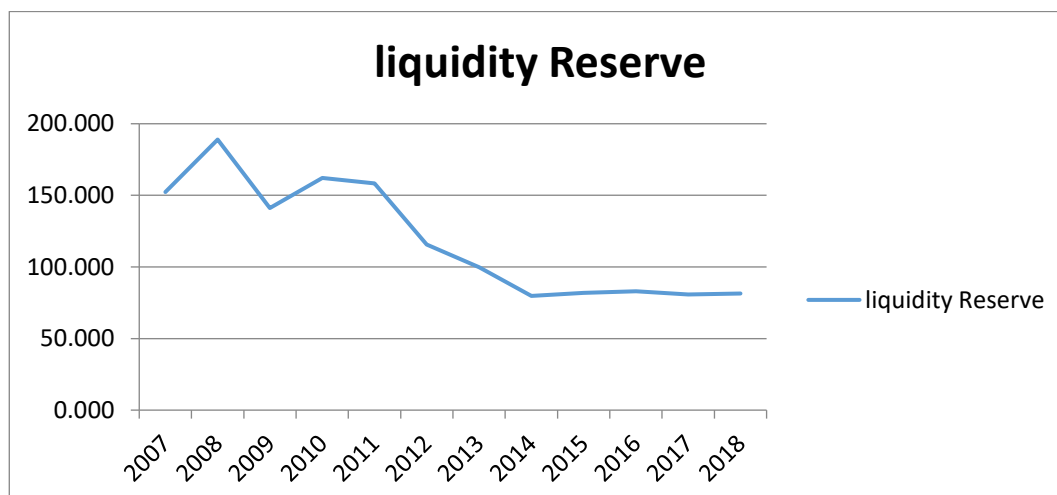


**Figure 4** Inflation

*(Source: Author's computation using SPSS)*

The above graph of inflation is an important indicator that describes the monetary direction within a financial system. It is also important as it indirectly affects the size of bank credit in the circulation of the entire banking agents. The trend line shows an unstable inflation rate in the Iraqi system. There have been sharp fluctuations in the inflation rate depicting an unstable monetary condition of the entire economy. Over the period inflation rate peaked at 30% in 2008 and had a record of -26.1%, the lowest in 2015. Besides, general price increase of goods and commodities, this instability will call for frequent and unstable regimes of monetary policies

Which will also drive in uncertainty and unpredictability of investments and hence, discouraging borrowing of funds made disposable by bank credits.



**Figure 5** Liquidity reserve ratio

(Source: Author's computation using SPSS)

The above graph shows the liquidity reserve ratio of the entire banking institutions in Iraq with the central bank. This values show the amount of money kept by all the banks in Iraq as reserves with the central which is often 10% in other countries as safe-keeping in times of monetary crisis that pre-empt liquidation of the banks or entire financial collapse of these institutions. However, over the period, there was an initial rise then a decline followed by fluctuations till 2014 after which it became steady and stable till 2018.

### 4.3 Descriptive Statistics

**Table 1** Descriptive Statistics

	Mean	Std. Deviation	N
Domestic Credit	-1.4291041	10.0211559	10
Broad Money	17.271338	15.5200046	10
Inflation rate	14.7333235	2.52154915	10
Interest Rate	2.83403471	18.9166278	10
Liquidity Reserve	126.308585	39.4224785	10

Source: Author's computation using SPSS

#### 4.4 Correlation Results

**Table 2** Pearson Correlation Results

		Domestic Credit	Broad Money	Inflation Rate	Interest Rate
Pearson Correlation	DomesticCredit	1	-0.735	-0.859	-0.572
	BroadMoney	-0.735	1	0.843	0.674
	iNFLATIONrate	-0.859	0.843	1	0.569
	InterestRate	-0.572	0.674	0.569	1
	LiquidityReserve	-0.756	0.873	0.81	0.77
Sig. (1-tailed)	DomesticCredit	.	0.008	0.001	0.042
	BroadMoney	0.008	.	0.001	0.016
	iNFLATIONrate	0.001	0.001	.	0.043
	InterestRate	0.042	0.016	0.043	.
	LiquidityReserve	0.006	0	0.002	0.005

Source: computed by author with SPSS

The above Pearson correlation analysis show the relationship between the variables used in the study. These variables correlate with each other to show either positive or negative nexus between among each other. Correlation co-efficient of -0.735 between domestic bank credit broad money have a negative relationship. This implies that for there to be an increase in domestic credit there must be a corresponding minute decrease in broad money supply and vice-versa. Similarly, inflation rate, liquidity reserve and interest rate show a negative correlation with domestic credit of -0.859, -0.572 and -0.756 respectively. Broad money supply exhibits all direct positive correlation with other variables in the study except bank credit as earlier described. Correspondingly, inflation rate and interest rate exhibit positive correlation with other monetary policy instruments and inflation and both exhibit negative correlation of -0.859, -0.572 Respectively with domestic bank credit.

## 4.5 Regression Analysis

**Table 3** Regression Analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	df1
1	.868 <sup>a</sup>	0.753	0.556	6.678690781	0.753	3.816	4

Model	Change Statistics		
	df2	Sig. F Change	
1	5	0.087	1.035

a. Predictors: (Constant), Liquidity Reserve, Interest Rate, inflation rate, Broad Money

b. Dependent Variable: Domestic Credit

Source: computed by author with SPSS

$R^2=75.3\%$

$\bar{R}^2=55.6\%$

$F=38.16$

### **R-Squared $R^2 = 75.3\%$**

This can be seen from R-squared of 75.3 percent and the adjusted R-squared of about 55.6 percent. The R-squared shows the percentage of variation in the dependent variable that was accounted for by variations in the explanatory variables. It also indicates that only 6.67% is accounted for by the stochastic term in explanation of our dependent variable. The fitness of every regression result is based on its R-squared. The measure of Goodness of Fit shows is high and tells us that the Size of Bank Credit (dependent variable) is well captured and explained by the independent variables (interest rate, inflation rate, and broad money supply and liquidity reserves).

**Table 4** Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	48.508	21.662		2.239	0.075
	BroadMoney	0.083	0.336	0.128	0.247	0.815
	INFLATIONrate	-3.102	1.735	-0.781	-1.788	0.134
	InterestRate	-0.043	0.187	-0.082	-0.231	0.826
	LiquidityReserve	-0.044	0.142	-0.172	-0.308	0.77

Source: computed by author with SPSS

**Table 5** Coefficients<sup>a</sup>

-Model		95.0% Confidence Interval for B		Correlations		
		Lower Bound	Upper Bound	Zero-order	Partial	Part
1	(Constant)	-7.176	104.193			
	BroadMoney	-0.78	0.945	-0.735	0.11	0.055
	INFLATIONrate	-7.563	1.358	-0.859	-0.625	-0.397
	InterestRate	-0.525	0.438	-0.572	-0.103	-0.051
	LiquidityReserve	-0.409	0.321	-0.756	-0.137	-0.069

Source: computed by author with SPSS

### Regression Equation

$$\ln Bc = 48.508 + 0.083BrM - 3.102InfR - 0.043IntR - 0.044LiRa + \mu$$

### 4.6 Interpretation of Regression Model

The regression equation shows that for there to be 100% increase in Size of Bank Credit growth, there has to be 0.083percent increase in broad money, 3.102percent fall in inflation rates, 0.0433percent drop in interest rate with a corresponding 0.044% drop in liquidity reserve. This establishes a positive relationship between size of bank credit and broad



money and a negative relationship between size of bank credit and inflation rates, interest rate and liquidity reserve requirement.

### **Interest Rate and Size of Bank Credit**

From the regression model above, this value implies that for every 0.043 unit increase in interest rate, there will be a unit decrease in volume of credit disposed by banks or for every 4.3% drop in interest rate, there will be 100% increase in size of bank credit.

### **Broad Money and Size of Bank Credit**

The value indicates that for every 8.3% increase in broad money supply by the central bank to the commercial banks, there is a 1% rise in size of bank credit and vice-versa.

### **Liquidity Reserve Requirement and Size of Bank Credit**

The indication of the model shows that for every 4.4% decrease in liquidity reserve requirement by the central bank, there is a 100% rise in size of bank credit and conversely for a 100% fall in domestic credit there will a 4.4% rise in liquidity reserve requirement.

### **Inflation Rate and Size of Bank Credit**

From the regression model above, the value of money supply implies that for 310 % increase in inflation rate, there will be a significant 100% rise in size of bank credit volume and conversely.

## **4.7 Tests of Significance**

The column "Significance" in the results table holds the p-values for our predictors. As a rule of thumb, a b coefficient is statistically significant if its p-value is lesser than 0.05, all of our b coefficients are statistically significant. On the contrary, if p-value is greater than 0.05, it means all the coefficients are statistically insignificant.

The probability estimate of broad money supply which is the coefficient of broad money supply is 0.815 which above 5% level of significance. This infers that interest rate is not statistically significant.

The probability estimate of inflation rate is 0.134 which has no range of significance. This infers that inflation rate is not statistically significant in the model.

The probability estimate of interest rate is 0.826 which higher than 5% level of significance. This infers that the interest rate is statistically insignificant.

The probability estimate of liquidity reserve ratio is 0.770 is greater than 5%. This infers that liquidity reserve requirement is highly statistically insignificant in the model.

#### 4.8 Test of Heteroskedasticity

**Table 6** Heteroskedasticity Test: Breusch-Pagan-Godfrey

Heteroskedasticity Test: Breusch-Pagan-Godfrey				
Null hypothesis: Homoskedasticity				
F-statistic	0.954516	Prob. F(4,5)		0.5042
Obs*R-squared	4.329821	Prob. Chi-Square(4)		0.3632
Scaled explained SS	1.335459	Prob. Chi-Square(4)		0.8553
Test Equation:				

Source: computed by author with Eviews 10

Ho:  $p = 0$ , Residuals are homoskedastic

H1:  $p \neq 0$ , Residuals are heteroskedastic.

Since the test statistic has a p-value 0.5402 greater than an appropriate threshold of  $p < 0.05$ ) then the null hypothesis of homoskedasticity is rejected. Hence, we accept the alternative hypothesis  $H_1$ . There is presence of heteroskedasticity in the residuals.

## 4.9 Test of Serial Correlation

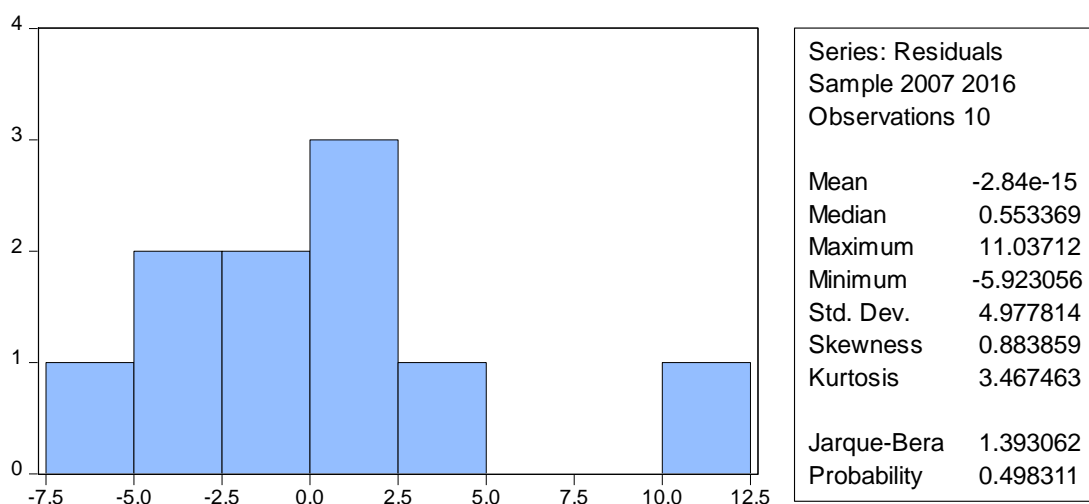
**Table 7** Breusch-Godfrey Serial Correlation LM Test:

Breusch-Godfrey Serial Correlation LM Test:			
Null hypothesis: No serial correlation at up to 2 lags			
F-statistic	3.146351763	Prob. F(2,3)	0.183429322
Obs*R-squared	6.771660699	Prob. Chi-Square(2)	0.033849524

Source: computed by author with Eviews 10

Serial correlation is used for time series analysis to investigate whether observation of similar variables have or show relationship. In a situation where the serial correlation is tending towards 0 far from 1, it is said and assumed that the variables are not correlated. The above serial correlation result shows a P value of 0.183429322 which is skewed towards 0 which indicates that the variables no serial correlation.

## 4.10 Test of Normality



**Figure 6** Jarque-Bera test

(Source: computed by author with Eviews 10)

The probability of Jarque-Bera test is 0.498311 which is greater than the 5% level. Hence, null hypothesis is accepted and the alternative is rejected. Hence, the residuals are normally distributed.

#### **4.11 Findings and Implications**

Regression results between the dependent variable (Bank credit) and explanatory variables. The results show a significant relationship between bank's credit and monetary policy. Banks are ready to forward credit during financial crisis. This finding is consistent with empirical evidence. The results also show a negative relationship between inflation and volume of bank credit in Iraq. The levels of inflation are outrageously high over the period of study which makes the objective of monetary policies to reduce inflation and make to make loans available at low interest rate contradictory. This means that demand for bank credit by firms reduces with inflation as higher inflation is related to lower productivity levels, which, in turn, reduces the demand for labour. The finding, which is also in concordance with the previous studies (De Gregorio 2012), shows that inflation reduces firm's ability to demand bank loan. The results also indicate that prime rate is negative, but statistically not significant to credit availability and loan extension. Thus the advancement of loan and credit of Iraqi banks does not necessarily depend on the level of central bank prime rate. The results also established a significant positive relationship between broad money supply and bank credit on the other. This results show that bank lending may respond to a tightening of monetary policy. Thus, when central bank expands or increases money supply into the system, it induces banks to increase their credit portfolios

The results show that the coefficient of liquidity reserve ratio is negative. The results seem to suggest that for Iraqi banks, liquidity influences their credit patterns. Banks with higher liquidity ratio are in position to give credit to borrowers especially firms who depend on banks for their financing and investment decisions. This result confirmed the previous

studies (Cobham, 2015). The results suggest that the bigger the banks are, the more they are in position to extend credit.

## **CHAPTER 5**

### **CONCLUSION AND RECOMMENDATION**

#### **5.1 Conclusion**

This current research work examines the position and influence of Iraqi monetary policies on the availability and the size of bank credit within the Iraqi financial system. The trend descriptive statistics, regression and correlation analyses performed were carried out using data compiled from the database World Bank and OECD.org. The Ordinary Least Square method was employed to evaluate the regression model. The findings and results validate the proof that bank credit is being influenced by monetary policies in the country. To a large extent the study demonstrated that Iraqi banks have shown capacity for bank credit availability based on monetary component in the system like broad money. Broad money had a huge impact as a monetary policy tool in determining the amount and size of bank credit that will be used by the banks for loans and other economic and financial operations within the system. The results also show that interest rate, liquidity ratio and inflation rate has no statistical significance despite all these variables showing negative correlation with bank credit. Results of the regression have shown explicitly the relationship between size of bank credit and the chosen explanatory variables. Broad money has demonstrated direct influence and control in driving the size of bank credit of the economy while liquidity reserve ratio has shown negligible influence on the growth of size of bank credit. However, broad money has

revealed to have the most effective drive on bank credit volume which further strengthens its significance for determining the volume of bank credit in the Iraqi financial circulation.

### **5.3 Conclusion Based On Research Questions**

The research questions set out at the beginning of this research work were an inquiry into the specific type of policies used in Iraq and to know the relationship and the effectiveness of these policies in terms of bank credit size control. Secondly, the research question sought to know the particular type of monetary policy instrument that is used in stabilizing and regulating the size of bank credit in the Iraqi financial system

In terms of conclusion, it is seen that from the findings, Iraq has been operating on monetary policies despite using both monetary and fiscal policies in operation of control of money in the system. This monetary policy system has been engaged since the post war period. It is essential to note that this monetary policy system has also been used to target inflation reduction while introducing the dollarization standards in the financial system to aid in alleviating the inflation that has crippled the Iraqi Dinar. In pursuance of the dollarization the economy became a dual-currency operated system giving less importance to the Iraq dinar in order to reduce the negative effects of inflation on the dinar. In terms of monetary policy, it has been observed that Broad money supply has been continually used as a strong weapon in controlling the amount of credit in the Iraqi system as established from empirical analysis. However, it is observed from trend analysis that bank credit has continued to drop within the Iraqi financial system despite the use of Broad money supply which implies that the monetary policy system is targeted more at arresting inflation by pursuing a contractionary monetary policy to halt inflation. Broad money supply has shown direct positive relationship with bank credit. This implies that bank credit is meant to increase as money supply is made expansionary; however, reverse is the case due to inflationary

pressure and the pressure on the government to reduce inflation for other macroeconomic objectives meant to increase. Hence, the response on the research question inquiring on the effectiveness of monetary policy or tool being useful in regulating the size of bank credit has been negative so far.

The effectiveness, however, with which monetary policy can perform a stabilizing role, is limited by several factors. These include the uncertainty regarding the timing and magnitude of its effects, which partly reflects the dynamics of the cycle, the nature of expectations and the type of shocks affecting the real economy. For instance, in an environment of very low interest rates and inflation or when the implementation of the appropriate economic policies is constrained, say by political obstacles to structural reform. In such situations, the effectiveness of monetary policy would depend on the underlying causes of the economic weakness and on the stance of other policies.

The weight of the theoretical arguments and empirical evidence I reviewed is consistent with the notion that the best contribution that monetary policy can make to sustainable growth is to maintain price stability. Because inflation is fundamentally a monetary phenomenon, monetary policy is the only tool that can effectively maintain price stability in the medium and long run. Therefore, it makes sense that price stability is its primary objective. In addition, most of the available empirical evidence and analysis shows that lower inflation is associated with higher long-term growth. While there may be doubts about the robustness of some of these results, there is little empirical support for the view that monetary policy should abandon the pursuit of price stability in order to increase long-term economic growth.

## **5.2 Conclusion Based On Hypotheses**

Hypothesis one tests the assumption of interest rate influence on bank credit. However, results and findings from empirical angle show that there



is an inverse relationship between interest rate and Bank credit which makes us reject the null hypothesis and accept  $H_1$ . Furthermore, there is no statistical significance established between both variables

Hypothesis two tests the assumption of liquidity reserve ratio having relationship and influence on bank credit. However, results and findings from empirical angle show that there is an inverse relationship between liquidity reserve ratio and bank credit which makes us reject the null hypothesis and accept  $H_1$ . Furthermore, there is no statistical significance established between both variables.

Hypothesis three tests the assumption of liquidity reserve ratio having relationship and influence on bank credit. However, results and findings from empirical angle show that there is a positive and direct relationship between broad money and bank credit which makes us accept the null hypothesis and accept  $H_1$ . Furthermore, there is no statistical significance established between both variables.

Hypothesis four tests the assumption of general monetary policy stance having relationship and influence on bank credit. However, results and findings from empirical perspective employing the above four instruments of monetary policies show that there is relationship between monetary policy and bank credit which makes us reject the null hypothesis and accept  $H_1$ .

Another vital finding discovered in the result is that there specific firm characteristics that also determine size of bank credit. Specific firm characteristics such as capital base also influence the size of bank credit. Proportionally, the size of a particular bank's capital or financial base determines the amount of credit it can advance to her customers and loan seekers. The bigger the bank, the higher the size of bank credit and vice-versa. In similar perspective, liquidity levels also play an important role in bank credit volume as earlier stated in the literature. However, due to restraints of inflation as pursued by the Iraqi central bank which have been

perceived to be irrationally high in the system with record of 30% during the period of study. The inflation rate has been unsteady and due to this fluctuation, liquidity levels have been affected to ration the amount of credit banks can extend to the public and economic agents. Hence, the high inflation rate has played a very strong and opposing role in the size of bank credit.

#### **5.4 Policy Recommendation**

Given the above reports, it is incumbent to recommend economic policies in line with the findings. In view of this,

The policies include;

1. Broad money which consists of M1 and M2 should be carefully used to stimulate economic growth since size of bank credit is highly responsive to it than other monetary policy tools. Strict and vigilance and caution should be exercised to avoid further inflationary tendencies that will be experienced due to further monetary expansion in the economy in a bid to further increase bank credit in bank circulation.
2. Interest rate can be another alternative to stimulate bank credit operations. However, it is a very strong instrument in money creation within an economy. It should be sustained at an optimal level that is targeted at bank credit regulation. As a result, the effects should also be carefully observed to avoid externalities or excess effect on other monetary objectives.
3. The banks within the Iraqi economy should be further regulated in terms of capital base expansion and liquidity levels. This can also make them strong and increase their propensity to make credit disposable for financial objectives.
4. A more vibrant strategy in case of monetary policy formulation and sustainability should be adopted for the regulation of bank credit in the system. This approach should have an assessment

mechanism for the curtailing of shocks and externalities of monetary policies for other macroeconomic goals in the economy.

5. The Iraqi economy should be stabilized in order to provide the steady atmosphere for efficient execution of monetary policies.

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## APPENDICES

### Appendix 1: Data

Years	Domestic credit	Broad Money	Interest Rate on Lending	Inflation GDP	liquidity Reserve
2007	-11.230	37.105	18.783	15.016	Hj,
2008	-16.378	35.215	19.215	30.175	188.947
2009	-9.615	26.704	16.156	-19.521	141.223
2010	-1.246	31.206	14.346	16.587	162.230
2011	-0.518	20.694	14.131	24.689	158.378
2012	-1.864	3.994	13.868	2.670	115.578
2013	-1.383	15.965	13.575	0.020	99.679
2014	0.341	3.882	12.603	-0.695	79.760
2015	8.844	-9.111	12.293	-26.100	81.793
2016	18.758	7.059	12.364	-14.500	83.084
2017	17.920	2.639		15.600	80.855
2018	6.966	2.732		16.100	81.347
2019		0.713			
2020		5.769			

### Appendix 2: Serial Correlation

Breusch-Godfrey Serial Correlation LM Test:				
Null hypothesis: No serial correlation at up to 2 lags				
F-statistic	3.14635 1763	Prob. F(2,3)		0.1834 29322
Obs*R-squared	6.77166 0699	Prob. Chi-Square(2)		0.0338 49524
Test Equation:				
Dependent Variable: RESID				
Method: Least Squares				
Date: 08/26/20 Time: 10:32				
Sample: 2007 2016				
Included observations: 10				
Presample missing value lagged residuals set to zero.				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
BROADMONEY	0.24467 8908	0.26594407	0.92003 8971	0.4254 0423

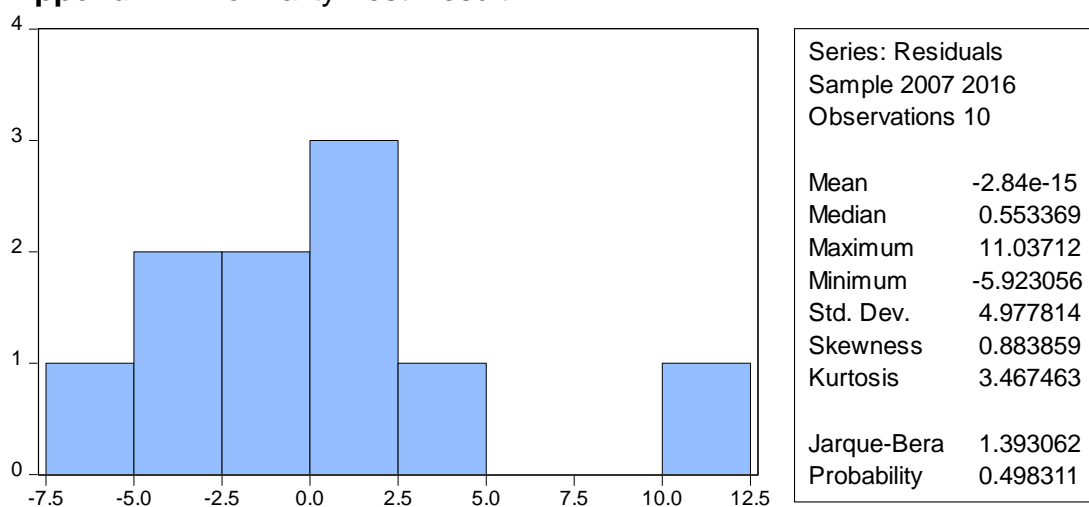
INFLATION	0.10021 2034	- 0.146027009	- 0.68625 6838	0.5418 33074
LENDINGR	0.04799 6129	1.373876279	- 0.03493 4826	0.9743 2619
LIQUIDITYR	0.00177 0979	0.104572799	0.01693 5369	0.9875 51515
C	5.19808 7489	18.97586876	- 0.27393 1463	0.8019 15587
RESID(-1)	0.32999 0544	0.643227994	0.51302 2672	0.6433 23895
RESID(-2)	1.65434 0986	0.735311583	- 2.24985 0299	0.1099 53334
R-squared	0.67716 607	Mean dependent var		-2.84E- 15
Adjusted R-squared	0.03149 821	S.D. dependent var		4.9778 1376
S.E. of regression	4.89879 0396	Akaike info criterion		6.2118 80896
Sum squared resid	71.9944 4204	Schwarz criterion		6.4236 90461
Log likelihood	24.0594 0448	Hannan- Quinn criter.		5.9795 26319
F-statistic	1.04878 3921	Durbin- Watson stat		2.8550 59457
Prob(F-statistic)	0.52745 7919			

### Appendix 3: Heteroskedasticity Test: Breusch-Pagan-Godfrey

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
Null hypothesis: Homoskedasticity			
F-statistic	0.954516	Prob. F(4,5)	0.5042
Obs*R-squared	4.329821	Prob. Chi-Square(4)	0.3632
Scaled explained SS	1.335459	Prob. Chi-Square(4)	0.8553
Test Equation:			
Dependent Variable: RESID^2			
Method: Least Squares			
Date: 08/26/20 Time: 10:36			
Sample: 2007 2016			

Included observations: 10			
Variable	Coefficient	Std. Error	Prob.
C	162.3189	120.9898	0.2374
BROADMONEY	2.117887	1.874228	0.3097
INFLATION	-0.19489	1.046238	0.8595
LENDINGR	-3.694923	9.691911	0.7187
LIQUIDITYR	-0.962768	0.7936	0.2792
R-squared	0.432982	Mean dependent var	22.30077
Adjusted R-squared	-0.020632	S.D. dependent var	36.92529
S.E. of regression	37.30427	Akaike info criterion	10.38295
Sum squared resid	6958.043	Schwarz criterion	10.53424
Log likelihood	-46.91473	Hannan-Quinn criter.	10.21698
F-statistic	0.954516	Durbin-Watson stat	1.671303
Prob(F-statistic)	0.504159		

#### Appendix 4: Normality Test Result



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- 1- **REFERENCE:** NECHIRVAN ABDI
- 1- (20184398)

I would like to inform you that the above candidate is one of our postgraduate students in the Department of Banking and Finance. He has taken his thesis under my supervision and the thesis titled: Impact of Monetary Policy on the Size of Bank Credit(A case study of Iraq)

. The data used in his study was obtained from World Bank Database.  
Please do not hesitate to contact me if you have any further queries or questions.

**Sincerely yours,**

Assoc Prof .Dr Turgut. Tursoy  
**Head of Department of Banking and Finance,**  
**Faculty of Economics and Administrative Sciences,**