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**Addis Ababa University**

**College of Business and Economics**

**Department of Accounting and Finance**

**Effect of inflation on Loan recovery in the case of Nib International  
Bank**

**A Thesis Submitted in Partial Fulfillment of the Master of  
Science in Accounting and Finance Degree Requirements**

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## **DECLARATION**

I Betelhem Belayneh declare that I attend the College of Business and Economics at Addis Ababa University. This thesis is done for Master's research titled as "Effect of inflation on loan recovery in the banking industry: A case study on Nib International Bank" is done through due diligence and the upmost dedication to show the findings of the study with all honesty, and this study was supervised by Dr. Alem Hagos.

BETELHEM BELAYNEH

SIGNATURE\_\_\_\_\_

DATE\_\_\_\_\_

## **CERTIFICATION**

This is to certify that this thesis entitled “Effect of inflation on loan recovery in the banking industry: A case study on Nib International Bank” submitted in partial fulfillment of the requirements for the award of the degree of Master of science in Accounting and finance to the College of Business and Economics, Addis Ababa University, through the Department of Accounting finance, done by Woy Betelhem Belayneh ID No. GSE/6544/12 is an authentic work carried out by her under my guidance. The matter embodied in this thesis has not been submitted earlier for award of any degree or diploma to the best of my knowledge and belief.

Advisor: Dr. Alem Hagos. (PhD) \_\_\_\_\_ Date \_\_\_\_\_

**Addis Ababa University**  
**College of Business and economics**  
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This is to certify that the thesis prepared by Betelhem Belayneh, entitled: “Effect of inflation on loan recovery in the banking industry: A case study on Nib International Bank” submitted in partial fulfillment of the requirements for the Degree of Master of Science in Accounting and Finance complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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## **ABSTRACT**

Ethiopia has been going through a growing inflation rate for the past six years (2016/17-2021/22), and the impact of inflation has been felt throughout different economic sectors. One of Ethiopia's notable private banks is Nib International Bank and the primary goal of this research was to assess the impact of inflation on loan recovery in NIB. The study focuses mainly on the effects of inflation on the loan recovery performance of NIB. Descriptive research design and quantitative research approach were used. Loan repayment were the dependent variable under research, whereas inflation was the independent variable. To achieve the study aims and to test our hypotheses, SPSS version 25 was used to calculate descriptive, simple ratios, percentages, tables, mean frequencies, standard deviations, etc. as well as inferential statistics like stationary analyses, autocorrelation and regression analyses. Secondary data were used in the study to achieve its objective from the annual reports of the National Bank of Ethiopia (NBE) and Nib International Bank as well as the index data from the World Development Bank from 2016/17 to 2021/22 are collected in the form of CSV.

Ethiopia experiences a high inflation rate from the years 2016/17 to 2021/22 and the highest inflation rate was recorded in 2021/22. The study shows that inflation rate and loan recovery performance have a negative proportional relationship therefore the finding show that independent variable has strongly correlated to loan repayments performance or practices the study reckoned that NIB should give a high priority and a keen eye on the effects of inflation and should have their own policies and strategies to mitigate the effects.

Key word: - inflation, loan, loan repayment

## LIST OF ABBREVIATIONS

ANOVA- analysis of variance

CSV-common spread values

NBE-National Bank of Ethiopia

NIB – Nib International Bank s.c

NPL-Non performing loan

SPSS- statically package for social science

WDII- world developments indicators

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# CHAPTER ONE

## 1. INTRODUCTION

### 1.1 Background of the study

“Inflation means rising prices, which can lead to lower purchasing control with time. Average price rises for a selection of products and services across time can indicate the rate of reduction in buying power. According to (Jalil, 2011). Stated that “Price increases are usually stated as a percentage, which implies that the volume of cash units purchased is significantly lower than in previous periods”. Deflation, which happens when prices drop and buying power rises, contrasts with inflation. “Rising prices mean fewer service and goods can be bought with one unit of currency” stated by World Bank (2023). This drop in purchasing power has an influence on the cost of life for the general population, which ultimately results in slower economic growth. According to economists, prolonged inflation happens when a nation's currency growth rate is higher than its economic growth rate. Monetary authorities (mainly central banks) respond to this by taking the required measures to manage the money supply and credit, maintain inflation within reasonable bounds, and guarantee the smooth operation of economic growth.

Inflation is generally understood to be a steady rise in the cost of goods and services throughout an economy. As prices increase, a given amount of money may purchase fewer goods and services. Therefore, as purchasing power per unit of money decreases due to inflation, the medium of exchange and unit of account for the economy loses real value (Boyd and Champ, 2004). A lower rate of inflation is therefore preferred because it lessens the severity of economic recessions by allowing the labor market to adjust more quickly during a downturn. They also point out that high inflation rates are caused by excessive growth in the economy's money supply relative to the rate of economic growth.

The basic indicator of price inflation is the inflation rate, which is the percentage increase or decrease in the index of prices in general over time (typically the consumer price index). The consumer price index measures changes in the costs of a set assortment of products and services that the typical customer purchases. The percentage change in a price index over time is known as the inflation rate.

Lending is one of the most significant services that financial institutions provide to their clients; in other words, banks provide advances and loans to individuals, governments, and businesses (Cheboi, 2012).

Banks are the most crucial institutions for saving, mobilizing, and financial resource allocation due to this, they are significant for economic development and growth due to their functions. In order to perform this obligation, Banks have to acknowledge their own capacity, breadth, and prospects for mobilizing monetary resources and allocate them to productive initiatives. Du to this, regardless of the means of revenue or the country's economic policies, commercial banks would be interested in making loans and advances to their numerous customers while keeping in mind the three principles guiding their operations, which are liquidity, solvency and profitability (Cheboi, 2012). While researching variables that affect interest rates, level of lending amount, and security setting in bank loan approval, Chodechai (2004) notes that banks must be cautious with their lending choosing a price because the revenue from interest income won't be sufficient to cover the cost of the deposits, general expenses and the reduction in income from some defaulting borrowers. Furthermore, charging excessively high interest rates might result in an opposing selection situation and moral risk issues for debtors. But, commercial banks' lending decisions are influenced by a variety of factors, including the current interest rate, the amount of deposits, the degree of domestic and foreign investment, the banks' liquidity ratio, prestige, and public recognition, to name a few. According to the level of risk, the interest rate is the sum that a lender charges a borrower as a percentage of the principle for the use of assets, compensating the lender for any loss from asset use. Inflation is a major factor of commercial banks' lending rate everywhere the world. As per Santoni (1986), inflation devalues the monetary value to the extent that a percentage increase in inflation leads in a proportional reduction in the value of the country's currency. In general, inflation academics ascribe inflation to monetary causes and poor economic adaptations (Chand, 2008). Commercial bank performance has long been a source of concern in developing countries. This phenomena is related to commercial banks' critical position in the economy. Furthermore, the manifestation of banks is crucial to owners, depositors, investors, potential and policymakers because the most efficient executors of the government's monetary policy are banks (Mian et al.2013). This implies that the volume of bank lending may be affected in part by the performance of commercial banks. Taner (2000) found that unpredictable inflation boosts interest rates, decreases loan amount, and affects loan request in his study on the effects of

inflation doubt on credit markets. As a result, A rise in inflation could result in higher bank lending rates, reduced bank lending volumes as a result. Emon ,2012 backs up this claim, stating that creditors are well alert that inflation diminishes the value of their currency during the life of a credit, as a result, they increase interest rates to make up for the loss. Thus, rising interest rates might affect how any commercial bank borrows money. This further implies that there's a favorable relationship among loan rates and inflation, although the amount by which one influences the other over various periods of time is unknown.

Mishkin (2000) explained that as interest rates rise, depositors or creditors who pay interest on loans or deposits lose buying power while their borrowers benefit. Debt relief has a beneficial influence on inflation because borrowers who have obligations with a fixed nominal interest rate will notice a reduction in the real interest rate when the inflation rate rises. Creating a higher initial reported interest rate or selling the interest at a variable rate are two methods. The "actual" rate of interest on a loan is the nominal rate less the rate of inflation. As a result, if one takes out a loan with an interest rate of fifteen percent and the inflation rate is five percent, the real interest rate on the loan is ten percent. Banks and other financial institutions compensate for this inflation risk by incorporating an inflation premium into the costs of lending money, either by selling interest at a variable rate or as a result of a higher initial advertised interest rate.

As per to Clayton and Joseph 1995, businesses modify their tendency to spend as interest rates on business loans rise, pressuring factories to minimize the cost of borrowing. Due to this the drop in the providing products or services, a lot of factories have laid off people. If firms not doing so, the loans will more expensive, also some might be by banks took control of because they are unable to fulfill their obligations. Though economists disagree on what causes inflation, The generally accepted view is that it happens when the money supply rises more quickly than the rate of increase in the need for money. This can happen within a single country, but in a global economy, it can also spread from one country to another.

The broad theory of monetarism describes how the amount of money in the economy and inflation interact. For instance, once Spain overthrew the Aztec and Inca empires, vast quantities of riches, Silver, in particular, flooded Spain's and other European countries' economies. As the money supply expanded swiftly, the value of money fell, which led to a rapid rise in prices. Based on the kind of commodities & and services, there are several methods to measure inflation. Deflation,

which happens when inflation drops below 0% and prices frequently drop, is the opposite of this. Be careful not to mix up the phrases "deflation" and "disinflation" when discussing slowing (positive) inflation. Financial institutions have a significant impact on economic growth (Jalil, 2011).

The financial sector is crucial to the expansion and development of the economy. Banks are often tasked with assisting communities by offering sufficient credit at competitive interest rates. According to Adriaan et al. (2002), a loan is any financial transaction involving a bank that results from a direct or indirect advance, a responsibility on the bank's part to make money accessible to a person by a certain date, or typically an obligation to repay. The broad theory of monetarism describes how the amount of money in the economy and inflation interact. For instance, once Spain overthrew the Aztec and Inca empires, vast quantities of riches, Silver, in particular, flooded the economy of Spain and other European countries. The value of money decreased as the money supply grew quickly, and prices shot up. Depending on the kind of commodities and services, Inflation can be measured using a variety of methods. The reverse of this is deflation, which happens when inflation drops below 0% and prices frequently drop. Avoid conflating deflation with phrases like disinflation and other terms that refer to sluggish (positive) inflation. (Jalil, 2011)(Adriaan et al., 2002) he stated that "financial institutions play a significant influence in the development of the economy. The financial sector plays an important role in economic growth and development. Banks are typically tasked with helping communities by providing adequate credit at competitive interest rates. A loan is a financial matter of a bank, either indirect or direct, an advance payment, or an obligation to make funds available by a specified date, or usually an obligation to repay. A crucial component is credit risk management and a hot topic facing banks, so great care should be taken in providing credit. The element of risk management is important not only for the sustainability but also for the growth of the banking sector. Sustainability and growth bring stability not only to the economy as a whole, but also to local currencies (Greuning & Bratonovic, 2003). Inadequate credit risk management creates liquidity risk and can lead to bankruptcy of commercial banks. The presence of risks in the financial sector also relates to the products offered by the financial sector. These include on-balance sheet products such as short-term and long-term loans and off-balance sheet products such as letters of credit and other guarantees.



According to Friedman, as referenced by Duffy and Kate 2022, a monetary phenomenon, inflation occurs constantly and everywhere.. This means that if the pace of money growth is very high over a period of time, the country's inflation rate will likewise be very high. Monetary policy tools are necessary to manage the amount of currency in circulation in response to commensurate currency demand. Keynes' Liquidity Preference Theory argues that transactional, precautionary, and speculative reasons drive money demand. However, the component that determines how much money to keep for trading purposes is the interest rate. This proved that money's in high demand is inversely associated with rates of interest, as the desire for cash lowers when interest rates rise if an increase in money.

According to Friedman, inflation is a universally occurring financial phenomenon. This indicates that if the money supply grows rapidly for a while, the inflation rate in the nation will likewise be rapidly rising. To manage the amount of money in circulation in response to the appropriate money demand, monetary policy tools are required. According to Keynes' liquidity preference theory, money demand is influenced by transactional, precautionary, and speculative motives. However, interest rates are what determine how much money should be kept for the transaction's purpose. This shows that as interest rates rise, money demand declines, and as a result, money demand is negatively correlated with interest rates. In other words, as money demand rises, money supply rises when that increases (Mishkin, 2016).

Governments frequently and very possibly increase the amount of money in circulation. The price level would increase at a similar rate to the money supply If the price of money were set. In Ethiopia the outbreak of COVID and the recent conflict in the northern region of the country has had a major impact in the sudden surge of inflation rate. The Central Statistical Agency of Ethiopia has reported a peak of 35.1% inflation in the December month of 2021.

According to Ralf et al. (2000), "undertaking a study on the drivers of bank lending performance in Germany indicated that lending rate is an important component in the commercial banks' lending policy such that, on the other hand, There is a decline in the commercial banks' lending profitability when the volume of their lending declines. He adds that commercial banks grew their proportion of the market by expanding lending volumes even to borrowers with poor credit quality during Spain's economic boom between 1985 and 1997, which boosted the number of problematic loans. Gurley, Todd A. (2005) contends that factors that affect macroeconomic stability, such as inflation

rates and commercial bank lending rates, exacerbate the low credit quality that local commercial banks in developing nations must deal with.

The overall repercussions of this action are detrimental to the balance sheets of commercial banks. According to Eczema (ibid), who quotes Paola (2001) in his evaluation of the usefulness of overall commercial bank lending amount as a sign of distressed commercial banks, rising interest rates above the expected level and an increase in total commercial bank lending amount could have contributed to the banking crises in Sweden and Finland. According to Tanner's 2000 review of the impact of inflation uncertainty on the credit markets, unpredictable inflation drives up interest rates, reduces the supply of loans, and has an impact on loan demand. This indicates that a rise in inflation may result in higher bank lending rates and a reduction in bank lending volume.

This claim is supported by Eon (2012), who writes, "Lenders raise interest rates to make up for the loss because they are very aware that inflation reduces the value of their money over the life of a loan." He also says that any commercial bank's borrowing habits may be impacted by the higher interest rates. Even though it's unclear how much one influences the other over different time periods, this implies that positive correlation exists between inflation rates and loan rates. Therefore, the goal of this study is to ascertain how the country's inflation rates throughout time have affected the pattern of Nib International Bank (NIB) loan volumes.

## 1.2 Background of the organization

According to the Commercial Code of Ethiopia and the Proclamation for Licensing and Supervision of Banking Business Proclamation No. 84/1994, Nib International Bank (NIB) was established on May 26, 1999, with 717 shareholders, a paid-up capital of Birr 27.6 million, and an authorized capital of Birr 150 million. The Bank hired 27 people when it first opened its doors on October 28th, 1999. It entered the banking sector as the sixth licensed private bank in the nation.

Nib International bank (NIB) is one of the well-known banks in Ethiopia, and has been known to provide loan services to businesses in different sectors serving as a financial backbone to those businesses that have borrowed money. The loan service has different plans and schemes that their customers can make use of. The loan service implemented by the NIB is also affected by inflation; this can be noticed in direct changes in loan plans and schemes and also in the general strategies implemented by the whole organization

### 1.3 Statement of the problem

Ethiopia statistics shows that inflation had been on the rise hitting a roof mark of 13.8% in 2018 up from 33.9% in 2022 year. Lending has become quite costly as lenders have resulted to increasing interest rate as compensation for the decrease in the purchasing power of money they will be repaid in the future. Low and stable inflation refers to a price level that does not adversely affect the decision of loan and producers. Price stability is a precondition for achieving a wider economic goal of sustainable growth and employment. High rates of inflation lead to inefficiency in a market economy and, in the medium to longer term, result in a lower rate of economic growth. Movements in the general price level are influenced by the amount of money in circulation, and productivity of the various economic sectors.

An increase in loan repayments ensures an ongoing resource available for on-lending to other borrowers. Banks can generate credit when borrowers repay their loans. (KBA, 2014) stated that “Credit creation decreases when borrowers default on loan payments. He also found a stable supply of funds boosts assurance in the banking sector, accumulating and raising capital, and increasing output”.

Gadise (2014) investigated the macroeconomic and bank-specific variables of NPLs in Ethiopian banks using a quantitative research approach and secondary data. Return on equity and capital adequacy ratio have statistically significant effects on NPLs, according to the study. Anisa (2015) revealed that financing costs, loan-to-deposit ratios, and lending interest rates all had a positive and significant influence on bank NPLs in a study based on secondary data. Despite the fact that the research has certainly aided the field, there is still a research vacuum to be filled. Despite that a lot of bank-specific attributes, Anisa (2015) utilized secondary data from other banks (cost efficiency, deposit rate, loan to deposit ratio and lending interest rate). Other measures, such as return on equity and credit growth rate, might help determine a bank's nonperforming loan percentage (NPL). Furthermore, during the loan process, Zelalem (2013), Gadise (2014), and Anisa (2015) disregarded the credit performers' capacity. As a result, credit performer competence and knowledge should be considered and researched. Although some researchers disagree, Gadise (2014) contends that inflation has no effect on NPL and that raising the lending rate reduces the amount of NPL. The purpose of this study is to this research gap by identifying the connection between inflation and loan recovery, focusing on new loans each year for six years”.

## 1.4 Hypothesis

Ho Inflation, consumer's price, GDP and GDP linked series has no statically significant effect on loan recovery

H1 Inflation, consumer's price, GDP and GDP linked series has statically significant effect on loan recovery

## **1.5 Objectives of the study**

### **1.5.1 General Objective**

The general objective of the study is to show the effect of inflation on the loan recovery performance of Nib International Bank.

### 1.5.2 Specific objectives

- 1 To analysis the association among inflation, consumer's price loan recovery
- 2 To analysis the effect of GDP on loan recovery.
- 3 To analysis the effect of inflation GDP linked series on loan recovery.

## **1.6 Significance of the study**

The outcome of the study would be providing necessary information to the following key importance as follow below.

### **1.6.1 Nib International bank (NIB)**

The top management would then be prompted to seek into means of navigating it either through policy change or by maximizing their earnings because The study would enable them to comprehend how the bank's overall lending volume and loan default rate are impacted by the inflation rate fluctuation design. One of NIB's primary roles as a bank is lending, which generates a respectable amount of income.

## **1.6.2 Researchers and Academicians**

Researchers and academics who wish to explore or investigate the impact of the inflation rate on Banks' lending patterns in Ethiopia and so establish the groundwork for conducting other related studies would find the study to be of interest because it will add to the body of knowledge.

## **1.7 Scope of the study**

### 1.7.1 Conceptual scope

The study was limited to Nib International Bank and mainly focused on the effects of inflation, such as consumer's price, GDP, GDP linked series on loan recovery.

### 1.7.2 Geographical scope

Inflation is a current issue all over the world, but more aggravated on developing countries like Ethiopia, could be interested the work addressed all financial institutions, hence due to broadness and to avoid uncontrolled geographical limitation the study was limited to NIB.

### 1.7.3 Time scope

The secondary data on inflation is provided by world development indicators in Ethiopia. The Central Statistical Agency of Ethiopia for the last six years 2016/17 to 2021/22, bank lending rates, annual lending volumes and annual loan defaults rate from Nib International Bank for similar period 2016/7 - 2022. CSV data from World Development Index from 2016/17-2021/22.

## **1.8 Organization of the study**

The paper has five chapters. The first section manages the early parts, which have a background of the review, proclamation of the issue, research data, goals of the review, meaning of the review, and extent of the review. The second section contains the connected hypothetical and experimental writing audit. The third section manages research plan and approaches, test and examining methods, information assortment instruments, information examination devices and exploration procedures. The fourth section manages the information show, examination and translation of the review at last the sound findings, the fifth section contains the summary, conclusion and suggestions of the research.

## CHAPTER TWO

### 2. LITERATURE REVIEW

#### 2.1 INTRODUCTION

The following topics will give a brief definition of the various concepts and terms we will be using and provide theoretical and empirical literature reviews.

#### 2.2 Theoretical literature

##### 2.2.1 The Classical Quantity Theory of Money

Fisher, 1911 developed this theory, in which he held that cash was only used as a means of exchange to settle transactions that involved the supply and demand for services and goods. The empirical studies of the quantity theory of money (QTM) have concentrated directly on the association among the change rate of money stock and inflation. The theory of quantity of money is the view in monetary economics that the amount of cash in circulation and the level of prices are directly and proportionally related (Fisher, 1911). Keynesian economics questioned the theory, but the monetary school of economics updated and revitalized it.

Although mainstream economists concur that the theory of quantity is valid over the course of time, there is still controversy regarding the short-term applicability of the theory. According to the theory's detractors, there is no stable association between cash supply and price level since money velocity is unstable and prices are sticky in the short term (Friedman, 1987). Despite its similarities to monetarism in Western economics, the quantity theory of money is still one of the acknowledged tenets of the socialist monetary authority. The quantity approach that is used is, of course, the traditional, transactions-based one instead of the contemporary, Friedmanite extension that takes into account, among other things, interest rates, assets and wealth, and expectations that adapt (Friedman, 1987).

According to Abel and Bernanke (2005), Generally speaking, economists concur that rising inflation is driven by high growth in the cash supply. According to this idea, money is simply employed as a medium of exchange to settle transactions between supply and demand for goods and services. Quantity theory of money (QTM) empirical research has focused on the relationship between the rate of change in the money supply and inflation. In monetary economics, the quantity theory of money holds that the quantity of money is directly related to the price level. Keynesian

economics questioned this theory, but the school of monetary economics updated and reinvigorated it.

By using the Engle-Granger two-stage test for cointegration to look at the long-run relationships between money, prices, output, interest rates, and the ratio of demand deposits to time deposits (a proxy for financial development), Omanukwue (2010) found evidence of a long-run relationship that is consistent with the money quantity theory. He claims that the quantity theory of money's restrictions on actual output and the money supply are not absolute and that his research in Nigeria revealed a "weakening" unidirectional causal association among the money supply and core consumer prices.

Karfakis (2002) and Amin (2011) despite the large number of empirical research on the causal relationship between price and money all over the world, few academics have attempted to look into this connection in Sub-Saharan Nigeria and Africa. According to him, there are just a few studies in Nigeria that assess the validity of the quantity of money theory, including Anoruo (2002), Nwaobi (2002), Fielding (1994), Nwafor (2007), and Omanukwue (2010).

### 2.2.2. The Keynesian Theory

Keynes, (1924) Paley (2002) claimed that "Changes in the money supply affect demand for goods and services only indirectly, and eventually income levels, through changes in interest rates, and therefore, for instance, an raise in money supply leads to a decrease". "Higher interest rates lead to lower private investment and ultimately lower national income levels". Effects of a rise in the money supply on the economy depends on the impact of interest rates. In Keynesian thinking, consumer and investment demand are mostly unaffected by fluctuations in interest rates.

Interest is therefore inelastic Stiglitz (2002, claimed that "since the fact that the level of investment greatly depends on technical advancement, company confidence, and expectations, an increase in the money supply would have a limited effect on aggregate demand and, consequently, an effect on production and employment. Claimed to be relatively small". Keynesians argue that "the impact of monetary policy on the economy and national income is limited, as an increase in the money supply is offset by a decrease in velocity and has no effect on  $PT$ ". According to Keynes, "an raise in the money supply cannot raise the price level proportionally" Stiglitz (2002)

### 2.2.3 Monetarist Theory

According to Abel (2005), "Inflation happens when the various prices of services and in contrast increase over time." In the present days, an International Monetary Fund research report supports the premise that excessive bad debt inflation can be both good and negative, according to the report (IMF, 2016). Rising inflation will make it harder for homebuyers to pay down their mortgages if income levels stay the same or don't rise, which would increase the number of mortgage defaults. When income levels are stable or improve, lower inflation makes it easier for homebuyers to pay down their debt. Due to decreasing inflation, there is an improvement in cash flow and purchasing power (IMF, 2016). Bad debts have been greatly impacted by inflation. An increase in borrowing rates results in.

On the one hand, inflation can benefit borrowers if it occurs while incomes and wages are rising. Healthy inflation from rising incomes allows borrowers to payback their debts and principal, effectively reducing the amount of interest they have to pay. On the other hand, however, inflation can improve debt servicing capacity by reducing the value and principal balance of debt, which affects non-performing loans. Rising inflation leads to lower real debt service payments, leading to lower NPL (Klein, 2013). As a result, inflation could possibly reduce loan and help reduce bad mortgages through higher repayments.

Therefore, monetarists draw the same result as the classic money quantity theory, which holds that an increase in the cash supply will immediately cause prices to increase and is also likely to do so for money earnings, real output, and employment (Friedman, 1987). However, he contends that in the long run, "Unless there is sustained economic growth, all increases in the money supply will result in higher prices" (Friedman, 1987). According to the monetarist school of economic theory, "Changes in the money supply have a major impact on both the level of production in the short term and the rate of inflation in the long term." Monetarists favored maintaining a steady rate in order to reduce uncertainty.

### 2.3 Definition of inflation

Inflation is described as a period of generally increasing prices for production and goods components. Inflation is undesirable in any economy due to the distinct economic costs associated with it. First, due to the ongoing loss of purchasing power, currency and non-interest-bearing checking accounts are undesirable when inflation is strong. Second, Tax laws can be distorted, for



example, when there is a lot of inflation and the actual value of these deductions is much lower than it should be (Ludi and Ground, 2006). When there is inflation, some people gain while others lose out. For instance, persons whose pensions are fixed in shilling terms lose out when the value of their future earnings decreases. The rate of inflation is defined due to the fact the rate at which costs normally rise (Brealey et al., 2001). Inflation is highly undesirable, and a high rate of inflation is seen as one of the most serious challenges that a country can face. Inflation is always and everywhere generated by a rise in the supply of money. Credit is one of the most pressing economic issues of our time, and inflation management is one of the most fundamental aspects of any economic system. In a modern economy, inflation is a factor that every country and government must deal with. As a result, it is not only feared but also misunderstood as an economic phenomenon (Brealey et al., 2001).

Milton famously asserted (1992) that inflation is a universal financial phenomenon. He meant that protracted inflation has always been caused by sustained money supply expansion rather than sustained velocity growth or sustained negative real income growth. Inflation does not automatically signal the demise of an economy unless a government fails to put measures in place to mitigate its impacts. Inflation has a detrimental impact on the economy as a whole. Keynes defined hyperinflation as Keynes (1924) defined "full inflation" as the culmination of inflation.

Karl and Ray (1989) contended that if people are not adequately educated about what is going on in the economy during inflation or do not comprehend what is going on with prices in general, they will make mistakes in their commercial dealings, which can lead to resource misallocation. Loan repayment is being hampered as loan charges rise. With the increase in costs, the amount of money available for disposal is substantially less during times of inflation; therefore, some borrowers may have difficulty repaying their loans.

Bank loans and advances to consumers range in size from what is called micro to macro financing. Some were personal loans, while others were institutional loans. Banks have found a failure rate in both circumstances when it comes to repayments. This does not, however, imply that all bank lending has been harmful (McGoven, 1998). Financial institutions lose a lot of money due to non-payment of loans and overdrafts obtained from banks by people and institutions. This diminishes

a country's net worth since numerous lending firms are denied their legally earned income (Chabota, 2007).

based on Gichuki et al. (2012), the Central Bank of Kenya (CBK) has employed "monetary policy to stabilize both inflation and output using two instruments, namely, interest rates and reserve money simultaneously," over the years. This implies that interest rates and inflation are connected and hence have a close relationship. Gavin et al. (2005) investigated the "effects of alternative monetary policy rules on inflation persistence, monetary data information content, and real variables." According to the study, "inflation persistence and variability were dependent on the Central Bank's money supply rule."

As stated by (Keeley, 2001), An increase in manufacturing costs is one effect of inflation, which causes enterprises to raise the prices of their final products. This occurs when raw material prices rise and enterprises are compelled to raise prices in order to meet or maintain profit margins, or in the event of increased labor costs. 2004 (Stiglitz). noun poi "Inflation can also be caused by international lending and national debts; in this case, countries that have borrowed money must lower their interest rates to meet their debt obligations." According to Kamisky and Reinhart (2006), " Interest rates and inflation have a favorable association; The interest rate charged rises as a result of rising inflation., It can be understood by the fact that commercial banks seek a favorable return on the money they lend, and if there is inflation, this means that the investor's money loses real value at the rate of yearly inflation."

#### 2.4. Definition of loan

A deal to advance a certain amount of money with interest over a predetermined period of time for a specific purpose. The sanctioned amount of the loan for a predetermined duration and at an agreed interest rate are features of a loan issued by a bank.

Receiving deposits and making loans are the two major activities of a bank. Deposit receiving is risk-free because the banker is accountable for returning it whenever it is asked. On the other hand, lending is always fraught with danger due to a lack of assurance. However, a banker's primary source of revenue is lending. Given that he isn't lending cash from his own moeny, a banker should use extreme caution when making loans. "The society's deposits account for a sizable portion of the funds lent. Most of these deposits are pay back immediately (Mithani et al., 2008).

## 2.5 Loan repayment

Repayment service is understood to mean the total amount of the loan repaid by the due date specified on the loan. Unified contract. According to Godquin (2004) explains "payback performance in two terms is changeable; It is predicated on an arbitrary definition of what is timely (specified) repayment extreme "grace period" allowed". Guttman (2007) "measures redemption performance Depends on the length of stay". On the other hand, the term crime means not performing an obligation Repayment obligation when full repayment is promised (Nanyonga, 2000), overdue loans are loans written off by his MFI (Norell, 2001)

"The reasons of defaulting risks are primarily a absence of after-disbursement management, that results in moral hazard, and lack of training on knowledge and basic business skills claim Kassim & Rahman (2008). They go on to say that the "lack of after-disbursement monitoring concerning how money is being used" can lead to borrowers "diverting funds other than starting or expanding a business. Creditors may default on their loans if they use them for purposes other than company ventures. The lack of business understanding is the second-leading reason for loan default. According to the writers, "Excessive indebtedness might result from a lack of understanding on how to run a firm." "Repayment default can also be caused by lack of essential business skills, such as recording sales transactions in books (Kassim & Rahman, 2008).

## 2.6. Impact of Inflation on Bank Lending Rates

Summers (2003) notes that "interest rates rise as inflation rises." Additionally, he shows that "the real net interest cost for businesses will significantly decline if interest rates rise in line with rising inflation." This demonstrates that inflation may have an impact on interest rates. In a paper titled "The Relationship between Interest Rates and Inflation," Olga (2010), who used her CPI data for the United States, claimed that inflation increases or decreases slightly before changes in interest rates. This implies that interest rates are somewhat influenced by inflation.

## 2.7 Determinants of Loan Repayment

The following are the most frequent causes of defaults: if the financing body is not serious about repayment of loan, debtors are unwilling to payback their debts.; The employees of financial organizations are not required by shareholders to make a profit.; clients' lives are frequently filled with unforeseeable problems like disease or decrease in the family; if the loans are too substantial for the company's liquidity demands, Excess funds could be used for private purposes; and if loans are granted without a competent business evaluation, (Norell, 2001). Wakuloba (2005) In the research she conducted on "the causes of default in Government microcredit programs," she found inadequate business results, funds diversion, and domestic difficulties as the main causes of default. Moral hazard occurs when banks are unable to assure that their clients are putting in the entire effort required for their investment projects to succeed. "Moral hazard also occurs when clients attempt to flee with the bank's cash," (Armendariz and Morduch, 2010) state in their book. They also argued that "Without security, the borrower does not completely internalize the risk of project failure, hence the lender and borrower do not share the same goals. "Furthermore, the financial institution is unable to describe exactly how the debtor should carry out the project" (Berhanu, 200). Furthermore, the loan's size and term, repayment rates are affected by a number of factors, including the lender's interest rate and loan disbursement time the timing of the loan's release. (Oke et al., 2007). Socioeconomic parameters like gender, educational level, marital status, and household income level are important borrower determinants, as is peer pressure in group-based schemes.

"The correlation between economic inflation and non-performing loans is positive," as per Khemraj and Pasha (2009) and Fofack (2005). According to Nkusu (2011), this association may be negative or positive. In accordance to the author, inflation affects the paying capacity of the borrower back loans either favorably or unfavorably; higher inflation can improve the borrower's ability to repay loans by lowering the real value of outstanding debt." Furthermore, when salaries and wages are sticky, higher inflation can also make it harder for borrowers to repay their loans by lowering their real income.

## 2.8 Lending interest rate of commercial banks

In his study on the effects of inflation on home loans, Gupta (2010) observes that one of the main reasons why interest rates fluctuate and rise is inflation. This indicates that a growing rate of inflation tends to raise loan rates, which raises the bank's expenses and ultimately leads to a rise in mortgage interest rates as well as loan rates.

According to Cobbinah Nicholas's 2011 examining the effect of the Bank of Ghana policy rate on commercial bank lending rates, the head of Eco Bank Stockbrokers Limited, Mr. Iddrisu Mahama, observed that there was an expectation of a 200 basis point reduction in the policy rate from 15 to 13%. He believed that key economic indicators like inflation and government-backed securities were all declining. These should indicate a direction for policymakers to take in order to further lower the policy rate, which is the rate at which the central bank lends to commercial banks.

Moreover, Nicholas 2011 pointed out that it would be wise for the Central Bank to further lower its policy rate to make the cost of financing simpler for businesses given the anticipated rise in utility prices as a result of the increases in tariffs. The Monetary Policy Committee reduced its policy rate by 350 basis points from 18% to 15% based on the discussion, the likelihood that the process of deflation will continue, and improvements in economic activity and output growth. Commercial banks followed suit by lowering their respective base lending rates.

According to Nicholas (2011), inflation lowers the purchasing value of money, and the idea that it will persist makes lenders demand higher interest rates on loans. This is due to the fact that borrowers wanted to be compensated for both giving up the utilization of their funds and taking a risk in the lending process, as well as for the anticipated loss of their funds' purchasing power throughout the course of the debt. Additionally, there is a propensity for borrowers to be prepared to pay more for borrowing money because they anticipate that the value of their money will decrease prior to their paying back the loan. If the borrower spends the money to purchase an item that is likely to increase in value with inflation, like a house, their desire to pay higher interest rates to borrow is further reinforced. As a result, base rates may increase in response to inflation and inflationary expectations. According to Plosser (2008), nominal interest rates are inversely correlated with inflation levels. The writer provides evidence that, for a number of industrialized economies over the past ten or so years, the average real short-term interest rate during an

economic cycle positively correlates with the rate of inflation. In addition, he lists a number of variables that could explain this association, such as a decline in macroeconomic volatility, a narrowing of the tax gap among nominal and real interest rates at reduced rates of inflation and lastly, a decline in the premium for risk. According to the quantity theory of money, as governments raise their spending, the stock of money rises, leading to an increase in inflation. To offset this trend, monetary policy would start to adjust in response to inflation trends. Increasing the nominal rate of interest is an attempt to curb spending and shrink the money supply. As a result of these fiscal policies and the ensuing monetary reactions, inflation and interest rates have been fluctuating and rising sharply. In their study on how inflation affects banking and economic growth, Boyd and Champ (2004) observe that one way that inflation may have an impact on the banking industry is by decreasing the entire credit amount that is made accessible to business and by lowering the actual rate of return on assets. Lower rates of return tend to encourage borrowing more than saving. Less qualified and more likely to default on their loans are the new borrowers entering the market. Banks are thus obliged to ration credit, which means limiting the amount of loans granted, by simply imposing an additional lending rate in response to these impacts of lower actual returns from loans and a surge of less creditworthy customers.. They further point out that rationing is only affected by inflation when it exceeds a certain threshold. In a study on bank lending in an economy in connection to inflation changes within an economy, Beck et al. (2013) found that even at very low inflation rates, inflation influences banking lending rates. They said that even holding all other variables constant during a multivariate statistical study, a strong inverse association between banking and inflation loan size was still discovered.

According to Alam et al. (2008), there is no association between loan rates and inflation in Bangladesh, and there is also little to no correlation between the two. According to et al. (2007), the unit roots hypothesis can be used to describe how rates of lending and inflation endure over time. According to the study, rates of lending and inflation have a long-term association. It also discovers that short-term lending rates might not be accurate forecasters of future inflation. By demonstrating that there is a correlation between current loan rates and historical inflation rates, Chowdhury (2012) supports this assertion. The actual rate of return declines if commercial loan rates are not modified for increases in inflation. In a sample of post-war data, Evans et al. (1995) observed a correlation between lending rates and inflation and examined the long-run behavior of commercial bank lending rates with respect to inflation. The analysis finds that the two

macroeconomic variables have a significant association. Clear concepts regarding the factors that influence inflation in developing nations have been documented by Liu and Adedeji (2000), Ubide (1997), Leheyda (2005), and Khan and Schimmelpfennig (2006).

A Markov switching model is used by Martin et al. (1998) to describe the change in inflation. According to the study, which looks at the association among commercial bank lending rates and inflation, those rates directly reflect anticipated inflation.

According to Kamisky and Reinhart (2006), there is a positive correlation among rates of interest and inflation. This finding is explained by the fact that investors want to receive a favorable return on the capital they lend, and if there is inflation, it means that the real value of the investor's money is declining at the annual rate of inflation, which means that the borrower failed to account for inflation when he set his expectations for the investment's return. In this situation, the lender will demand that the borrower make a profit to offset the risk of taking on the loan and compensate for the loss due to inflation. Mentioning how he or she would have benefited if these financial institutions had used their funds for other endeavors. This implies that financial institutions that lend money must take inflation into account, which raises the rates of interest charged (Kamisky and Reinhart, 2006).

According to Makin (2003), inflation generates a number of tax neutrality channels that affect how nominal interest rates react to inflation expectations and skew decisions about savings and investments. He also points out that in inflation or deflation, there are arbitrary income transfers among debtors and creditors in an economy. Real interest rates that are distorted are the cause of this redistribution that are either overestimated or too high as the price level changes. He adds that just because rates of interest and inflation are positively correlated, it does not necessarily guarantee that rates will rise or that higher rates will result in higher inflation. Instead, this association would show that the central bank is increasing interest rates in response to higher inflation. When prices for goods and services start to soar due to inflation, the central bank acts to raise interest rates in an effort to reduce demand. As a result, commercial banks likewise raise their rates of lending in line with the central bank's rates. The central bank is able to boost or reduce the money supply and hence regulate inflation by raising or lowering interest rates.

## 2.9 Effects of Inflation on loan repayment behavior

Inflation's effects on how people repay loans According to Laidler and Parkin (1975), inflation is a phenomenon of continuously increasing prices, or alternatively, a continuously declining worth of money.

According to Helmut F. (1984), the thought of expectation elasticity, or the association among the variation in percentage within the likely value of a variable and the percentage change in the actual value of a variable and the percent change in the actual value of the same variable, is how to express the connection between the disruption of equilibrium and the change in anticipation.

The ratio of the proportional increase in the predicted future prices of X to the proportional increase in its current price is how Hick (1946) defines the elasticity of a certain individual's anticipations of the price of commodity X.

The so-called monetarist argument has allowed for a rigorous examination of macroeconomics' theoretical underpinnings. The controversy peaked in Milton Friedman's two publications, "A Theoretical Framework for Monetary Analysis" (1970a) and "A Monetary Theory of Nominal Income" (1971), as well as in the theoretical discussion that surrounded them, around the start of the 1970s. In addition, K. Brunner (1970), K. Brunner and A.H. Meltzer (1976), A. Meltzer (1977), H.G. Johnson (1972a), D.E.W. Laidler (1975a, 1976, 1981), and M.J. Parkin (1975) all made important contributions to the development and acceptance of monetarism as a macroeconomic theory. The explanation of inflation has taken center stage in these monetarist studies. Three theories repeatedly occur in these authors' writings, despite the fact that they used various theoretical methodologies: (a) the root cause of inflation is a financial one. (b) Keynesian theory, which monetarists compare to a Phillips curve without taking expectations into account, is insufficient to explain the inflation problem, particularly the acceleration of inflation. (c) The rate of inflation and its acceleration are completely explained by the rate of growth and the acceleration of the money supply.

However, monetarism, as Karl Brunner put it, claims that it is more than just an inflationary theory. It might be seen as an effort to develop a different theoretical macroeconomic paradigm from the Keynesian perspective.



## 2.10 Inflation and Interest Rates

According to Keynes (1930), inflation will occur if investment surpasses saving. A recession will result if saving outpaces investment. This has the connotation that the best course of action during a recession should be to promote spending while discouraging saving. This goes against conventional wisdom, which holds that being frugal in difficult times is necessary. According to Keynes, " Profit, not thrift, is the engine that propels enterprise." Say's Law, one of the economic "givens" of his time, was controversial to Keynes. According to Say's Law, supply drives demand. Keynes held that demand drives output, not the other way around. Keynes persisted in his claim that, even when wages were sufficiently low, full employment was not always possible. A lack of consumer spending results in unemployment because economies are composed of total production quantities resulting from all expenditure streams. During recessions, economies' total demand declines. In other words, both firms and individuals cut back on spending. A vicious cycle of employment losses and more spending declines arises from lower spending, which further reduces demand. Governments should borrow money, according to Keynes's approach, and then inject that money into the economy to increase demand. Governments should repay the loans as soon as the economy stabilizes and starts to grow again. The government and business sectors make main contributions to economically and socially successful economies.

Adam Smith's laissez-faire economics, which maintained that markets perform best when free of state intervention, was shattered by Keynes's belief that governments should play a significant role in economic management. We are currently in the midst of a very serious international recession, which will go down in history as one of the most severe ever experienced, according to Keynes (1930) in a piece published in the Nation newspaper. To get us out of a downturn of this magnitude, it will take more than passive changes in bank rates; it will take a very proactive and determined approach. Interest rates must be established based on the potential level of inflation over the next few years, according to a Bank of England paper from 2008. This is due to the fact that the economy will have a ton of spare capacity because during a recession, when output has been declining, it will be possible for output to increase rather quickly without leading to inflationary pressure.

According to Pierre (2001), central banks frequently employ changes in bank rates as a means of managing the availability of money. A change in the official bank rate could have some immediate consequences, such as on borrowers' confidence, which could therefore have an immediate impact on their spending. In general, however, it will take time for a change in the official bank rate to have an impact on the behavior and choices of loan recipients and businesses. In general, today's interest rate changes tend to have their full impact on output over a period of approximately a year and on inflation over a period of around two years. Of course, this is only a very rough guide.

The ability of the government to regulate the movement of money within a society is known as monetary policy. In his paper, Michael (2006) underlined that when interest rates are high, people tend to restrain their expenditure and, to the greatest extent feasible, refrain from borrowing money. In consequence, this slows down the flow of money throughout society. In this sense, monetary policy must consider the future. Although it is an important factor, interest rates must be determined based on what inflation may be over the next two years, not what it is right now. The probable economic developments during that time span must be evaluated by policymakers, particularly the rate at which demand will expand relative to supply (output) growth. To determine the appropriate level for interest rates, the Monetary Policy Committee consults growth and inflation predictions.

#### 2.10.1 Significance of Changes in Interest Rates

Demand able to impact by changes in interest rates in the ways listed below:

#### 2.10.2 Spending and Savings Decisions

A shift in the cost of borrowing has an impact on spending decisions, claims News Watch (2008). Interest rates will have an impact on how appealing today's purchases are compared to those made tomorrow. Saving will become more appealing as interest rates rise, while borrowing will become less so. Both loan recipients and businesses' existing expenditures will tend to decline as a result. This includes spending by loan recipients in stores and spending by businesses on new equipment, such as investments. A decrease in interest rates, on the other hand, will typically lead to an increase in business and consumer expenditure.

### 2.11 Cash Flow

Choi, Elyasiani, and Kopecky (1992) state that a change in interest rates will affect the financing expenses of the company, which will have an adverse effect on the amount of principal and interest that must be paid on loans. This change will also have an effect on the company's cash flows. The cash flow, or quantity of money available to borrowers and businesses, will alter whether interest rates rise or fall. The amount that savers earn from interest-bearing bank and building society deposits will grow if interest rates rise. However, it will also result in higher interest payments for borrowers who are charged variable interest rates (as opposed to fixed rates, which do not vary), such as individuals and businesses. Among them are numerous families that have mortgages on their homes. Spending is probably going to be impacted by these cash flow variations. Lower interest rates will impact borrowers and savers in opposite ways.

### 2.12 Asset Price

According to Philip (1990), a modification in interest rates has an impact on the value of several assets, including housing and stock prices. The return on savings in banks and building societies is increased by higher interest rates. This can tempt savers to allocate less of their funds to alternatives like real estate and stock investments. Prices for these assets are likely to decrease if demand for them declines. Prices for these assets are likely to decrease if demand for them declines. Individuals who own these assets have less wealth as a result, which may have an effect on how willing they are to spend. Lower interest rates again tend to have the reverse impact by driving up asset prices.

### 2.13 Exchange Rates

In particular, the currency rate has an impact on prices. According to News Watch (2008), as investors are drawn to the higher sterling rates of interest, an increase in interest rates compared to those in other nations tends to boost the quantity of money pouring into the country. The exchange rate will typically increase in comparison to other currencies as a result of this. In reality, both anticipated increases in interest rates and any unforeseen ones will have an impact on the exchange rate. This is due to the fact that if investors anticipate an increase in interest rates, they may raise their investment in a currency before rates do indeed rise. Thus, there is seldom a straightforward connection between changes in interest rates and those in exchange rates. Other matters Equally, a stronger pound will result in lower import costs, which will have an immediate impact on inflation since many imported items are counted in the CPI. Additionally, a stronger pound will

typically result in less demand for products and services abroad. Both a decrease in export demand and a shift in domestic consumer expenditure toward imported items would result in a reduction in output. Interest rate decreases typically have the opposite impact.

#### 2.14 Effect of Increased Interest Rates on the Borrower

Most loans are created using financial terms. Charles (1985) argued that because they pay back less in real terms than they borrowed, borrowers typically benefit greatly from inflation. But usually, this isn't the case since interest rates aren't high enough to offset inflation. The ability of a consumer to pay back a loan is directly impacted by interest rate levels. People are more inclined to borrow, for instance, when the rates of interest are low because they believe it to be relatively simple to pay back their loan. People are hesitant to borrow when rates of interest are high since loan payback will cost them more money. Some borrowers would even struggle to make their repayments, especially if interest rates rises more quickly than consumer income. Some borrowers may default if interest rates increase significantly and stay high for a considerable amount of time.

#### 2.15 Effect of Increased Interest Rates on the Lender

Lenders are given back the money they initially lent, which may now be worth less because of inflation if prices have gone up since then. According to Charles (1985), the people who have fixed assets and income in terms of money, or whose income and assets appreciate at a slower pace than inflation, are the ones who suffer from inflation. The situation is similar for loans. In order to maintain the equilibrium real interest rate, increased inflation must therefore be largely compensated by correspondingly higher nominal interest rates (David, Stanley, and Rudiger, 1984). Cochrane (2007) argues that the conventional belief that the determination of a rational expectations (RE) equilibrium suffices to infer that stable inflation behavior would be generated is false and raises serious doubts about the fundamental economic logic behind current mainstream monetary policy analysis. This is due to the fact that New Keynesian (NK) models often support the presence of RE routes with explosive inflation rates in addition to one or more stable paths that typically do not imply explosions in real variables important for transversally criteria. As a result, conventional logic does not entail that explosive inflation is absent. However, such an outcome does not support dire assessments of NK analysis. Because there is another standard that is logically appropriate for the situation at hand.

This is the criterion by which a RE solution must satisfy the property of least-squares learnability in order to be believable. Adopting this criterion serves to theoretically validate the majority of current mainstream analysis, which should appeal to analysts interested in actual monetary policy.

According to a fundamental analysis mentioned by Cochrane, The inclusion of medium-of-exchange money in a model tends to exclude pathways where the price level approaches zero but not those where it explodes (Obsfeld and Rogoff, 1983).

## 2.16 The Connection of Inflation to Loan repayment defaults

Simply put, default is the failure to fulfill an obligation that is owed. In a financial default, the debtor has not complied with the terms of the loan contract. It is generally accepted that central banks that are not independent will yield to political pressure in response to short-term election pressure or because they may place a high value on short-term economic expansions while underestimating the longer-term inflationary effects of expansionary policies. As a result, inflation will be excessively high. In fact, the majority of empirical studies examining the connection between central bank independence (CBI) and inflation find that average inflation is inversely correlated with measures of CBI.

### 2.16.1 History of inflation

When prices increase at first, people initially comment this is abnormal the result of some emergency. I'll put off making any purchases until the cost drops again. This was the prevalent mindset throughout the initial inflationary period. This idea tempers the price increase itself and further hides inflation because it raises demand for money. However, as inflation increases, consumers start to recognize that prices are always rising because of inflation. People will now declare, "I will buy now, despite the 'high' prices, since if I wait, prices will increase even more. The effect is that the need for money now decreases, and prices rise proportionately faster than the growth in the money supply.

The government is then frequently asked to "relieve the money shortage" brought on by the accelerated price increase at this stage, which causes it to inflate even more quickly. The nation will soon reach stage 19 of the "crack-up boom," at which point people will declare, "I must buy anything now—anything to get rid of money that depreciates on my hands. (1990) Murry, N. R.)

Money is increasingly available, demand is declining, and prices are rising exponentially. As people spend an increasing amount of time trying to get rid of their money, production drops sharply. The economy switches to other currencies if they are available, such as other metals, foreign currencies, or even a return to bartering terms if the monetary system has effectively collapsed. The effects of inflation have caused the monetary system to collapse. (1990) Murry, N. R. The assignats of the French Revolution, the Continentals of the American Revolution, and particularly the German crisis of 1923, as well as the Chinese and other currencies after World War II, are examples of historical hyper-inflation (George A. and Unwin 1937).

A third charge against inflation is that it always triggers the dreaded "business cycle" when newly minted money is first used as loans to businesses. This stealthy yet lethal procedure, which has gone unnoticed for decades, operates as follows: Under the direction of the government, the banking system creates fresh money that is then lent to businesses. The new funds appear to businesspeople to be legitimate investments, but unlike free-market investments, they are not the result of voluntary savings. Businessmen spend the new money in numerous ventures and use it to fund increased prices and wages for workers as well as other aspects. As the new money spreads across the entire economy, people tend to return to their previous levels of voluntary spending and saving. In other words, additional bank money loaned to businesses initially makes the saving share look greater if people want to save and invest around 20 percent of their wages and consume the rest. The original 20–80% is restored as the new money trickles down to the general populace, and numerous investments are now shown to be wasteful. The depression stage of the business cycle is characterized by the liquidation of the inefficient investments made during the inflationary boom. (D. Van Nostrand, Princeton, NJ, 1963).

The government must take several difficult actions to depart from the free market in order to exploit counterfeiting to increase its revenue. A free market that was operating normally could not be invaded by the government and its own paper tickets printed. Few people would accept the government's money if it were offered suddenly. Many individuals in "backward countries" have, even in modern times, flatly refused to accept paper money and insist on exclusively transacting in gold. Therefore, governmental intrusion must be much more covert and gradual. There were no banks until a few centuries ago; therefore, the government could not employ the banking engine for extreme inflation as it can now. Inflation was believed to be a thing of the past during the 1980s Great Boom, and prudent governments had monetary and fiscal policies, according to Murry N.R.

(1995). Inflation was supposed to disappear due to fundamental economic improvements and efficient markets, but instead of disappearing, it reappeared with full force and returned to the depths of the recession that it was during Australia's boom.

### 2.17 Empirical review

The section that follows revised empirical studies accompanied on loan recovery performance and the effects of inflation on financial institutes. More specifically, studies touching the effects of inflation on loan recovery performance. According to Ahmed (2010), "Reasons of poor recovery and reasons for loans turning in to nonperforming". He also text that "several factors are to blame for the low recovery and rise in commercial bank non-performing loans "A few important factors for loans becoming NPL are mentioned," according to Ahmed 2010, "and these are: Poor credit appraisal system; Lack of vision or foresight in approving, assessing, or raising credit limits; inadequate oversight; careless advances to fulfill financial obligations; Inadequate bankruptcy and foreclosure laws; shifts in macroeconomic conditions and policies; opaque accounting procedures and subpar auditing techniques; and a deficiency in communication between banks and their clients"

Muhammad et al (2012) carried out a study to provide the perception of Pakistani bankers regarding the economic factors causing non-performing loans in the Pakistani banking sector since 2006. The study was conducted via a well-structured questionnaire and data was collected from 201 bankers who were involved in the lending decisions or analyze the credit risk or handling non-performing loans portfolio. Correlation and regression analysis was carried out to analyze the impact of selected independent variables (Interest Rate, Energy Crisis, Unemployment, Inflation, GDP Growth, and Exchange Rate) on the non-performing loans of Pakistani banking sector. Top Pakistani banks were selected as a sample. According to the results Pakistani bankers perceive that Interest Rate, Energy Crisis, Unemployment, Inflation, and Exchange Rate has a significant positive relationship with the non-performing loans of Pakistani banking sector while GDP growth has significant negative relationship with the non-performing loans of Pakistani banking sector. The study also discussed how good loans are turning into bad loans due to disaster in energy sector of Pakistan and how these energy crisis are badly affecting the banking sector of Pakistan.

A multitude of factors are to blame for the weak recovery and rising number of bank NPLs, says Ahmed (2010). These include a subpar loan approval system, inadequate legal provisions for foreclosure and bankruptcy, carelessness when approving credit limits, poor oversight, careless spending to meet budgetary goals, a lack of sincerity in corporate culture, shifts in the macroeconomic climate, a lack of transparency in accounting policy, poor auditing procedures, and a lack of coordination between banks and their customers.

According to Brenda (2014), "debt repayment is impacted by inflation rate because of higher interest rates triggered by Central Bank's endeavor to mop up surplus liquidity in the market. In order to restrict borrowers' access to credit, this exercise raises lending rates. The findings of Glogowski (2008) that "inflation is essential for banks in their capacity of financial intermediation, having adjusted for expected inflation, and may face severe default risk depending on the fluctuation of inflation between the expected and actual inflation rates on their fixed instruments" are supported by this information.

Brenda (2014) also discovered that there is a direct correlation among loan risk and inflation, with periods of high inflation increasing the probability of credit default due to borrowers' incapacity to handle high interest rates. Brenda (2014), on the other hand, suggested that "commercial banks should assess their customer and charge appropriate interest rates." as it is ineffective to have an increased level of non-performing loans".

Bichanga & Aseyo (2013) performed a study to uncover "the reason of defaults Microfinance Institution (MFI) in Trans Nozoia County". He writes Specific goals include: "Explore the impact of borrower non-supervision on repayment of funded loans By MFI of Trans-Nzoia County. To study the impact of slowing economic expansion .The borrower's experience in repaying the loan and deciding how to repurpose the loan The borrower's funds will delay the repayment of the loan. The target group includes 150 samples were selected from total of four hundred borrowers and two hundred MFIs Simple random sampling of each stratum allowing all members of the population equal and independent chance of being selected as a respondent, and the easiest. The most convenient and biased selection method. Structured and semi-structured data collection methods were used to gather the data. Using both quantitative and qualitative methods, a data analysis tool was used to analyze the data, which was then tabulated by frequency. The investigation found that the failure to repay the loan was due to lack of supervision. Lack of



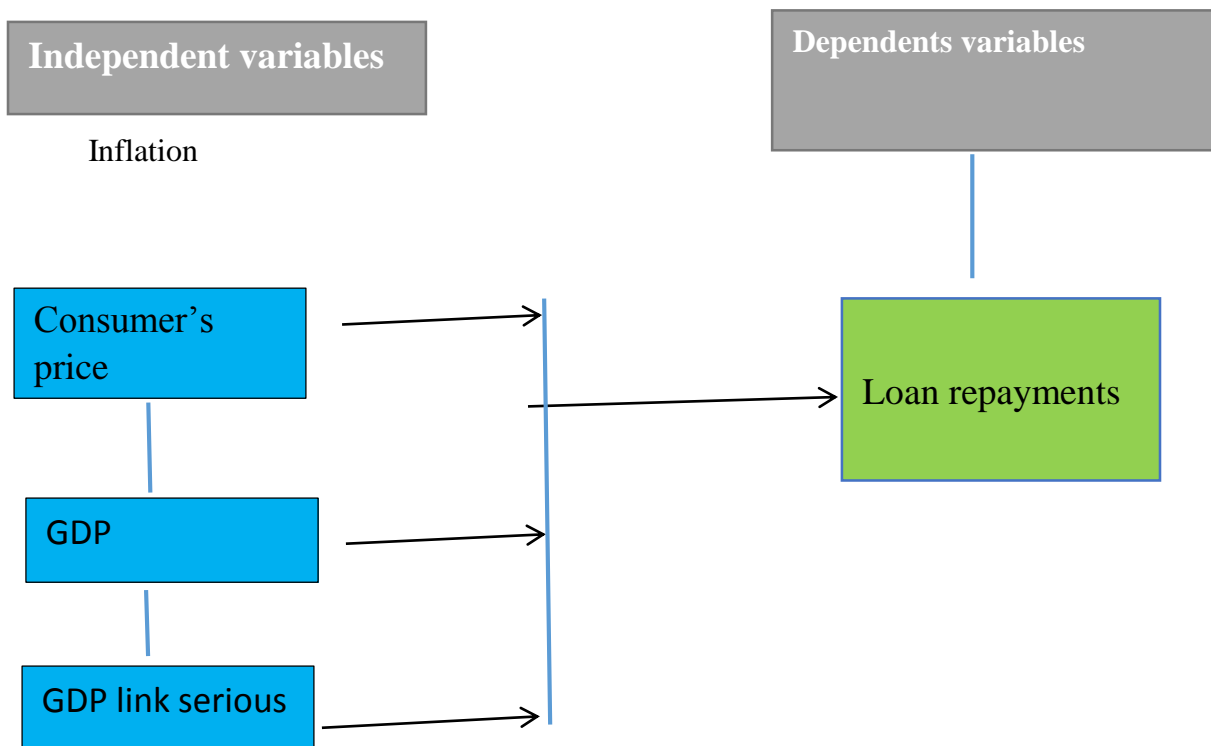
training for borrowers by MFI Used credit funds before receiving credit. The results are also mostly the borrower didn't use the loan amount on the proposed and agreed project”.

In 2018, Zhang, H., & Chan, K.C. (2018) carried out study to determine the effect of bank shareholding on China banks' corporate management during inflation. The study was done in China through causal research design and the focus was state-owned enterprises that had shares owned by the banks. It was identified from the study findings that for these SOEs, the market value of cash holding is low while the overinvestment of free cash flow remains higher than for SOEs with no bank shareholding during inflation. The conclusion of the study was that corporate cash management in Chinese commercial banks increases the performance of these banks and that shareholding is essential for improving financial performance in Chinese commercial banks during inflation. However, the study focused on Chinese banks and the findings may not apply to South Sudan commercial banks due to changes in the environment of operation.

### 2.17.1 Conceptual Framework

A conceptual framework is a scientific instrument that comes in different forms and contexts. It is used to organize thoughts and make theoretical qualifications. Following a thorough empirical assessment, the study's hypothesis was created and is based on the conceptual framework that is suggested below.

*Figure 1 Conceptual framework*



## CHAPTER THREE

### 3. RESEARCH METHODOLOGY & DESIGN

#### 3. INTRODUCTION

The research methodology is the subject of this chapter. The following topics are covered in terms of research technique, data sources, research design, and data analysis

#### **3.1 Research Design**

According to (Kothari, 2004) his text stated that. Research design is a design and inquiry strategy aimed at obtaining responses to research queries; It is at the core part of every study. A research design is an arrangement of parameters for gathering and analyzing data that attempts to balance study goals and relevance. He also pointed out that it is the conceptual framework under which the study was carried out. Descriptive research's major goal is to characterize the current situation. It includes a synopsis of the statistical units that were examined. This type of study is useful for profiling a group of people and relevant events, finding the event and characteristics of the phenomenon, and measuring the impact of inflation on collection performance. The study focus on cross-sectional research design and this will be descriptive in nature

#### **3.2 Research approach**

Methods cover everything from general assumptions to precise data collecting, processing, and interpretation processes. A typical approach to conducting a systematic investigation where the researcher only uses accessible data throughout the study process. The research approach that the researcher is going forward to execute, quantitative data types, The first procedure that is going to be systematic collection of data from the source taken, on a selected Nib International Bank's (NIB). In addition to the data is done on selected professionals that work in NIB's credit and portfolio management & workout department. After executing the data collection process which is stated above, data analysis follows the data analysis process, analysis interpretation, conclusion and recommendations will be generated, on the basis of this the study was conducted quantities approach. .

### 3.2.1 Sources of Data and data Collection Instruments

Due to the nature of the research, secondary data from the annual reports of the National Bank of Ethiopia (NBE) and Nib International Bank as well as the index data from the World Development Bank from 2016/17 to 2021/22 are collected in the form of CSV.

### 3.3 Methods of Data Analysis

To achieve the study aims and to test our hypotheses, SPSS version 25 was used to calculate descriptive, simple ratios, percentages, tables, mean frequencies, standard deviations, etc. as well as inferential statistics like stationary analyses, autocorrelation and regression analyses. This includes diagnostic tests or assumptions tested based on data properties. To achieve this, an effort was made to use relevant data analysis tools that match the nature of the data at hand

#### 3.3.1 Model Diagnostic test

Last but in no sense least, diagnostic tests were used to establish whether the model was consistent or not. And additionally test for Serial Correlation, heteroscedasticity test, normality Test, Test for multicollinearity and goodness of fit ( $R^2$ ), all the performance of the model were test in F-test, F-statistic is used to test the joint statistical performance of the model.

### 3.4. Research Variables

#### 3.4.1 Dependent variables

##### 3.4.1.1 Loan recovery

The study is the determinants of inflation on loan recovery in Ethiopia. Implies that loan repayments is influenced by different factors like GDP, consumers price and GDP link series, in their respective values of the country. From the above variables the dependent variable is loan recovery and the independent variable is inflation.

#### 3.4.2 Independent variable

##### 3.4.2.1 Inflation:

One concern is how inflation affects loan recovery "inflation is persistent rise in the average level of prices for goods and services " according to (Aberu, 2010). He also argue that "It is calculated as a percentage increase each year." "When inflation rises, so does the purchasing power of money." As a result, in this study, I anticipate a negative sign for inflation in the regression since, as long as inflation occurs, savings capacity declines.

### 3.5 Reliability and validity test

To ensure the instrument's validity, the researcher attempted to investigate relevant literature in order to alter the item of this specific survey in order to keep validity (National Bank of Ethiopia (NBE) and Ministry of Finance and Economic Development (MOFED)). Pre-testing the data would also help in establishing the reliability of the test instrument. In this study, the test-and-retest technique will be employed in order to test for dependability at the pre-testing point. According to O'Connor and Kleyner (2011), dependability is defined as a measure of how consistent a study technique is. The pre-test assessed the clarity of the data, and any ambiguity was deleted and fixed. Therefore, the study collected rich data from both World developments

### 3.6. Ethical Consideration

The foundational idea and rules of good human conduct are called ethics. Resnik (2015) defines ethics as standards of conduct that provide a distinction between appropriate and inappropriate action. Anonymity and confidentiality of data was highly maintained to protect the respondents from any victimization that may be associated data. The data was gained from institution by keeping the institution rule and regulation and the study result was shared, if the institution wants to triangulate it

#### 3.6.1 Analytical Model

The regression analysis helped to provide estimates of the value of the study parameters based on the model shown below:

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Where:

Y = loan repayment

X1 = GDP

X2 = GDP link serious

X3 = consumer's price

a = constant term

$\beta_1, \beta_2, \beta_3$  = Beta coefficients

$\varepsilon$  = Error term

## CHAPTER FOUR

### 4. DATA ANALYSIS, PRESENTATION, AND INTERPRETATION

#### 4. Introduction

In this chapter study has analyzed and interpreted determinants of lending behavior of NIB by gathering the balanced annual panel data. A time series portion of the study spans the years 2016/17–2021/22 and a cross section segment which considered NIB. This chapter was organized in to two major sections of analysis. First section was regarding descriptive analysis and the second was regarding inferential statistics. Three sub sections were included in second section of analysis including; diagnostic tests, correlation analysis, and regression analysis.

#### 4.1 Descriptive Analysis

Table 4.1 provides the descriptive statistics for the study's independent and dependent variables. For both the independent and dependent variables, the study examined the descriptive statistical measures between the data to examine the measures of central tendency and dispersion.

*Table 1 Descriptive Statistics*

	N	Min	Max	Mean	Std. Deviation
loan repayments	5	4555.4	7922.1	5774.600	1315.1969
IR	6	8.01	23.47	14.3808	5.89969
Valid N (listwise)	5				

Source:-Own source SPSS, 2023

Mean value of loan and advance (5774.6) considered as 1315.1969 deviating from central tendency, inflation rate mean value from 2016-2022 is 14.381 and 5.899 deviating from center.

## 4.2 Loan recovery performance of the NIB

Table 2 Loan disbursement of NIB

Loan disbursement of NIB						
Year	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022
Loan Disbursed (in millions of birr)	6725.2	6197.2	9175.6	10426.1	14007.3	17008
Growth Rate (in %)		7.851	48.06	13.62	34.34	37

Source: NBE annual Report (2016-2021), own survey

From the data presented in Table 2 above, it is evident the loan disbursed by the NIB over the five year period has shown that there have been changes in the loans disbursed by the NIB. From the financial years 2016/2017 to 2017/2018 there was an annual percentage change of 7.851%, from the financial years 2017/2018 to 2018/2019 an annual percentage increase of 48.06%. From the financial years 2018/2019 to 2019/2020, there was an annual percentage change of 13.62%. From the financial years 2019/2020 to 2020/2021, there was an annual percentage change of 34.34%. And in fiscal years 2021/2022, the annual percentage change is 37.77%.

## 4.3 Stationary statics

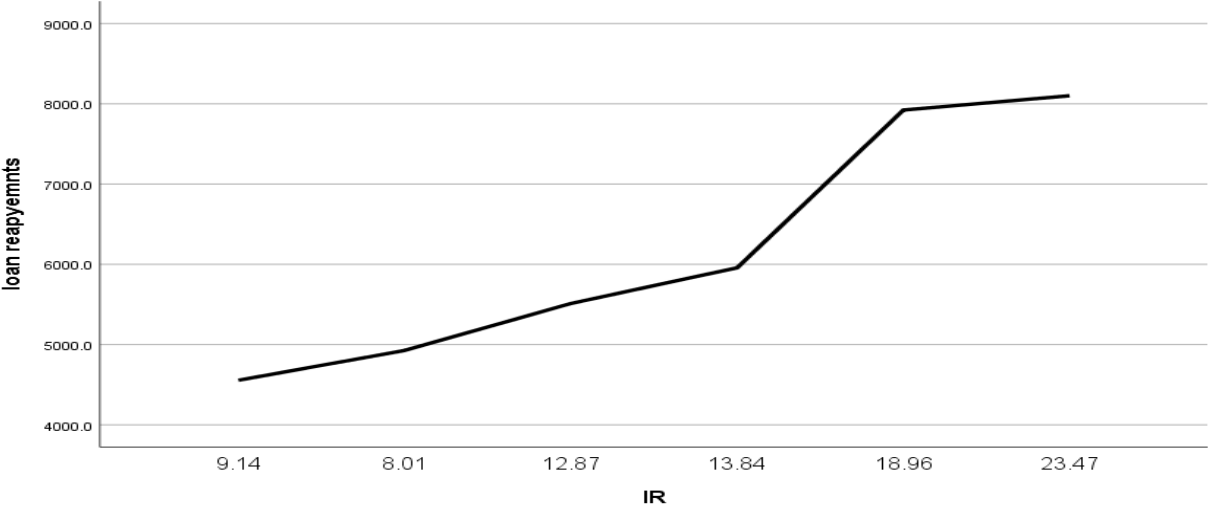
Table 3 stationary model fit

Fit Statistic	Mean	SE	Minimu m	Maximu m	Percentile							
					5	10	25	50	75	90	95	
Stationary R-squared	.456	.	.456	.456	.456	.456	.456	.456	.456	.456	.456	.456
R-squared	.852	.	.852	.852	.852	.852	.852	.852	.852	.852	.852	.852
RMSE	584.71	.	584.710	584.710	584.710	584.710	584.71	584.71	584.71	584.71	584.71	584.71
MAPE	6.249	.	6.249	6.249	6.249	6.249	6.249	6.249	6.249	6.249	6.249	6.249
MaxAPE	9.643	.	9.643	9.643	9.643	9.643	9.643	9.643	9.643	9.643	9.643	9.643
MAE	377.74	.	377.74	377.74	377.745	377.74	377.74	377.74	377.74	377.74	377.74	377.74
MaxAE	728.82	.	728.824	728.824	728.824	728.824	728.82	728.82	728.82	728.82	728.82	728.82
Normalized BIC	13.386	.	13.386	13.386	13.386	13.386	13.386	13.386	13.386	13.386	13.386	13.386

Source: - own survey, SPSS, 2023

In table 2 above The  $R^2$  statistic show that the sum of inflation has explained the loan recover in NIB, Here, an  $R^2$  of 0.852 implies that 85.2% of the variability contained in the data independent variables (inflation) has statically explained loan recovery. Squared Mean Error For every observation, it is the mean of the squared discrepancies between the expected and actual values. It is roughly 584.7 here error in mean absolute percentage. It is the average percentage error between the expected loan recovery for inflation and the actual numbers. It is around 377.745% here. This indicates that each anticipated value is, on average, 377.745%.

. Figure 2 traditional model plot



Source: - own survey, SPSS, 2023

When showing time series data, a time series chart is one form of presentation where the data points are organized in a grid. The X-axis indicates that (inflation rate) represents each year's time index and the other represents the value of what is observed on Y-axis in credit recovery. The strength of time series charts lies in the fact that trends and regularities can be identified. In the plot we can observe an increasing trend over the years and a clear seasonality that increases from year to year, from 2016/17, 2017/18, 2018/19, 2019/20, 2020/2021, 2021/2022 therefore, we can consider the value 9.14, 8.01,12.87,13.84,18,96,23.47 in the form of peaks in the summer months caused by the holiday period. The study may conclude that 2019/2022 increased more than other years.



#### 4.4 Autocorrelation analysis

Table 4 autocorrelation loan repayments

Series: loan repayments

Lag	Autocorrelation	Std. Error <sup>a</sup>	Box-Ljung Statistic		
			Value	df	Sig. <sup>b</sup>
1	.523	.323	2.622	1	.105
2	-.021	.289	2.627	2	.269
3	-.272	.250	3.808	3	.283
4	-.457	.204	8.821	4	.066

a. AUTONote 2

b. AUTONote 1

Source: - own survey, SPSS, 2023

To model the time series data, first determine whether lags have significant correlations using the autocorrelation function (ACF) and then gain an understanding of the time series' patterns and characteristics. The Box-Ljung Q test is a more quantitative method of testing autocorrelation at multiple lags. Loan repayment data are independently distributed (i.e. the autocorrelations in the patterns and properties of the time-series values range from -1 to more) to +1 like .532, -.021, -.272 and -.457 at insignificant levels. This study is supported by: When inflation increases, the money's purchasing power decreases (Aberu, 2010). In the regression, we anticipate a negative sign for inflation, since the ability to save decreases when there is inflation.

Table 5 Autocorrelations inflation rate

Series: IR

Lag	Autocorrelation	Std. Error <sup>a</sup>	Box-Ljung Statistic		
			Value	Df	Sig. <sup>b</sup>
1	.476	.323	2.179	1	.140
2	-.003	.289	2.179	2	.336
3	-.230	.250	3.028	3	.387
4	-.470	.204	8.331	4	.080

a. AUTONote 2

b. AUTONote 1

The Box-Ljung Q test is a more quantitative method of testing autocorrelation at multiple lags. The data are independently distributed (i.e. the autocorrelations in the patterns and properties of the time series). The value of all time series has been found to be between -1 and +1 such as .476, -.003, -.23 and -.470 at insignificant levels respectively. Also supported by (Aberu, 2010): When inflation rises, the money's purchasing power, so we anticipate a negative sign for inflation for inflation in the regression, when inflation is present, saving capacity declines

#### 4.5 Regression analysis

Table 6 model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.962 <sup>a</sup>	.925	.900	415.7571

Source: - own survey, SPSS, 2023

The model summary affirmed that 96.2% of inflation is affected by loan repayments in NIB which have influence on consumer price , GDP, GDP linked series This is a fair model based on the fact that almost 3.8% of loan repayments is affected by other unknown variables

Table 7 ANOVA

		ANOVA <sup>a</sup>				
Model		Sum of Squares	df	Mean Square	F	Significance
1	Regression	6400409.899	1	6400409.899	37.028	.009 <sup>b</sup>
	Residual	518561.981	3	172853.994		
	Total	6918971.880	4			

a. Dependent Variable: loan repayments

b. Predictors: (constant) IR...

Source: - own survey, SPSS, 2023

The ANOVA result in the above table verified the significance of the overall model with a p-value of 0.009 with a total sum of squares of 6918971.88, which is below the alpha level, i.e. H. 0.05, with a value of F=37.028 and a degree of freedom of 4, which is independent. The variables together have a statistically significant correlation with the research's dependent variable.

Table 8 coefficient

Model		Unstandardized Coefficients		Standardized Coefficients	t	Significance
		B	Std. Error	Beta		
1	(Constant)	2104.238	631.184		3.334	.045
	IR	292.136	48.009	.962	6.085	.009

Source: - own survey, SPSS, 2023

The SPSS output in Table 8 above shows parameters in detail in the model used (beta values) and the interpretation and meaning of these values. From the table, the study can deduce that  $B_i$  is 292.136, and this shows that when the variables are not accounted for (when  $X=0$ ), the model predicts a loan payback of 0.743. The regression line's slope is the other computed value. When a predictor significantly affects our capacity to anticipate the outcome, the change in the outcome that arises from a unit change in the predictor is represented by the symbol  $b$ . Keep in mind that, with relation to its standard error,  $b$  differs from 0.

#### 4.6 Diagnosis test

Table 9 Ljung-Box Q(18)

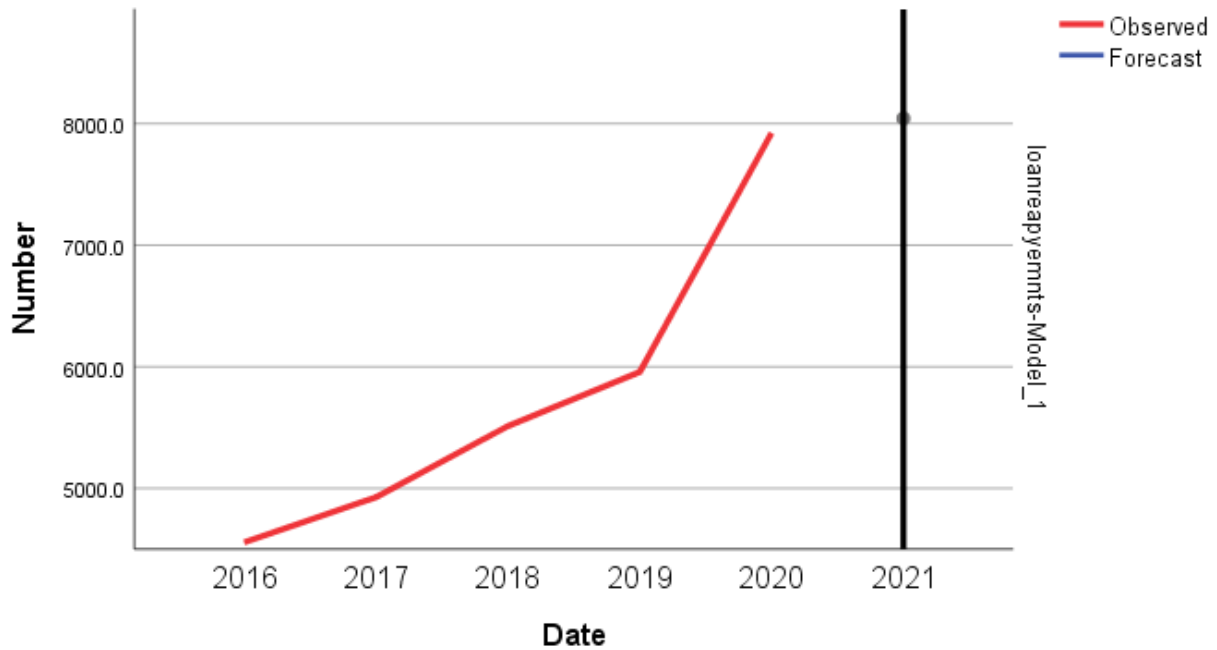
Model	Number of Predictors	Model Statistics				Number of Outliers
		Model Fit statistics	Ljung-Box Q(18)			
		Stationary R-squared	Statistics	DF	Sig.	
loan repayments - Model_1	3	.456	.	2	.	0

Source: - own survey, SPSS, 2023

One kind of statistical test that determines if a set of autocorrelations in a time series is non-zero is called the Lung Box Test, after Greta M. Lung and George E.P. Box. Because it evaluates "overall randomness" based on the total number of lags rather than randomness on a per-lag basis, the test is a portmanteau. To determine whether autocorrelation exists at specific lags, the partial autocorrelation function (PACF) and sample autocorrelation function (ACF) are helpful qualitative tools. A more scientific method of testing for autocorrelation at various lags is the Ljung-Box Q-

test. Since the population from which the sample is drawn has no correlations, the data are independently dispersed, meaning that any correlations that are seen in the data are the consequence of data randomness.

Figure 3 chart



Source: - own survey, SPSS, 2023

In graph 2 above indicated that observed data is exponentially upward this indicated that inflation rate increments, the study can be concluded the data were well distributed.

Table 10 Durbin-Watson

Model	Durbin-Watson
1	2.763

Source: - own survey, SPSS, 2023

“The test statistic has a range of 0 to 4, where a value of 2 indicates that there is no correlation between the residuals. “this is explain by (Field, 2009). He also stated “Adjacent residuals have a negative correlation when the value is greater than 2, and a positive correlation when it is less than 2. Generally speaking, the residuals are independent (not correlated)”. (Muluadam, 2015). If the Durbin Watson statistic is approximately 2, then 1.50 to 2.50 is an acceptable range. The Durbin-Watson score in this investigation was 2.763, which is extremely near to 2. Thus, it can be concluded that there is probably no longer a requirement for independent error.

Table 11 Durbin-Watson

Model		Tolerance	VIF
1	(Constant)	.045	
	IR	.009	1.000

Source: - own survey, SPSS, 2023

As per result of VIF below table 4.3,2 researcher has accepted null hypothesis of There isn't an exact linear correlation among any of the explanatory variables and rejected alternative hypothesis of there is a precise linear correlation between each of the explanatory variables because average value of VIF for this study is 1.00 Finally, there is no strong collinearity between explanatory variables in the model

#### 4.7 Hypothesis Test

There are theories that seek to investigate whether the possible correlation between inflation and Nib International Bank's success in recovering loans. Each hypothesis test can be validated because the Sig result is less than 0.05.

Therefore H1 is accepted that means with compute data such as consumers price, GDP, GDP linked series **has statically significant effect** on loan repayment, the reverse is H1 is inflation attributes such as consumers price, GDP, GDP linked series there is statically significant on loan repayments HO is rejected

The tests are summarized as follows:

#### 4.8 Discussion

In Table 2 above, the R2 statistic shows that the sum of inflation explained the credit recovery in NIB. This R2 of 0.852 indicates that 85.2% of the variability enclosed in the data-independent variables (inflation) statically explained credit recovery. Mean square errors. It is the mean of the squared deviations between each observation's actual and expected values. Now the mean absolute percentage error is about 584.7. This is the average percentage of error between actual values and projected credit recovery from inflation. Here it is around 377.745%. This indicates that the average of each estimated value is 377.745% the subject to be addressed here is the model's overall performance, which has been validated by a variety of statistical findings. One way to achieve this

is the ANOVA test, which gives a p-value of 0.000, which is below the alpha value, i.e. H1. 0.05. This indicates that there is a statistically significant correlation between the total independent variables and the dependent variable i.e. H1. Inflation shows a significant correlation with economic sectors

The other way is to check the fitted R squared (coefficient of determination). It's described as the fraction of the whole variation or spread in NIB's loan collection performance that can be explained by how the regression's independent variables vary. With an adjusted R-squared value of 0.900, this means that 90% of the variation in NIB's loan collection performance is explained by the linear relationship with all independent variables. Therefore, a high adjusted R-squared indicates that the independent variable in the research has a significant impact on the dependent variable. In general, the regression model developed as part of this study can be considered a good fit or predictor of NIB's loan collection performance.

The study found a linear association between credit risk and inflation, as default rates increase during periods of high inflation when borrowers cannot afford high interest rates. This is consistent with studies by Vogiazas & Nikolaidou (2011) and Ngetich (2011), his explain that the “apply similar credit risk measurements”. Likewise, these results agree with other studies by Warue (2013), Beck et al. match. (2013), Sout et al. (2009) and Aver (2008). These findings could be interpreted as follows: "As banks mark the majority of loans at variable lending rates, which means that borrowers will be forced to repay their loans if interest rates rise, an increase in lending rates leads to a significant increase in credit risk." It is not the same.

## CHAPTER FIVE

### 5. SUMMARY, CONCLUSION AND RECOMMENDATION

#### 5.1 Summary of findings

This research sought to determine how inflation affected the performance of NIB International Bank's loan collection performance. The following discussions, conclusions, and recommendations were drawn from the analysis and data collected. The analyzes were depending on research goals. Researchers therefore selectively examined different loan sectors offered by the NIB and compared them in terms of how they affect loan collection performance. The results of this study provide important information on the impact of inflation on NIB's loan collection performance. This study was conducted systematically using valuable data that helped researchers gain insight into the factors affecting loan repayment characteristics. Based on data analysis and discussion of the results, the most important findings of the study are summarized. Ethiopia experiences a high inflation rate from the years 2016/17 to 2021/22 and the highest inflation rate was recorded in 2021/22. The study shows that inflation rate and loan recovery performance have a negative proportional relationship. To better understand the impact of inflation on NIB's loan collection performance, the study examined three main inflation attributes such as consumer price, GDP and GDP link series. The model summary confirmed that 96.2% of inflation is influenced by loan repayments in NIB affecting consumer prices, GDP and GDP-related series. This is a fair model based on the fact that nearly 3.8% of loan repayments.

## 5.2 Conclusion

In the last few years, previously, there is a rapid increase in the number of empirical studies aiming to correlate macroeconomic issues with wealth development in the banking industry on a global scale. Managing the high stock of non-performing loans remains a major challenge as the effects of the post-crisis are still being felt. Financial institutions need to implement appropriate policies to reduce the rise in NPL in order to mitigate credit risk from inflation. The study shows that all independent variables such as GDP, inflation rate and GDP link series are related to credit recovery performance, therefore H1 hypotheses on the results were accepted. According to survey data, the last six years have seen an acceleration of inflation growth. The researcher used three types of tests: stationary static, descriptive analysis, correlation test and coefficient test, which clearly show that inflation affects loan recovery performance and that NIB loan services are affected by the selected variables, namely based on consumer price, GDP, GDP , linked Series. The study may conclude that the H1 hypothesis that inflation has a satirically significant and negative association with bank loan performance has been accepted, while the null hypothesis has been rejected and has reached a point where it has become mandatory for financial organizations is to embrace them and have more risk reduction plans

## 5.3 Recommendation

- The survey found that various credit control structures presented by the NIB. Given the important relationship between inflation and credit services and recovery from the Bank; accompanying recommendations have been developed to better understand the impact of inflation on loan recovery performance.
- NIB should give a high priority and a keen eye on the effects of inflation and should have their own policies and strategies to mitigate the effects and devise measures that are mutually beneficial. Rescheduling payments would save the bank money through default, increased provisions for loan defaults, and the cost of pursuing defaulters. The bank should follow up with the borrower, monitor repayment behavior, and propose default mitigation methods before it is too late (before default).
- The borrower should be able to assess the impact of inflation on financial resources and, if having difficulty fulfilling loan payback obligations, request a reasonable repayment



schedule from the bank. The recommendations must be acceptable to all parties both the lender and the borrower are involved.

- NIB should have a long term plan to mitigate effects of inflation on loan recovery performance.
- Even if NIB is performing better than the average loan recovery performance of private banks in the country there should be a more structured approach to mitigate the effects of inflation.

For the most part, in Ethiopia inflation is growing but NIB is performing well. Next to the troubles and the difficulties that are occurring in the ground some sectors are performing better than others, this can be used to promote a high loan recovery performance which is desirable for most credit facilities.

#### **5.4. Limitations**

This entire study has some limitations, the first of which is organizational. the loan repayment data source only from single Banks, better to collect from others banks to compare mean comparison because inflation is common issue for all financial institution in addition to that Data was collected from secondary sources only; this strongly indicates that such source may not indicates new finding and results, research should be conducted both primary and secondary source data collection instruments,. That will enable future researchers and researchers alike to have a wholesome result that can be a general indicator on the effects of inflation.

The collected findings were created by non-probability sampling, which was the second noted limitation. Although sufficient measures have been taken to eliminate bias, there is still room for improvement. Therefore, more study is needed to reach a more thorough conclusion about the relationship between the inflation characteristic and loan recovery success

## Appendix I: Loan collected by private banks in million birrs

Loan collected by private banks in million birr					
Bank	Year				
	2016/17	2017/18	2018/19	2019/20	2020/2021
Awash International Bank	6975	8333.5	9734.3	12053.7	12426.3
Dashen Bank	7877.7	8392.3	11981.2	12839.1	19616.2
Bank of Abyssinia	2881.2	3795.2	3923.2	3900.9	11987.7
Wegagen Bank	5595.1	6021.5	6375.6	9440.1	8407.2
United Bank	5989.5	7230.3	7378.2	7583.6	11449.3
Nib International Bank	4555.4	4926.9	5511.9	5956.7	7922.1
Cooperative Bank of Oromia	4647.1	6587.9	9254.9	12207.3	14879.1
Lion International Bank	2513.9	3223.7	3460.3	3855.5	3307.1
Oromia International Bank	2103.4	2158.8	3352.2	7102.1	4456.1
Zemen Bank	2882.3	4535.3	6323.8	3291.8	8317.1
Berhan International Bank	2675.8	3558.5	4530.7	4614.5	4698.3
Bunna International Bank	1491.8	1811.9	2331.4	2464.4	2244.9
Abay Bank	1722.3	2231.1	3017.4	3582.2	5675.4
Addis International Bank	552.2	541.5	667.4	698	1184.5
Dehub Global Bank	617.5	706.5	1557.7	1552.8	3276.6
Enat Bank	1190	1594	1616	1804.8	2603.7

## Appendix II: Annual GDP growth

Data Source World Development Indicators										
Last Updated Date 12/18/2023										
Country Name	Country Code	Indicator Name	Indicator Code	2016	2017	2018	2019	2020	2021	2022
Ethiopia	ETH	GDP growth (annual %)	NY.GDP.MKTP.KD.ZG	9.433483	9.56419	6.816148	8.364086	6.059531	5.641531	5.317096

## Appendix III: Annual Inflation, consumer prices

Data Source World Development Indicators										
Last Updated Date 12/18/2023										
Country Name	Country Code	Indicator Name	Indicator Code	2016	2017	2018	2019	2020	2021	2022
Ethiopia	ETH	Inflation, consumer prices (annual %)	FP.CPI.TOTL.ZG	6.628133	10.68712	13.83304	15.80963	20.35635	26.83952	33.88988

## References

- Amin, SB & Rahman A.F.M.Ataur (2011), „Energy-Growth Nexus in Bangladesh: An Empirical Study“, International Review of Business Research Papers, Vol.2, No.2, pp.182
- Chodechai, S. (2004). Determinants of Bank Lending in Thailand: An Empirical Examination for the years 1992 – 1996. Frankfurt am Main .Peter Lang. New York.195
- Cheboi, P. K. (2012).Response Strategies to Change in the Economic Environment by Cooperative Bank of Kenya Limited. University Of Nairobi.
- Mian S. N, Imran H. N., Muhammad M. N., (2013). Role of Rate of Return, Inflation and Deposits on Loan Supply: An Empirical Study of Banking Sector In Pakistan: Department of Management Science and Programme Coordinator Dual Degree Program, COMSATS Institute of IT, Lahore. Hailey College of Commerce,University of the Punjab, Lahore: African Journal of Business Management.
- Taner, Y. (2000).Effects of Inflation Uncertainty on Credit Markets: A Disequilibrium Approach. Economics Department, John Cook School of Business. St. Louis University.
- The Influence and impact of the exchange rate on the economy: Faculty of Business, University of Nottingham Ningbo, by Yuxin Zhao
- Chowdhury, K. Emon.(2012). Impact of Inflation on Bank Lending Rates in Bangladesh. Journal of Politics & Governance Vol. 1, No. 1, pp. 5-13.
- Armendariz, A. and Morduch, J. (2010) ‘The Economics of Microfinance’, 2 nd ed. The MIT Press Cambridge, Massachusetts London, England
- Factors determining exchange rates: The roles of relative price levels, Balance of payments, Interest rates and risk, by Peter Isard
- The Trend of loan recovery performance in the banking industry: A case study of Oromia International Bank S.C.

Relationship between Inflation and Economic Growth in Ethiopia: An Empirical Analysis, 1980-2011

The Treatment Of Non Performing Loan in Microeconomic Statistics. IMF working paper.by Adriaan M. Bloem, Cornelis N. Gorter (2002)

The law reform Text, England, Dartmouth Publishing Company Limited.by Sonali Abeyrante, Banking and Debt Recovery in emergency Markets, (2001).

Jalil, T. (2011). Macroeconomic Theories of Inflation. International Conference on Economics and Finance Research vol.4.

Abel, A., Bernanke, B.(2005). Macroeconomics(5th Ed.). Pearson

Bichanga, W. O., & Aseyo, L. (2013). Causes of Loan default Within Micro Finance Institutions in Kenya. Interdisciplinary. Journal of Contemporary Research in business, 316-335.

Duffy, Kate 2022: Biden says 70% of March's Record Inflation Was Driven by 'Putin's Price Hike' in Gasoline. Yahoo Money 13.4.2022.

Gormley, Todd A., 2005, Banking Competition in Developing Countries: Does Foreign Bank Entry Improve Credit Access, unpublished manuscript, MIT, October 28<sup>th</sup>

Leheyda, N. (2005). Determinants of Inflation in Ukraine: A Co Integration Approach.

Khan, M. S. & Schimmelpfennig, A.(2006). Inflation in Pakistan: Money or Wheat? IMF Working Paper WP/06/60, International Monetary Fund: Middle East and Central Asia Department.

Liu, Olin & Olumuyiwas S. A. (2000).Determinants of Inflation in The Islamic Republic of Iran. A Macro-Economic Analysis. IMF Working Paper WP/01/198,International Monetary Fund: Middle Eastern Department.

Chowdhury, K. Emon.(2012). Impact of Inflation on Bank Lending Rates in Bangladesh.

Salah, U., Alam, M & Alam, K. A. (2008). An Empirical Evidence of Fisher Effect in Bangladesh: A time series approach. USA University Review, Vol. 2 No. 1, pp.1-8.

Journal of Politics & Governance Vol. 1, No. 1, pp. 5-13.

- Mimeo, University of Mannheim, Mannheim: Centre of Doctoral Studies in Economics and Management (CDSEM).
- William, J. C. & Denni, L. Hoffman. (2007). Long run relationship between Lending Rates and Inflation. *Journal of Money, Credit and Banking*, Vol. 28, No. 1, pp.102-118.
- Beck, R., Jakubik, P. & Piloju, A. (2013). Non-Performing Loans what matters in addition to the Economic Cycle? ECB Working Paper Series NO 1515. European Central Bank.
- Fisher, I. (1911). *The Purchasing Power of Money*.
- Friedman, M. (1987). Quantity theory of money, *A Dictionary of Economics*, v. 4
- Godquin, M. (2004), Microfinance Repayment Performance in Bangladesh: How to Improve the Allocation of Loans by MFIs, *World Development* Vol. 32, No. 11, p.1909–1926
- World Bank 2023 East Asia and the Pacific Economic Update, April 2023: Reviving Growth
- Kassim S and Rahman M., (2008). Handling Default Risks in Microfinance: The Case of Bangladesh. International Islamic University Malaysia
- Klein, N. (2013). Non-Performing Loans in CESEE: Determinants and Macroeconomic Performance. IMF Working Paper.
- IMF. (2016). Non-Performing Loans in the ECCU: Determinants and Macroeconomic Impact. Western Hemisphere: International Monetary Fund.
- IMF. (2020, 6 8). IMF Surveillance. Retrieved from IMF Official Website:  
<https://www.imf.org/en/About/Factsheets/IMF-Surveillance>
- Norell, D., (2001), How To Reduce Arrears In Microfinance Institutions, *Journal of Microfinance*, 3,
- Boyd, J. & Champ, B. (2004). Inflation and Financial Market Performance: What Have We Learned in the Last Ten Years? University of Minnesota .Carlson School of Management and Federal Reserve Bank of Cleveland.
- Plosser, C. I. (2008). Government Financing Decisions and Assets Returns. *Journal of Monetary Economics*. Vol. No.4, pp. 13-18.
- Cobbinah Nicholas.(2011).The Impact of Bank of Ghana policy Rate on Commercial

Bank Lending Rate.Barclays Bank of Ghana. Institute of Distance Learning,  
KNUST. Kwame Nkrumah University of Science and Technology.

Cobbinah Nicholas.(2011).The Impact of Bank of Ghana policy Rate on Commercial Bank  
ending Rate.Barclays Bank of Ghana. Institute of Distance Learning, KNUST. Kwame  
Nkrumah University of Science and Technology.

Gupta, A. (2010).Inflation Impacts Home Loan Rates. The Economic Times. India