THEMODERATINGEFFECT OFGROSSDOMESTICPRODUCT AND MEDIATING EFFECTOFINFLATIONONTHERELATIONSHIP OFCREDIT RISKANDPERFORMANCEOFPRIVATECOMMERCIAL BANKS INETHIOPIA

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DECLARATION

Iherebydeclare that thisstudyentitled“The moderatingeffect ofgrossdomestic product and mediatingeffectofinflationontherelationshipofCreditRiskandPerformanceofprivateCommercial Bank of Ethiopia” ismy originalwork prepared under theguidanceof my advisor Dr. LakewAlemu.Thispaperissubmittedinpartial fulfillment ofthe requirement fortheawardofMaster’s Degreein Management andithasnotbeen previously submitted to anycollegeor university.

By:FasikaMekonnen

Signature----------

Date----------

LETTEROF CERTIFICATION

Thisistocertify thatFasikaMekonnencarried outherstudyonthetopicentitled"The moderating effectof grossdomestic productandmediatingeffect ofinflationonthe relationshipofCreditRiskand Performance ofprivate CommercialBankofEthiopia".Thisworkisoriginalinnatureandsuitablefor submission forthe award ofthe Master'sDegreein Management.

Dr. LakewAlemu_____

(Advisor) Signature Date

ADDIS ABABA UNIVERSITY COLLEGE OF BUSINESS AND ECONOMICS

This is to certify that the project prepared by FasikaMekonnen entitled: The Effect of Credit Risk Management on the Profitability Performance of Commercial Bank of Ethiopia submitted in partial fulfillment of the requirements for the Degree of Master inmanagement.This complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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Contents

LIST OF ACRONYMS

BCBS	**Basel Committee on Banking Supervision**
CR	**Credit Risk**
GDP	**Growth Domestic Product**
INF	**Inflation**
LTA	**Loan to Total asset**
NBE	**National Bank of Ethiopia**
NPL	**Nonperforming Loan**
PPP	**Pre Provision Profit to loan**

Table and Figure

Abstract

*The objective of thestudy was toillustratetherelationshipbetween credit risk andperformance of private commercial banksinEthiopia includingthe moderating and mediatingeffects of GDP and inflation respectively. A panel datafromtwelve selectedprivate bankscoveringthesix-yearperiod(2016-2021)wasanalyzed.The traditional profit theory has beenemployedtoformulate profit,measuredby ReturnonAsset (ROA),asa functionof Non-performingloanrate (NPLR),theratioof Pre Provisionprofit toNet loanandLoan toTotal Assetsmeasuresof credit risk andmediatingandmoderatingeffectswereconsidered. Panel data regressionmodelanalysisvia*generalleastsquares(GLS), *estimatorswasused to estimate the function.Bothexplanatoryandinferentialresearch approachhas been usedtoanalyzetherelationshipsof adependentvariablewithexplanatoryvariablesandtheeffectsofmediatingandmoderating variable. After analyzing the data, the two variables NPLand LTA has shown a significant positive andnegative relationshipwithROA respectively. Pre-provisionprofitofbanksshowsthattherewaspositiveandstatisticallyinsignificantrelationshipwithperformance. Additionally,GDP has a significant moderate effect on PPPLandLTTA on the other handinflationmediateNPLandLTTA variablesofbanksinthisstudy. The study concludes that,* increasingloanis*not an indicator ofincrement inperformance ofprivate banks. So, otherincome generating waysmustbe considering in order to increasingperformance.*

Keywords:-credit riskPerformance, moderation,mediation

CHAPTER ONE

The purpose of this chapter is to provide background information on the study. The remaining parts of the chapter are organized as follows. The first section presents background of the study. While the second section sets out statement of the problem. Section three and four presents the objectives of the research and hypotheses of the study respectively. Then, Fifth and six sections present the significance and delimitation and limitation of the study.

1.1. Introduction

Banks need to manage the credit risk inherent in the entire loan portfolio as well as the risk in individual credit or transaction. Analyzing credit risk and performance is important to get the appropriate economic information and it is also important for sustainable profitability of banks. It is not a new topic many researchers invested time and effort to study about it but it still requires further studies. A large part of bank's returns comes from interest and loans which are the main activities of banks.

For most banks loans are the largest and most obvious source of credit risk. However, other sources of credit risk exist throughout the business activities of the banks. Banks are increasingly facing credit risk (or counterparty risk) in various financial instruments other than loans, including acceptances, interbank transactions, trade financing, foreign exchange transactions, financial futures, swaps, bonds, equities, options, and in the extension of commitments and guarantees, and the settlement of transaction (Basel Committee on Banking Supervision 2000).

Information related with credit risk helps banks adjust their capital through study on the credit rating or default rate of borrowers. Credit risk leads to market risk as it reduces liquidity of instruments and also to systemic risk. Thus, managers are advised to employ a modern risk management technique to diversify the earning activity of the bank (Catherine, 2020).

It is worth noting that credit risk is also linked with other risks likely to affect the activities of the banks (for example, fluctuating interest rates and other possibly related variables). Credit

risk, however, can be a function of other factors such as insufficient knowledge on financial risks andEspeciallycredit riskat institutionlevel;lackofappropriate andeffectivelyimplantable creditpolicies, inadequatecapital level and unstableliquidity status, laxity in credit assessment, and poor lending practicesand procedures(Indiaeland Dickson 2013).

Credit riskmanagement isthe part ofthe comprehensive management andalsothe part ofthe control system.Creditriskcanbeconsideredasone ofthemajorriskbecause it isassociated withevery activetrade.Banksgenerallyhandledrisk managementstrategythatincorporatesthe principlesofriskmanagement processesincludingriskidentification,monitoringand measurement.Theaimofthecreditriskmanagementistomaintaintheefficiencyofthebusiness activitiesandthe continuityofthe business(Spuchlakovaetal, 2015)

Effective credit riskmanagement requiresfinancialmanagersorriskmanagerasappropriate as itmaybe,tohaveindepthunderstandingofthecorporatefinancialrisksandhowtheyinterrelate withcredit risk.Thisdemandsanalysisofthe businessenvironment inwhichthe bankoperates andthe assessment ofthe credit riskintermsoflikelihoodandimpact ontheentity`sloan portfolioandprofitability.The assessment availsimportant informationtobanksnecessaryto identify,measure,monitorandcontrolcreditriskaswellastodeterminethattheyholdadequate capitalagainstthese risksandthattheyare adequatelycompensatedforrisksincurred(Indiaeland Dickson 2013).

Bank performanceisimportantbecauseof itseffecton theperformanceofthewholeeconomy. Goodperformanceof banksfacilitateseconomicdevelopmentbymakingthesavinginvestment processmore smooth,efficient,andeasiertoreach.Thefailure ofa singlebank,ontheother hand,cannot onlyaffectitsshareholdersanddepositorsbut alsothe rest ofotherbanksandthe nation's economy (Haileetal.,2014).

Acommercialbank'sperformanceisexamined forvariousreasons. Bankregulatorsidentify banksthat areexperiencing severeproblems so that they can beremedied. Shareholdersneed to determinewhetherthey shouldbuy orsellthestockof variousbanks. Investment analystsmust be able toadvise prospective investorsonwhichbankstoselect forinvestment.Commercial

banksalsoevaluatetheirownperformanceovertime todetermine the outcomesofprevious management decisionssothat changescanbe made where appropriate.Without persistent monitoringofperformance,existingproblemscanremainunnoticedandleadtofinancialfailure in thefuture(*Legessa*and *Yosef*, 2019)

Atakelt (2015) states the level of asset quality is influenced by several macro and micro economic factors. Generally, Bank size, deposit rate, inefficiency, diversification, profitability, credit growth and capital adequacy indicators are important bank specific factors that were mostly employed in the study related to Credit risk determinant while GDP, inflation, exchange rate, interest rate, money supply, and unemployment rate are some of widely employed macroeconomic determinants of credit risk. However, this paper will address the impact, strength of the impact and moderation and mediation effect of credit risk on the performance of private commercial banks.

1.2. Back Ground of Private Banks in Ethiopia

In Ethiopia, the banking environment for the past decades has undergone many regulatory and financial reforms like other African countries and the rest of developing world. These reforms have brought about many structural changes in the banking sector of the country and have also encouraged private banks to enter and expand their operations in the industry.

Monetary and Banking Proclamation No.83/1994 and the Licensing and Supervision of Banking Business No.84/1994 laid down the legal basis for investment in the banking sector. Consequently, shortly after the proclamation the first private bank, Awash International Bank was established in 1994 by 486 shareholders and by 1998 the authorized capital of the Bank reached Birr 50.0 million. Dashen Bank was established on September 20, 1995 as a share company with an authorized and subscribed capital of Birr 50.0 million. 131 shareholders with subscribed and authorized capital of 25.0 million and 50 million founded bank of Abyssinia. Wegagen Bank with an authorized capital of Birr 60.0 million started operation in 1997. The fifth private bank, United Bank was established on 10th September 1998 by 335 shareholders. Nib International Bank that started operation on May 26, 1999 with an authorized capital of Birr

150.0 million. Cooperative Bank of Oromia was established on October 29, 2004 with an authorized capital of Birr 22.0 million. Lion International Bank with an authorized capital of Birr 108 million started operation in October 02, 2006. Zemen Bank that started operation on June 17, 2008 with an authorized capital of Birr 87.0 million. The last bank to be established to date is Oromia International Bank that started operation on September 18, 2008 with an authorized capital of Birr 91 million.

1.3. Statement of the problem

Credit risk hinders credit growth and affects growth of the banking sector. Credit risk means the potential loss due to the nonperformance of a financial contract, or financial aspects of nonperformance in any contracts.

Siraj et al., (2013)states that for banks, credit risk normally dwells in the assets in its banking book. Credit risk forces banks to provide higher provisions to withstand potential losses, loan restructuring, and loan moratorium and above all is a major reason for recessionary pressures and the relationship between credit risk and performance has been the concern of various studies financial crisis.

Adegbie and Otitolaiye (2020) uses the dependent variable, financial performance, was measured by return on capital employed and dividend paid per share while credit management was measured by non-performing loans ratio, capital adequacy ratio, loan to deposit ratio, loan loss provision as total revenue and bank size serve as control variables and the regression result revels that NPL, CAR and LDR have negative relationship with ROE and loan loss provision has a positive significant effect on ROE and deviated from existing literature by including return on capital employed and dividend per share as proxy variables for financial performance In addition to this, the study failed to show the impact of some very important variables on Ethiopian private banks performance such as ROA(return on asset).

Getahun, Anwen and Bari (2015) used Return on Assets (ROA) and Return on equity wereused as performancevariables and CapitalAdequacy Ratio (CAR), Non- Performing Loans to Total Loans (NPLR), Loan provision to Total Loan Ratio (LPTLR) as indicator of credit risk, the

results shows that CAR and NPLR of the banks are significantly negatively related with ROA and ROE and LPTLR, LPNPLR and LPTR significant positively relate with ROA and ROEbesides this LTA credit risk indicator has not included.

Shibru (2020) UsedFixed effect regression result andReturn on Asset as measure of profitability. Bank specific factors (Capital adequacy, Loan and Advances to total deposit, Non- Performing Loans Bank sizeand Liquidityand macroeconomicfactors(Inflation and GrossDomesticProduct)as indicatorsof creditrisk management;and he suggest that commercial banks should not only concentrated on enhancing their capacity in credit analysis and loan administration but also engrossed on macroeconomic factors that were significantly impact on the profitability of commercial banks in Ethiopia.

TheanalysisofNoorHusainyandJadah(2021)showsthatmeasuretheperformanceofthebank ROAwastakenasdependentvariableswhileliquidityrisk,creditriskwastaken asindependent variablesandbanksize,inflationand GDPgrowthweretaken ascontrolvariables.Thefindings illustratedthat,ROAweresignificantlyandadverselyassociatedwiththecredit risk.Liquidity riskissignificantlypositivelyassociatedwiththeROA.Onthe otherhand,ROAisnegatively influencedbythe control variable ofinflationandisstatisticallysignificant.Furthermore,bank performance significantlypositivelyassociatedwithbanksizeandGDP.Concerningthe practicalaspect,their paper isusefulfor managersand bankersin makingtheirdecision to improvethe performance ofbankanddrawuppoliciesthatwillenhanceeffectivefinancial system and suggested measuresthatcould be adopted by bankstomakesuresoundnessin their operations,Besides, this study was not use Return on equity (ROE).

The findingsthis studyare expectedtocontribute tothe present literaturesby including themoderatingeffectsofGDPandmediatingeffectsofinflationontherelationship betweenCreditRiskandPerformanceofprivateCommercialBanksinEthiopia.Itwillguidemanagers andsupervisorsinfinancialinstitutionsparticularly inthebankingindustryby providing the appropriate information soasto help them inimproving bank'sperformance.Furthermore,the achievement of thisresearch work will additionally empower thebusinessresearchersto gain hand on aptitudes about

handlingofresearchworkandinformationexamination.Thiscapabilityisempowering thespecialistto dealwith such related work withagreatdealof exactness.

1.4. Objectives of the study

1.4.1. General Objective

The main objectiveofthis study wasto analyzethe effectofcreditriskson financial performanceof private commercialbanks withmoderatingroleofGrossDomesticProduct and mediatingroleof Inflation.

1.4.2.Specific objective

➢Toexaminethe effect of creditriskindicatorontheperformanceofprivate commercial banks

➢Toanalyses mediating effectofInflationoncreditrisk and performance

➢Toexamine the moderating effectofGDPon creditrisk and performance

1.5. Research question

Inpursuit ofthe specific objectives,thisstudyseekstoanswerthe followingquestions: How creditrisksaffecttheperformanceof private commercialbanksin Ethiopia?

1. Whateffectdoesthecreditriskindicatorhaveontheperformanceofprivate commercial banks?
2. TowhatextentdoesGDP serve as a moderatorandinflation as mediatorimpactttherelationshipbetween creditrisk indicatorsand financialperformanceof privatecommercialbanks?

1.6. Significanceof thestudy

Thestudyhasagreatimportancefor privatecommercialbankfirmsin ordertomakeadequate controlovercredit managementsystem to makesustainableprofit.Thestudyalsocontributesto otherstudiestobe madeindifferent economic sectorsbyprovidingimage onthe relationship betweencreditriskandfirm'sfinancialperformance onEthiopianprivatecommercial banks.

Generally,it guidesmanagementneedtobe cautiousinsettingupa credit policythat will not negativelyaffectsprofitabilityandalsousedtoknowhowcredit policyaffectsthe operationof their bankstoensurejudiciousutilization of depositsand maximization ofprofit.

1.7. Scope andLimitation of the Study

The researchis limitedondetectingthe relationshipbetweencredit riskandprofitabilityof Ethiopianprivate commercial banksandone interveningandmoderatingvariable. The study onlyusestwelve banksfrom atotal of22.Informationinannual reports,the selectedsample onlycontainstwelvePrivatecommercialbankshavesixyears'annualreportsfrom2016to2021 and that have need to give essential information. Considering the above mentioned circumstances, the results of the study are limited to selected private banks in the sample andaregeneralizedtoallEthiopian private commercialbanks.

CHAPTER TWO

LITERATURE REVIEW

Thereviewshavethreesections.Section2.1presentstheoreticalframeworkofthestudy.This isfollowed byareviewof therelevantempiricalstudieson creditrisk andperformancefinally;conceptualframework of thestudy ispresented in section 2.3.

2.1. TheoreticalReview

2.1.1. Banking andBankrisk

The bankingbusiness,comparedtoothertypesofbusiness,issignificantlyexposedtorisks, particularlyinpresent everchangingcompetitive environment.Banksnolongeronlyreceive depositsandmake loans.Initsplace,theyare operatingina rapidlyinnovative industrywitha lot ofprofit pressure that needsthemtocreatemoreandmore value-addedservicestoofferto andbettersatisfythecustomers.Risksaremuchmorecomplexnowsinceonesingleactivitycan involveseveralrisks.

Itisapossibleloss toacommercialbankduetofailuresonthepartofbankborrowers (counterparties) to repay theloaned amounton time, or the amountbecomes completelyirrecoverable.It isfailure ofborrowerstomeet theirfinancial commitmentswithbanksin accordance to agreed termsand conditions(Indiael&Dickson2013).

Tursoy,(2018)statedthat,oneofthemainactivitiesconductedbyabankislending.Whensome ofitscreditsarenotreturnedtothebankwhenacustomerexperiencesfinancialproblems,this ispartiallycausingcreditriskforthebanks.Thiskindoffinanciallossresultsfromthefailure of creditcustomersto repay thebanks.

2.1.2. Credit risk

Riskisoftendefinedasa probabilityorthreat ofdamage,injury,liability,loss,oranyother negativeoccurrencethatiscausedbyexternalorinternalvulnerabilities,andthatmaybeavoided throughpreemptive action.Riskisa functionofthe likelihoodofsomethinghappeningandthe degreeoflosingwhicharisesfromasituationoractivity.Lossescanbedirectorindirect.For

Example,anearthquake cancause the direct lossofbuildings.Indirect lossesincludelost reputation,lost customerconfidence,andincreasedoperational costsduringrecovery.The chanceofsomething happeningwill impact the achievementofobjectives(BaselCommitteeon Banking Supervision2005)

AccordingtoAbu&Kokh(2020)Creditriskcanbedefinedasthoserisksarisingfrom failure to payallor partoftheservicesoriginallyprovidedand their profits, or risksresultingfromthe inabilityto returnprofitsfrombankinginvestments.Inotherwords,creditriskistheriskarising from thebanknot receivingthe moneyit provided(cashflow)at the timeofmaturity.Credit riskisthefirstriskinorderofimportancebecausefailuretomeetobligationsbymanyimportant customerscanleadto significant lossesthat canleadto bankruptcy.

Ghaithand Tareq(2019)saidthatCreditoperationsarethe most attractive investmentfor banks toachieveprofits.Therefore,thesecredit operationsare consideredthemost dangerous investmentsto banksbecauseof thevariousrisksthat maylead tothecollapseofthebank. Itis arguedthatthereisacloserelationshipbetween thecreditdecisionswithprofit maximizationof bank shareholders. Commercialbankseeksto achieve theobjectivesof profitability through the adoption of soundlendingdecisions. Thisisto beachieved through balancing of stakeholder interestsandtakingsafepoliciestoavoidsuchrisks.Therefore,banksaregrowingtheiractivities by(i)expandingtheircreditactivitytomaximize theirreturns; (ii)Formulatingnew lending policies;(iii) attracting high-valueclientsand monitoring their ratings.

2.1.2.1.CreditRiskTheory

Lando(2004)StatedthatBlackandScholes(1973)andMerton(1974)first originatethe methodologyStructuralmodelsviewafirm'sliabilitiesascomplex putoptionsonthefirm's assets. Therefore, modeledin thisapproach are thefirm'sliability structureand thefirm'sasset value process.Inthese models,the default timeisusuallycharacterizedasthe first hittingtime of thefirm'sassetvalueto agiven boundary determined by thefirm'sliabilities. As such, if the firm'sasset value processfollowsdiffusion,thenthe default time isusuallya predictable stoppingtime.The difficultieswiththe structuralapproacharetwofold: first,thefirm'sasset valueprocessisnotdirectlyobservable,makingempiricalimplementationdifficult; andsecond,

apredictabledefaulttimeimpliescreditspreadsshouldbenearzeroonshortmaturitydebt.This second implication is wellknown to be inconsistentwith historicalmarketcreditspread data.

JarrowandTurnbull (1992,1995),developedthe reduced-formapproachpreciselytoavoid modelingthe firm'sunobservable asset value process.DuffieandSingleton(1999)typically, reduced formmodelscharacterize default asthe firstjumptime ofa point process,oftena Cox process(i.e.,a doublystochastic Poissonprocess).Assuch,the default time isusuallya totally inaccessible stoppingtime,implyingnon-zerocreditspreadsforshort maturitydebt.Areview of the creditrisk literaturecan befound inmany good books, including Ammann (2001).

2.1.2.2. Information Asymmetry Theory

Inthecase whenagentsdonot havethe samelevelofinformation,theyareinasituationof information asymmetry. In thecredit market, "thedebtor, claimsareinaweak position because it doesnot have muchmore precise informationonthe financingproject"Crouzille,LePetit, andTarazi (2004)andthe bankhasa problem ofinformationasymmetryresultingfromthe difficulty in assessing creditrisk. Minimizingcreditrisk dependsmainly on thebank'sability to collectandprocessinformationwhenacceptingcreditapplications.Therefore,the bankin searchofinformationisconfrontedwiththe issue ofinformationasymmetry.Inthe credit marketinformationasymmetrygeneratestwomainissues adverseselectionandmoralhazard. Duetotheexistinginformationasymmetrybetweenthebankandtheborrower,thephenomenon ofadverse selectionorantiselectionis manifestedbefore signingthe credit agreement.Aftersigningthecredit agreement andgrantingcreditinformationasymmetrybecomesa source of moralhazard.

HuangandShen(2016)adaptedcredit risksandinformationasymmetrysourcethe adverse selectiondesignatesanimmoral effect ofmarketfunctioning,whichgeneratesinformation problems.These problemsarise whenthereisalackofobservationofthecharacteristicsofa product orservice.

Akerlof(1970)considersthat adverse selectionwhichoccursbefore the signingofthecreditagreement resultsfromthefactthatinformationaboutthecharacteristics

oftheborrowerisdissimulated.Aftersigningacontractbetweentheparties,expostinformation asymmetrygeneratesamoralriskproblem duetothe agent'sinabilitytoobservetheactionsof otheragents.Moral riskoccursundercertainconditionsandgivesrise todiverse situations.

Berger etal, (2011)distinguishestwosituations first uninformedagent doesnot knowthe actionsofhispartners.Thepartnershave anopportunisticbehavior,takingadvantageof thefact thattheagentisuninformedandactintheirowninterest,claimingthatthepoorresultsare independent oftheirwill.

2.1.3. Performance.

Aminetal.,(2018)statedthatfinancialperformanceisusedasageneralmeasureofacompany's overallfinancialhealthoveragivenperiodoftimeandcanalsobeusedtocomparesimilar companiesinthesame industry aswell astocompare industriesorsectorsagainsteachother.inthebankingsector,financialperformanceindicatesabank'sability touseitsassetstogenerate revenuetosustainitselfthroughitscorebusinessoperations.Commercialbanksusetheterms financialperformanceand profitability interchangeably to estimate their successesor failures. Evaluatingbankperformanceisacomplexprocessthatinvolvesassessinginteractionbetween theenvironment,internaloperationsandexternalactivities.Ingeneral,anumberoffinancial ratiosareusuallyusedtoassesstheperformanceoffinancialintermediaries.Theprimarymethod ofevaluatinginternalperformanceisbyanalyzingaccountingdata.Financialratiosusually provideabroaderunderstandingofthebank’sfinancialconditionsincetheyareconstructedfrom accounting data contained on thebank’sbalancesheet and financialstatement(Dan, 2010).

2.1.4 Creditrisk, Performance Indicatorsandhypothesisdevelopment

In this section theoperationaldefinition and theoriesof dependent, independent, mediating and moderating variable werepresentedasfollows.

Non-performing Loan

Anonperformingloan(NPL)isaloaninwhichtheborrowerisindefaultduetothefactthat they havenotmade thescheduled paymentsfor aspecified period. Althoughtheexact elements

ofnonperformingstatuscanvarydependingonthespecificloan'sterms,"nopayment"is usually definedaszeropaymentsofeitherprincipal orinterest.The specifiedperiodalsovaries, dependingontheindustryand thetypeofloanperiodis90daysor180 days.

Non-performing Loansratio = NPL/TL

Pre Provision profit to Net loanandAdvance(PPP/NLA):-used asa measurefor creditrisk. It indicatesbanks'ability to generate incomebeforethe expectation of defaultoccurs.

Loansto assetsratio:- isafinancialratiothatusually isapplied for banks(orcreditunions) to measuretherelation of thebank'sloan portfolioto the total assets.

Providingloansforclientsisa mainfunctionofeverybank,andit isnormalthat highpart of bank'sassetsisinloansform.Usuallyloansare providedforboth businessclientsandretail clients,but the exact structure ofthe loanportfoliodependsonthe strategyofthe financial institution.

High 'loansto assets' ratio might mean two things:

- Bank isathigherrisk because loansarelessliquidassetsthan otherfinancial assets.
- Loansusuallyarethemostprofitableassetsofthebank,anditishighlyexpectedthat bank with high loansto assetsratio willhavehigher netinterestincome.

Loansto assets=Loans providedto clients/Totalassets

Dependentvariable

Returnon Assets(ROA):- istheproportion of netincome toaggregate assetsof thebank. Showsthe ability ofmanagement to acquiredepositsatareasonable costand investthemin profitable investments. Thisratioindicateshowmuch net incomeisgenerated per dollar (birr) of assets. ThehighertheROA, the moretheprofitable thebank willbe.

ROA=netprofit/totalassets

Independent variable	**Explanation**	**Expected sign**
Non-performing Loan	Non-performingloans/ totalloans	-
Provisionto Total Loans(PRTL)	Pre-Provision Profit/Net TotalLoans and Advances	+
Loan to TotalAsset(LTA)	Loansprovided toclients/ Totalassets	+
Independentvariable		

Return on asset(ROA)	netprofit/total assets	
Mediating variable		
GrossDomesticProduct	GDPgrowth rate	+/-
Moderatingvariable		
Inflation Rate	Averageannualcentralbank rate(CBR)	+/-

Table 3.1 expected sign

Nonperforming loans(NPLs) refer to thosefinancialassetsfromwhich banksnolonger receive interestand/orinstallmentpaymentsas scheduled.Itisa loanthatisindefaultor close tobeing in default. ManyloansbecomeNonperforming laterbeing indefaultfor 3 months, but thiscan depend onthecontractterms. Aloan isnonperforming when paymentsof interestand principal arepastdueby3monthsormore,oratleast3monthsofinterestpaymentshavebeencapitalized, refinancedordelayedbyagreement,orpaymentsarelessthan3 monthsoverdue,but thereare othergoodreasonstodoubt that paymentswill bemade infull International MonetaryFund (IMF), (2001).

AdegbieandOtitolaiye(2020)Saidthat,banksare nowworkingsohardtoattract the massive numberofpeople whoare not bankingwiththem.Thishasledtoanincrease inbankssurplus unitsand deficitunitsas well. With theaimof increasing revenue and gaining a largeportion of themarketshare,manybankshavegiven outloansand advances whichcouldnotberecovered leadingtoamassivegrowthinNon-PerformingLoans(NPLs)intheiraccounts.Thishasbecome aworrisomesituation for banksand other stakeholders.

Bobakovia (2003)notesthat backinthe 1920sthe Americanfirm DuPont developeda basic methodforthefinancialanalysisofafirm,andwhich todayisusedinmodifiedformalsobythe leadingratingagenciesintheanalysisandevaluationofabank'sfinancialsituation.Thisanalysis andthe evaluationare singlecriterion,made from the aspect ofaftertaxprofit.Thebasic idea liesina hierarchical arrangement ofindicators.Thisanalysisservesforidentifyingand explainingtrendsinthe development ofROE andROAindicators,whicharethose most often usedinevaluatingprofitability.Inthecalculationofindividualindicators13itemsarenecessary, where

theseareavailable from abank'sannual report.TheDuPont analysisisameansfor breaking downtheindicatorsROEand ROA, identifying developmenttrendsand isolating problem areas.Onthe otherhand,however,it doesnot dealwiththe issue ofcapital adequacy, assetquality,abank'sriskexposuretointerestratechangesortheissueofliquidity.Inanalyzing theseareas,it isnecessary touseother analytical methods.TheindicatorROA(return onassets) andROE (returnonequity)are usedasthe basic indicatorsofprofitabilityinevaluating commercial 7 banksprofitability.

AccordingtoRosikahetal,(2018)ReturnonAssetisusedtomeasurethecompanycapability to createprofitsusing totalowned assetsby a company in thefuture, higher ROAof acompany performance will leadtomore effective company.Sothat it canbe seenasa positive signfor anyinvestorstoinvest theirstockinthe companythat wereeffectontheincreasedcompany stockincapital market.ReturnonAssets(ROA) isoneofprofitabilityratios.Intheanalysisof financial statements,thisratioismost oftenhighlighted,because it isabletoindicatecompany successtocreate profits.ROAisable tomeasure thecompanyabilitytogenerate profitsinthe past tothenbe projectedinthe future.Assetsinquestionare overall companyproperties, obtainedfromthecapitalitselforfromforeigncapitalthat hasbeenconvertedintocompany assetsusedforcorporatesustainability.Basedonthe literature discussedinthissection,we propose thefollowing hypothesis:

Ho:1NonperformingLoanhasnosignificantnegativerelationshiponfinancialperformanceof PrivateBanksinEthiopia.

Ho: 2 Pre Provisionprofitto Netloanand Advancehasnopositive significantrelationshipon financialperformanceof privateBanksin Ethiopia.

Ho:3LoantoTotal Asset (LTA)hasnopositive significantrelationshiponfinancial performanceof PrivateBanksin Ethiopia.

2.1.5. GrossDomestic product

Macro-economic factorssuchasinterest rates,inflation,grossdomesticproduct(GDP)and exchange ratesinfluence productioncapacityofdifferent sectorsofthe economyacrossthe globe.

AccordingtoInternationalMonetaryfund(2008) GDPmeasuresthemonetaryvalueof final goodsandservice that is,thosethatareboughtby thefinaluserproducedin acountry inagiven period of time(say aquarter or ayear). Itcountsalltheoutputgenerated within thebordersof a country.GDPiscomposed of goodsand a service produced for sale in the market and also includessome nonmarket production,suchasdefense oreducationservicesprovidedbythe government.Analternativeconcept,grossnationalproduct,or GNP,countsalltheoutputof the residentsofa country.soifa German ownedcompanyhasa factoryinthe UnitedStates,the output ofthisfactorywouldbe includedinU.S.GDP,but inGermanGNP.Notall productive activityisincludedinGDP.Forexample,unpaidwork(suchasthat performedinthe home or byvolunteers)andblack-market activitiesarenot includedbecausetheyaredifficult tomeasure andvalueaccurately.Thatmeansforexample,thata bakerwhoproducesaloafofbreadfora customerwouldcontribute toGDP,but wouldnot contributetoGDPifhe bakedthe sameloaf for hisfamily. Moreover, grossdomesticproducttakesno accountof thewear and tear on the machinery,buildings,andsoon(the so-calledcapital stock)that are usedinproducingthe output. ifthisdepletion of the capitalstock, called depreciation, is subtracted fromGDP, weget netdomestic product. Theoretically,GDPcan beviewed in threedifferentways.

Theproductionapproachsums the"valueadded"ateachstageofproduction,wherevalue addedisdefinedastotalsalesminusthevalueofintermediateinputsintotheproductionprocess. For example, flourwould beanintermediateinputand breadthefinalproduct,oran architect's services would be anintermediate input and thebuilding thefinalproduct

The expenditureapproachaddsupthevalueof purchasesmadeby finalusers for example, the consumptionoffood,televisions,andmedical servicesbyhouseholds; theinvestmentsin machinerybycompanies;andthe purchasesofgoodsandservicesbythe government and foreigners.

Theincomeapproachsums theincomesgeneratedbyproduction forexample,the compensationemployeesreceive andthe operatingsurplusofcompanies(roughlysalesminus costs). GDPin a country isusually calculated by thenationalstatistical agency, which compiles the informationfrom a large numberofsources.Inmakingthe calculations,however,most countriesfollowestablishedinternational standards.The international standardformeasuring GDPiscontainedinthe System ofNational Accounts,1993,compiledbythe International

MonetaryFund,the EuropeanCommission,the OrganizationforEconomic Cooperationand Development, theUnited Nations, and the WorldBank

Ho:4Gross Domestic Productdonothave significantmoderatingimpactbetweennon- performing Loan and return onasset.

Ho: 5GrossDomesticProductdo nothavesignificantmoderatingimpactbetweenPreProvision profit to Netloan and return on asset.

Ho:6GrossDomesticProductdonothavesignificantmoderatingimpactbetweenLoantoTotal Asset(LTA)and return on asset.

2.1.6. Inflation

Chioma, Adanma and Clementine(2014)Inflation hasalready beendefinedasaperiodof persistenceincreaseinpricesofbothgoodsandservicesoveraperiodoftime.Inorderto

Determine thisincrease inprices,a mechanismformeasurementand analysisof suchmovement isverynecessary.Itisallabouthowinflationaffectsprofitlevelsandhowprofitlevelinfluences theinvestmentdecisionofbanksvis-à-vislending. Whenonethinksofinflationwhatcomesto mindisthe dynamic situationofpersistent increase inthe price level whichresultsinthe diminution of realpurchasing power of currency atone'sdisposal at any point in time. Inflation which can take theformsof costpush, demand pull, imported, creeping, wagepush, mark-up or profitpushisaconditionofunrelentingpricespiral.Ithasbeengenerallydescribedasasituation ofpersistent riseinpricesofgoodsandservicesarisingfrom toomuchmoneychasingtoofew goodsinaneconomy.Italwaysresultswhentheaggregatedemandexceedstheaggregatesupply ofgoodsandservicesandhasthe net effect ofreducingthe purchasingpowerofthe monetary unit.

Kola,GjipaliandSula(2019)Aninflationrate thatisfullyanticipatedraisesprofitsasbanks canappropriatelyadjust interestratesinordertoincreaserevenues,while anunexpected change couldraisecostsdue to imperfect interestratefor adjustmentAccordingto hisempiricalresults, theinflation ratepositivelyand significantlyaffectsprofitability.According tothe literaturethis impliesthat, withinflation, bankincomeincreasesmorethanbankcosts, whichmaybeviewed astheresultofthefailureof bankcustomersto forecastfutureinflation.

The Classical Theory: -

Why We Believe in It the classical theory of inflation attributes sustained price inflation to excessive growth in the quantity of money in circulation. For this reason, the classical theory is sometimes called the "quantity theory of money," even though it is a theory of inflation, not a theory of money. More specifically, the classical theory of inflation explains how the aggregate price level gets determined through the interaction between money supply and money demand. As a matter of fact, because it traces the behavior of an important economy-wide variable inflation back to the most basic forces of supply and demand, the classical theory must qualify as one of the oldest "micro founded" models in all of macroeconomics(Ireland, 2014). Based on the literature discussed in this section, we propose the following hypothesis:

Ho: 7 Inflation will no significant mediating impact between non-performing Loan and return on asset.

Ho: 8 Inflation will no significant mediating impact between Pre Provision profit to Net loan and return on asset.

Ho: 9 Inflation will no significant mediating impact between Pre Provision profit to Net loan and return on asset.

2.2. EMPIRICAL REVIEW

Manystudiesare introducedconcerningaboutcreditrisk.Some ofitisconcerningtoitseffect andorrelationshiponbank performance.Numbers of researchers haveexaminedtheimpactof credit riskonbanksinvaryingdimensions.Thosestudiesare presentedincrosscountryand individualcountryside.

Williams(2004)presentsaworkonalargesampleof Europeansavings banksfrom1990-1998.Loanqualityisdefinedastheratioofloanlossprovisionstototalloans.

Thisratiomightbelessimportantthantheratiooffnon-performingloanstototalloans,asitcould be endogenousintheestimationsowingtotheinfluence ofbankmanagement onprovisions. Cost andprofitefficiencyscores,allmeasuredbythestochastic frontierapproach,are alternativelyusedinthe tests.The studyconcludes that decreasesincost andprofit efficiency

tendtobefollowedbydeteriorationsinloanquality,inaccordance withthebadmanagement hypothesis.

Kithinji(2010)examinetheeffectof creditriskmanagementon theprofitabilityofcommercial banksinKenya.The Data onthe amount ofcredit,level ofnon-performingloansandprofits were collectedfrom 2004to2008.The findingsrevealedthat the highest profitsofcommercial banksare not influencedbythe amount ofcredit andnon-performingloans,therefore the study suggesting thatadditionalvariablesother than creditand non-performing.

Al-Khouri,(2011)analyzedthe impact ofbank'sspecific riskcharacteristics,andthe overall bankingenvironment onthe performance of43commercial banksoperatingin6ofthe Gulf CooperationCouncil (GCC)during1998-2008.Usingfixedeffect regressionanalysis,results showedthat credit risk,capital risk,andliquidityare the majorfactorsthat affect bank performance whenprofitabilityismeasuredbyreturnonassetswhilethe onlyriskthataffects profitability whenmeasured by return on equity isliquidity risk.

IndiaelandDickson(2013)findthe relationshipbetweenthe credit riskandbankperformance asmeasuredbyreturnonasset.The independent variablesare loanlosstogrossloan,Non-Performingloan,loanlosstonetloan,impairedloantogrossloan.Thecontrolvariablesare depositandbanksize.Thedepositisusedbecausetheloanissuancedepends onthedepositlevel ofthe bank.Banksize classifybetweenthe large andsmall banks,whichone isvulnerablyto higher creditrisk. Thecreditriskindicatorshaveproduced negativecorrelation whichindicates thehigherthe creditriskthe lower thebank performance.

Chioma,AdanmaandClementina (2014)findsthat a little amount ofprice increase motivates producerstoproducemoreandsuchmoveisnecessaryformoreinvestmentneededforeconomic growth.Butthemajorlineofcontrastliesonwhatshouldbetheagreedtrade-offbetweendesired levelandthe point at whichinflationbecomesdisastrousordesiroustoinvestment andthe economy at large. Based on thesefacts, moderaterateof inflation becomesawelcomedevice to achieve economicgrowththroughinvestment.Therefore,thepolicyimplicationliesonthe obviousnecessityforthe policymakerstoformulate the economic policythat shouldembrace

moderate rate ofinflationwhichcanstimulate savingsandencourageinvestmenthence, economicgrowth.

Getahun,AnwenandandBari (2015) Identifythe regressionresultsofthe studysuggest that CARandNPLRofthe banksare significantlynegativelyrelatedwithROAandROE and LPTLR, LPNPLR and LPTR significantly positively related with ROAand ROE.

Gizaw, Kebede, and Selvaraj(2015)studiedbyusingpaneldataregressionanalysisandtheresultreveal thatcreditriskprofileofEthiopianBankshadbeenimprovingduringthestudyperiod.Theratio ofnon-performingloanandloanlossprovisionratioare sharplydecline inrecent past.Evenas theNPLreachedminimumtheLLPR isabout6%.Thecapital toadequacy ratio ofcommercial bankswasalsofounda little bit higherthanregulatoryrequirement at localandinternational level, butthedescriptive analysisindicated commercialbanksin Ethiopiahave adequatecapital towithstandshocksresultingfromcreditandotheroperationalrisks.

Taiwoetal.(2017)showed thatsound credit managementstrategiescan boost investorsand saversconfidence inbanksand leadtoagrowthinfundsforloansandadvanceswhichleadstoincreasedbankprofitabilitywhile non-performingloanswasalsopositivelyrelatedtolendinggrowth.Thismaybe because depositorsusuallydonotevaluate the creditriskmanagementeffectivenessofbankspriorto placingdepositsinthebanks.Interestratespreadwasalsofoundtobenegativelyrelatedtototal loansandadvancesassaversarereluctanttodepositcashwiththebankwhenthedepositinterest rateistoolowandbanksencounterdifficultyinfindingcredibleborrowerswhenthelend lending rate is too high.

Irfai, Ali and Nohong (2018) Discusses the moderating effect of Capital outflow monitoring management (COMM) variable on the relationship between credit risk and loan performance variables. The results obtained prove that credit risk has a positive effect on loan performance. The next hypothesis is the relationship between Capital outflow monitoring management (COMM) moderation on the relationship between the variables of credit risk and loan performance does not affect, and the Capital outflow monitoring management (COMM)

variable acts as a moderator (independent) Predictor. There is no form of moderation between credit risk, loan performance and Capital outflow monitoring management (COMM is due to the lack of customer development from the bank. Due to other activities provided, AAO's main task in developing debtors is neglected.

Ghaith and Tareq (2019) investigate the effects of CR on the profitability of Jordanian commercial banks. The study period covers the years 2008-2017 on 13 commercial banks. The main objective of their research was to examine the impact of various CR including: doubtful loans, non-performing loans and loss loans on the ROE and ROA. Based analysis of random effects model using a panel data, the study finds that there are several variables that appear to be the most significant ones when it comes to evaluating the performance of commercial banks.

Abu&Kokh (2020) indicate that the impact of CR (doubtful loans, nonperforming loans and loan loss) are negative and statistically significant on profitability of Jordanian commercial banks Credit risk affected performance indicators in five out of ten years; this shows the impact of credit risk fluctuating from year to year. Credit risk in four years had a negative impact and in one-year negative impact. The effect of the ratio (LLR/TL) was negative and greater than the ratio of (TL/TA) which did not affect only in one year limited positive effect. This indicates that the provisions Loan Losses were more influential than the volume of loans in other words that the quality of loans has a greater impact than the volume of loans on performance indicators.

Adegbie and Otitolaiye (2020) examined the effect of credit management on the financial performance of deposit Money banks in Nigeria for 2006 to 2018 by using regression analysis which reveal that non-performing loan, capital adequacy ratio and loan to deposit ratio have negative significant relationship with return on capital employed while loan loss provision has a positive significant effect on return on capital employed; and also that non-performing loan and loan to deposit ratio have a negative significant effect on dividend per share while capital adequacy ratio and loan loss provision have positive significant effect on dividend per share; therefore, they conclude that credit management is one of the major determinants of financial performance of a deposit money bank with significant effect on their financial performance.

Hence, poor credit management framework cost the financial system while good credit management framework improves the financial performance of Deposit Money Banks.

Bekana,(2021)investigatemanagement capabilitywhichwasmeasuredbythe ratioofnon-interestexpensetogrossexpenseandearningqualitythatwasmeasuredbythe ratioofnet interest income tototal assetswere positivelyandsignificantlyaffect the performance ofthe bankmeasuredbyROAandefficiencyratio.toguide the studythe followinghypothesisare develop.

DjazuliaandCandera(2020)foundthatinflationcanstrengthenthe influenceofreturnonassets onIslamicBankingGrowth.Inflationisnotamoderatingvariable,butsignificantinflation(with a negative slot)affectsthe growthofIslamic bankingasanindependent variable.These results provideanunderstandingthatifinflationincreases,thegrowthofIslamicbankingwilldecrease. Viceversa, ifinflation decreases, thegrowth of Islamicbanking willincrease.

Mambo(2020).Indicatesthatthere isanegative relationshipbetweenassetqualityand performanceofcommercialbanks,tobespecific,itwasfoundthataunitdecrease intheratioof nonperforming loanstototal loans willleadto anincrease in financialperformanceby 1,005.It also showsthataunitdecreasein lending ratio willlead toan increase in financialperformance by0,031; a unit decrease incapital adequacyratiowill leadtoanincrease infinancial performance by0.555.Inaddition,basedonthe hypothesestested,findingsfrom thestudy furtherprovidedevidence tosupport the arguments that ratioofnonperformingloansandbad debtdohaveasignificantnegative effectontheperformanceof banksin Uganda.Thisoutcome corroboratesthesuggestionthatthehigherthebad debts writtenoff fromtheprofitofthebank, the lowerthe ROE.The studyconcludesthat banksmanagement shouldestablishsoundcredit management basedona moderatecredit policy,because,howeversmall,it wasestablishedin thestudy that the morethe appetiteto lend is, the morelikelythebank willlose itsefficiencyin controllingloans,moreovertheyshouldcomplywithcreditsstandardswhichencourage the bankstoinvestinsaferassets,suchaslower-riskloansorgovernmentsecurities,whichmay affect bank performance but strengthen their liquidity position and avoid difficulties like the one Crane Bank Uganda and NBC Uganda went through during the last past years.

Kidane (2020)assessedthe impact ofcreditriskmanagement onprofitabilityofcommercial banksinEthiopia.Thisstudyconcluded that capitaladequacy, loangrowth, liquidity,banksize, InflationandGrowthDomestic Productusedasa proxyforcreditriskmanagementhadstrong impacton theprofitability of commercialbanksinEthiopia.

Almansouretal.(2021)indicatedthat the banksperformance issignificantlyaffectedbythe inflation rate inJordan. WhenROAisassumed asameasureof banks performance,theresults recorda probabilityvalue of0.027witha negative coefficient value of0.109,the results indicatedthatthereisasignificantandnegative relationshipbetweeninflationrateandbanks performance.Also,whenROEisexpectedtobeasa proxyofbanksperformancethe results recorda probabilityvalue of0.004witha negative coefficient value of0.188,these results indicatedthatthereisasignificantandnegative relationshipbetweeninflationrateandbanks performance.Finally,whenMNIisassumedasameasure ofbanksperformance,the results recorda probabilityvalue of0.007witha negative coefficient value of0.076,these results indicatedthatthereisasignificantandnegative relationshipbetweeninflationrateandbanks performance.

Batayneh,Salamat&Moman(2021)saidthat basedonARDL analysismodel,confirmedthat inflationhadnegative impact onthe performance ofthe financial sectorinboththe short and longrun.Theseresultswereinagreementwiththetheoreticalandempiricaleconomicliterature, which confirmed the existenceof anegativerelationship betweeninflation and theperformance of thefinancialsector. Thismightbeattributedto theshortageof thevolumeof savingsand the increase inconsumersspendingongoodsandservicesasa result ofhighinflation which reducestheamountofinvestmentsneededforproductionexpansionandlimitseconomicgrowth. Onthecontrary,theresultsshowedthattheeconomicgrowthplayedapositiveroleinimproving the performance ofthe financial sectorinthe Jordanianeconomyonthe shortandlongterm levels.

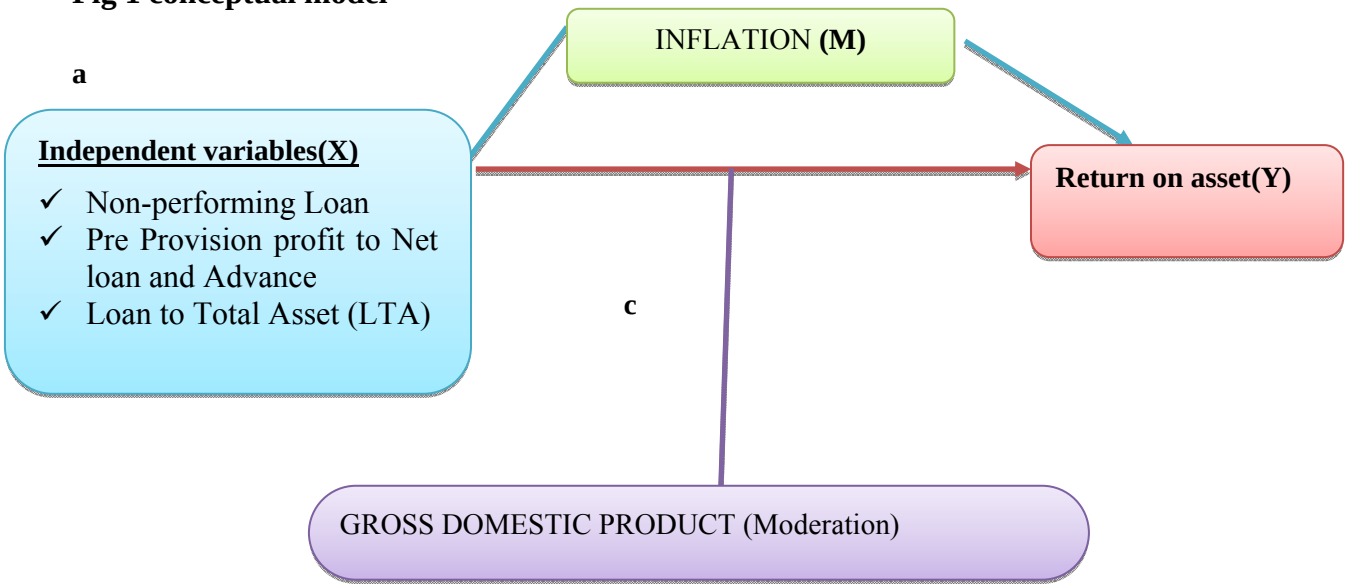
In thefirst model thep-valuesare indicativeof thesignificanceof all theexplanatory variables. Ascan beobserved fromthecoefficientresults, theGDPgrowth ratehasastrong significant positive effectonthebank'sperformanceinflationratepositivelyandsignificantlyaffectsprofitability.Accordi

ngtotheliteraturethis impliesthat, withinflation, bankincomeincreasesmorethanbankcosts, whichmaybeviewed astheresultofthefailureof bankcustomersto forecastfutureinflation.

2.3. CONCEPTUALREVIEW

Inflation as intervening variable and from macroeconomic factors inflation is incorporated as a mediating variable and seeks to investigate how those factors influence the relationship between the credit risk and bank performance. Inflation refers to the continued increase in the general prices of goods and services in an economy over time.GDP has added as a moderating variable.

Fig 1 conceptual model



CHAPTER THREE

RESEARCH METHODOLOGY

Thischapterbeginsbyaddressingthe researchdesignofthestudy.It thengoesaheadand discussesthe populationandsample size andprocedures.Researchproceduresarealso discussed.Amethodofpretestingwasreviewedandfinallydiscussesthe methodsofdata collectionand data analysisused.

3.1. Research design and approach

Selection of appropriateresearchmethods isveryimportantbecause itdecidesthequality of studyfindings.Thisstudywas use explanatory,explanatory research deals with cause-effect relationship. Explanatory research design, emphasis on specific objectives about the effects of changes of one variable on another variable and it involves an experiment where an independent variable is changed or manipulated to see how it affects a dependent variable and inferentialresearchdesignquantitative method ismainly usedto relatecreditrisk and performance.

3.2. Data sourceandData collection technique

Thisparticularstudyisquantitative innature andsecondarydatawerethe onlysource forthis study.Themaindata forthisstudywere collectedfrom National Bank of Ethiopia reports andbyreviewingthe balance sheet andincome statement ofselected banks.Fromthosebanks,6consecutiveyearsofbalancesheet and income statementreportshavebeenusedforthe studytoanalyzecreditrisk and performanceofprivatecommercialbanksinEthiopiaduring the period 2016-2021. Thedatasetsin this study werebalanced paneldata.

3.3. Sampling Design and Sample Size

Thepopulations of the study wereallprivatebanksoperating in Ethiopiabetween2016 and 2021. From all a sample of12commercial private banksstart namelyBankofAbyssinia,Awash International Bank,DashenBank,Hibret Bank,WegagenBank,ZemenBank,BirhanBank, Oromia International Bank,Enat Bank,AddisBank,LionBank,andNibinternational Bank wasselectedat thetime inprovidingthe requiredinformationandbyusing simple random sampling methodtochoose each member of the population has an exactly equal chance of being selected. This method is the most straightforward of all the probability sampling methods, since it only involves a single random selection and requires little advance knowledge about the population.

3.4. Data Analysistechniques

Based on the nature of the data the researcher has used different regressions that fits with panel data. Random effectregressionsestimatedviaGeneralLeastSquares(GLS), test for moderation and test for mediation wereused indataanalysiswhichcouldbe termedtobe astatisticaltechnique usedtofindrelationships betweenvariablesforthe purpose ofpredictingfuture values.STATAversion13softwarewas used to help usgo through data analysis.

3.5. ModelSpecification

ThestudyusedPanel regression model alongside withmoderationand mediationregression toanalyzethe relationship between one dependentand three independentvariables including GDP asmoderating variable and inflation asmediating variable.Thedependent variablesareReturnon Assetandindependentvariablesare Non-PerformingLoan,Pre Provisionprofit to Netloan and Advance(PPP/NLA), Loanto TotalAsset(LTA).

3.6. Regression Analysis

AgeneralLinearModelofMultipleRegressionisoutlinedintheequationYindicatesdependent variables,$B_o$the constant term,B_1,B_2andB_3,the coefficientsof thefunctionandX1,X2...are the independentfactors $Y= B_o +B_1x_1+ B_2X_2+B_3X_3+ \ldots E$

3.6. 1. ModeratedRegression Analysis

Moderationindicatesthatthe X-Yrelationdiffersbythe level ofZ.Whenusingmultiple regression,yousimplyinclude X,Z,andaninteractionterm betweenXandZ aspredictorsof Y.Ifthe regressioncoefficient ofthisinteractionterm issignificant,it suggeststhat Z modifies theX-Yrelation.

$Y= B_o +B_1x_1+ B_2X_2+B_3X_3+ e$……. Direct effect

$Y= B_o +B_1x_1+ B_2X_2+B_3X_3+B_3M$ (moderation) + e…….

Indirecteffect a indicatesthe main effectof Xon Y

bindicatesthemaineffectofZon Y

c indicatesthe interaction effectof Xand Z,

i.e., theeffectof Xon Y, given thepresenceof Z

3.6.2. MediationRegression Model

Conducta multipleregression analysis with XandMpredicting y.

Y= B_o +B_1x_1+ B_2X_2+B_3X_3...…….direct effecton dependentvariable

M= B_o +B_1x_1+ B_2X_2+B_3X_3e……effectof IVon mediation

Where:M= mediating variable=Inflation

Y= B_o +B_1x_1+ B_2X_2+B_3X_3+B_3X_3+M+e……. indirect effecton DV

Y= Return on asset

B_o = Constant Term

B_1, $B_2$and B_3, = Betacoefficients

X1 = Non-performing Loan

X2 = PreProvision profit to Net loan and Advance

X3 = Loan to TotalAsset

ε= Error term

CHAPTER FOUR

RESULTPRESENTATION ANDANALYSIS

Thischapterpresentsthe dataanalysisresultsbefore conductingthe regressionanalysis;the researchertestedcorrelationanalysistosee thedegree ofassociationbetweendependent andindependentvariables.The validity ofthe dataset byusingCLRMassumptionssuchasmulticolinearity, normality andheteroscedasticityof the model employed.Additionally,Hausemantest wasutilizedinordertoselect betweenfixed andrandomeffectpanel modelsforthestudy.The researcher has conductedexplanatory and inferentialtodescribethe nature ofdataset finally;randomeffectregressionanalysiswasusedtodeterminethe effectofexplanatoryvariablesonReturnonAssetofprivatecommercialbanksinEthiopia.Allstatistical estimations werecarried outusingSTATA13 softwarepackage.

4.1. Descriptivestatistics

Table4.1providesasummaryofthedescriptivestatisticsofvariablesfor12Privatecommercial banksfora periodofsixyearsfrom year2016-2021witha total of72observations.The table includesthemean,standarddeviation,numberofobservations,minimumandmaximumvalues for thevariablesof themodel.

Table4.1: DescriptiveStatisticsof Variables

```
. sum ROA NPL PPL LTA GDP INF
```

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	72	.0310093	.0484757	.0000192	.4002806
NPL	72	.0451387	.0688952	.0080645	.4224751
PPL	72	.070187	.0528805	.0018474	.380333
LTA	72	.5310184	.0973809	.0353639	.7265453
GDP	72	2.252611	4.610198	.17	12.8
INF	72	16.29444	7.720503	7.4	29.9

Source:(STATAresult, 2022)

The tablereportssingle BankPerformance IndicatorReturnonasset andthree creditrisk indicator whicharethenon-performing loan ratio, Pereprovisionprofitandloanto totalasset. Additionally,grossdomesticProductandInflationasModeratingandMediatingvariable.

The resultshowsthat the averagevalueof return on asset is3.1% thismeans, on the average, form each one-birr investment intheasset therewas0.0484757 centreturn with theminimumvalue 0.0192%andmaximumvalue40.02%. Thatmeans,themostprofitablebankamongthe sampledbanksearned40.02 %percentofaftertax forasinglebirrinvestedin the assetsofthe firm.Ontheotherhand,theleastprofitablebankofthesampledbanksearned0.0192%percent of profitaftertax foreach birr invested in the assetsof thefirm.

Regardingthe variablesofthe modeltherearesome interestingstatisticsthat havetobe mentioned.Despite the smalldispersioninthe minimum andmaximumobservationofROA there isrelative highvariation inNon-performingloanrate.Onaverage,theNon- performing loan rate equals4.513 % with amaximumof 42 %, which wasconsiderably below national standard,evenifit'sminimum value was0.08%.The standarddeviationstatisticsfor NPLRis6.8%whichshowstheexistenceofrelativelyhighervariationofnon-performingratio betweenthe selectedbankscomparedtothe variationinROA.This meansdespite the inverse relationship that existsbetween non-performing loan and profitability, theNPLmeasure indicatesthat theEthiopian privatebankshave, on average, a lower defaultposition which was somewhat lower than thenationalstandard forthelastsix years.

Furthermore,anotherinterestingobservationisthattherewassomewhatabalancedvariationin the pre provisionprofit tonet loanratioindicatedbythe range between0.018474and3.8%. The mean value isequals7.01%.Thestandard deviation statisticsforpreprovision profitratio was5.28%whichindicatesthat the writtenamountofloanlossvariationbetweenthe selected banks wasmedium.

On theother hand,theoutputsofthedescriptivestatisticsindicatethat,theratio ofTotalLoan Totalassetwas53.10 %, onaverage, withaminimumof 3.53% andamaximumof 72% with thestandard Deviation 0. 097.

RegardingmoderatorandmediatorGDPindicatedthe meanvalue 225.26%witha minimum of17%and12.8%withstandarddeviation4.610d198.Inflationindicatedthemeanvalue162.9

% with a minimumof 74 % and 29.9% with standarddeviation 772.05%.

4.2. TestResults for the classicallinear regression modelAssumptions

Differenttestswereruntomakethedatareadyforanalysisandtogetreliableoutputfromthe research.Inthisstudyasmentionedinchapterthreedifferenttestswerecarriedouttoensure thatthedatafits thebasicassumptionsof classicallineregressionmodel. i.e., theCLS assumptions,are fulfilledwhenthe explanatoryvariablesare regressedagainst the dependent variables. Consequently,theresultsfor modelmisspecification testsarepresentedasfollows.

4.2.1. Correlation

The modelhas several explanatory variablestheregression analysis should originatewith first calculatingthecoefficient ofcorrelationbetweeneachpairofindependentvariablestobe includedinthemodel.If oneormorecorrelationcoefficientsarecloseto 1or-1,thevariables are highlycorrelatedandaseveremulticollinearityproblem mayexist anditisnecessaryto removeoneofthe correlated independentvariable.

Table4.2:Correlation

```
. corr ROA NPL PPL LTA GDP INF
(obs=72)
```

	ROA	NPL	PPL	LTA	GDP	INF
ROA	1.0000					
NPL	0.5903	1.0000				
PPL	0.2590	0.1439	1.0000			
LTA	-0.5988	-0.2620	-0.2767	1.0000		
GDP	0.2962	0.2515	-0.0653	0.1806	1.0000	
INF	0.2100	0.2646	-0.0481	0.2812	0.7940	1.0000

Source:(STATAresult, 2022)

As could be seen in table 4.2 INF, NPL and LTA was the most positively correlated variable with ROA. This correlation clearly shows that, as the amount of non-performing loan increases, ROA also moves to the same direction. On the other hand, ratio of Loan to total Asset and seems

to be negatively correlated with the ROA measure indicating that when the LTA increase, ROA moves to the opposite direction. PPL GDP and INF banks were low correlation with ROA. PPL, LTA, GDP and INF low correlation with NPL and GDP was high correlation with INF.

4.2.2.Test for Heteroscedasticity

Heteroscedasticityisasystematicpatternin the errors wherethevariancesof the errorsarenot constant (Gujarati,2004).Heteroscedasticitymakesestimatorsnotefficient becausethe estimated variancesand covarianceof the coefficientsarebiased and inconsistent and thus, the testsof hypothesesarenolonger valid.

Inthisstudyasshownintable 4.1,boththe F-statistic andChi-Square versionsofthetest statistic gave the same conclusionthat thereisnoevidence forthe presence of Heteroscedasticity, since thep-values werein excessof 0.05 which is0.4533.

Table4.3:heteroscedasticity

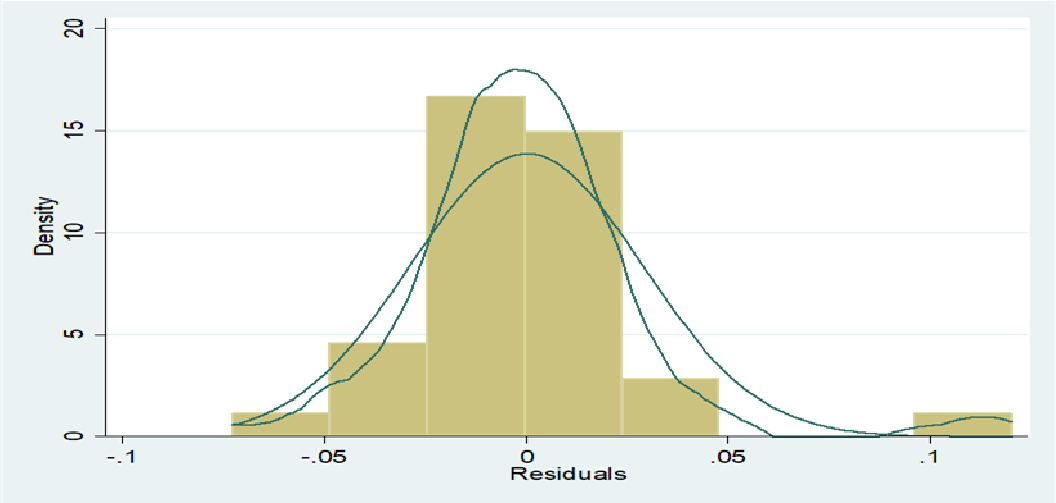
```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of ROA

         chi2(1)      =     0.56
         Prob > chi2  =   0.4533
```

4.2.3.Testofnormality

Oneof the assumptionsof linear regression analysisisthat theresidual isnormally distributed, atthemeanofzeroandstandarddeviationofone.Onewayoftestingnormalityisusingkdensitytoproduce a kernel densityplot withthe normal optionrequestingthat a normal densitybe overlaidonthe plot. Kdensitystandsforkerneldensityestimate.Itcanbe thought ofasa histogramwith narrowbinsand movingaverage.

Fig 2 Histogram



4.2.4.Test for Multicollinearity

Basedontable 4.3Multi-collinearityindicatesalinearrelationshipbetweenexplanatory variables which maycause theregressionmodelbiased (Gujarati, 2004). So asto examine the possibledegreeofmulticollinearityamongtheexplanatoryvariables,VarianceInflationFactor (VIF)techniquewasemployedtodetect themulticollinearityproblemandstrengthenthe analysis.Besidestocorrelationanalysismulticollinearityproblem isalsoidentifiedby VarianceInflationFactor(VIF).Theoretically,aVIF greaterthan10maysuggestthatthe concerned variable ismulticollinearandavariableislessthan the levelof significance(0.05), thenitindicatesthevariableismulticollinearwithothersinthemodel.Hence,theVIF'sresult in Tablebelowshowsnoneof theVIFsisexcessively high, suggeststhatthereisno perfector strong collinearity betweenthe explanatory variables.

Table4.4:VarianceInflationFactor

```
. vif
```

Variable	VIF	1/VIF
INF	2.99	0.334787
GDP	2.74	0.364944
LTA	1.33	0.752012
NPL	1.25	0.800969
PPL	1.09	0.913316
Mean VIF	1.88	

Source:(STATAresult, 2022)

4.2.5. HausmanTest

Thedatacollectedfromsecondarysourcesofdatawereestimatedandregressedusingthepanel model,whichincludedcrosssectionalandtimeseriesobservationsfortwelveEthiopianprivate commercial banksthat rangesbetweenthe periods2016to2021.Fixedeffectsandrandom effectsmodelsarecommonlyusedmodelsforthepaneldata.Inordertochoosefixedorrandom effect model a formal test socalledhausmanspecificationtest wasusedwhichwasbasedon thenullhypothesisinfavoroffixedeffectmodelestimator.Whenthetestismadeitisimportant toseethep-valuebecausethedecisionwasmadeonthebasisofthisvalue,accordinglyifthe pvalue ishigher than0.05 (i.e. it isinsignificant)hencerandom effectsispreferablewhereasif pvalue islowerthan0.05(i.e.it issignificant)fixedeffectispreferable (Gujarati,(2004)). Henceaccordingtohausmantestforthispaneldatamodelshownthat,themodelisbetteroff ifrandomeffectmodelisusedsincethep-valueforthemodelis0.1120,whichisgreaterthan 0.05(significant).

Table 4.5 Hauseman Test

```
. hausman fe re
```

	Coefficients (b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
NPL	.237146	.2438563	-.0067103	.01144
PPL	.0727458	.06428	.0084658	.0196621
LTA	-.3626406	-.3183517	-.0442889	.0193889
GDP	.0023457	.0024506	-.0001049	.0000351
INF	.0009991	.0007633	.0002358	.0001027

```
                b = consistent under Ho and Ha; obtained from xtreg
     B = inconsistent under Ha, efficient under Ho; obtained from xtreg

 Test:  Ho:  difference in coefficients not systematic

           chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                   =        8.93
         Prob>chi2 =      0.1120
         (V_b-V_B is not positive definite)
```

Source:(STATAresult, 2022)

4.2.6. RandomeffectRegression Analysis

Thisregressiontestindicatesthe explanatoryPowerofthe modelsR2is72.23 andfstaticis significant. F value of 0.000 indicates strong statistical significance, which enhanced the reliability and validity of the model. The result indicates that the changes in the independent variables explain 72.23% of the changes in the dependent variable. That is ratio of NPL, PPL and LTA collectively explain 72.23% of the changes in ROA. The remaining 27.77 % of changes was explained by other factors which are not included in the model. But according to real world practice it is high for three variables. Thus these variables collectively, are good explanatory variables of the performance of commercial banks in Ethiopia.

Table4.6: Random Effect Regression result

```
Random-effects GLS regression                   Number of obs      =        72
Group variable: BankID                          Number of groups   =        12

R-sq:  within  = 0.7223                         Obs per group: min =         6
       between = 0.4927                                        avg =       6.0
       overall = 0.6466                                        max =         6

                                                Wald chi2(5)       =    144.44
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0000
```

ROA	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
NPL	.2438563	.05374	4.54	0.000	.1385278	.3491849
PPL	.06428	.0665616	0.97	0.334	-.0661784	.1947384
LTA	-.3183517	.0423057	-7.53	0.000	-.4012694	-.235434
GDP	.0024506	.0011531	2.13	0.034	.0001906	.0047106
INF	.0007633	.0007292	1.05	0.295	-.0006658	.0021924
_cons	.1665831	.0234672	7.10	0.000	.1205881	.212578
sigma_u	.01368814					
sigma_e	.02621986					
rho	.21416923	(fraction of variance due to u_i)				

Source:(STATAresult, 2022)

Based on the results shown, NPL and LTA had statistically significant impact on performance. All independent variables that is ratio of Non-performing and ratio of Loan to Asset were significant at the p-value for all variables were 0.000. Whereas pre-provision profit to loans are insignificant. The hypothesisthereisnorelationship between NPL and LTA on ROAis rejected.

The result shows that the coefficient of non-performing loan rate against ROA were positive at 0.243. This indicates that there was a direct relationship between this independent variable and ROA. Thus the increase of this variable will lead to an increase in ROA.Positive were notintheexpectedsignofthe study,the Positive relationshipissupportedbyKidane (2020)andthisiscontradictedwithIndiaelandDickson(2013)negative relationship.

The coefficient PPL were positive at 0.06 this indicate that there was a direct relationship between PPL and ROA that means the increase of this variable will lead to an increase in ROA, keeping the other thing constant had a resultant change of 0.6 percent on the ROA in the same direction. Beside, many previous studies indicated a similarly strong significant positive relationship, for example Getahun, Anwen and Bari (2015) were some of them.

On the other hand, the coefficient was positive at -0.318 this indicate that there was an indirect relationship between TTL and ROA, thatmeansby one-unit increaseLTA, decreasesROAbyoneunit. This is contradicted with Abu and Kok (2020) and supported by Adegbie and Otitolaiye (2020)

4.2.7 . Test for Moderation Effect

Aspresentedinthe thirdchapterthe empiricalmodel usedinthe studyin order to identify the moderating effectofGDPOnEthiopian privatebanksperformance. Moderation implied an interaction effect, where introducing moderating variable changes the direction or magnitude of the relationship between two variables.

The belowtestsindicatethat the model ROAsatisfymoderatedlinearregressionassumptions andgoodtousetheestimating,theexplanatorypowerofthemodelsR2is83.08andtheFstatic is significant.

Table4.7:Moderated Regression result

```
. regress ROA NPL PPL LTA GDP NPLGDP PPLGDP LTAGDP
```

Source	SS	df	MS	Number of obs =	72
				F(7, 64) =	44.90
Model	.138618615	7	.019802659	Prob > F =	0.0000
Residual	.02822402	64	.000441	R-squared =	0.8308
				Adj R-squared =	0.8123
Total	.166842634	71	.002349896	Root MSE =	.021

ROA	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
NPL	.0320006	.0524164	0.61	0.544	-.0727131	.1367144
PPL	.1515976	.0520029	2.92	0.005	.0477099	.2554853
LTA	-.0049508	.0436494	-0.11	0.910	-.0921504	.0822489
GDP	.0287322	.0052043	5.52	0.000	.0183353	.039129
NPLGDP	.015575	.0083908	1.86	0.068	-.0011876	.0323377
PPLGDP	-.061964	.0215805	-2.87	0.006	-.105076	-.018852
LTAGDP	-.0406747	.0068531	-5.94	0.000	-.0543654	-.026984
_cons	.0147507	.0237303	0.62	0.536	-.0326561	.0621575

Source:(STATAresult, 2022)

The result showedthat NPL (Nonperformingloan)haspositive relationshipwithbeta coefficient 0.032andinsignificant relationshiponROA,the interactionvariable NPL*GDP betacoefficient0.0155makebetacoefficientlesspositive andp-valueinsignificantwith increasingreturnonasset.Andp-valuegreaterthan0.05acceptthe null hypothesisGross Domestic Product donot have significantmoderatingimpact betweennon-performingLoan and return on asset.

The result showedthatPPL (Pre-provisionProfit)haspositive relationshipwithbeta coefficient0.1515andsignificantrelationshiponROA,theinteractionvariablePPL*GDPbeta coefficient -061 makebetacoefficientnegativewithincreasing return on assetand p-value less than0.05.sowe reject the null hypothesisGrossDomestic Product donot have significant moderatingimpactbetween Pre-Provision profit andreturn on asset.

The resultshowedthat TLTA(Total LoantoTotalasset)hasnegativerelationshipwithbeta coefficient-0.0049andsignificantrelationshiponROA,the interactionvariableTLTA*GDP beta coefficient-0.040stillmake beta coefficient negative but lessnegative andsignificant moderatingimpactwithincreasingreturnonasset.sowerejectthenullhypothesis GrossDomestic

Product donot havesignificantmoderatingimpact betweenTotal loantototalasset and return on asset.

4.2.8. Test for Mediation

The below testsindicate that the model ROAsatisfymediatedlinearregressionassumptions andgoodtouse the estimating,relationshipbetweenthe explanatoryvariableand dependentvariable.A mediator variable is a variable that explains the relationship between a predictor variable and a dependent variable.The mediated effect divided by its standard error yields a z-score of the mediated effect. This value compared against a standard normal distribution to test for significance. If the z-score is greater than 1.96 we conclude that effect is larger than would be expected by chance and call the effect significant.

Table4.8:Mediation result

	OIM Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Structural						
ROA <-						
INF	.0017366	.000507	3.43	0.001	.0007428	.0027303
NPL	.253306	.0566376	4.47	0.000	.1422983	.3643137
PPL	.0589848	.0690227	0.85	0.393	-.0762971	.1942667
LTA	-.2809993	.0413191	-6.80	0.000	-.3619832	-.2000154
_cons	.1363548	.0229931	5.93	0.000	.0912892	.1814204
INF <-						
NPL	40.66042	12.26156	3.32	0.001	16.62821	64.69264
PPL	.6050009	16.04322	0.04	0.970	-30.83913	32.04913
LTA	29.92141	8.93327	3.35	0.001	12.41252	47.4303
_cons	-1.472197	5.341613	-0.28	0.783	-11.94157	8.997173
var(e.ROA)	.0008683	.0001447			.0006263	.0012037
var(e.INF)	46.90975	7.818292			33.83734	65.03244

Source:(STATAresult, 2022)

The result showedthatinflationhaspositive relationshipwithbetacoefficient0.0017and significant relationshiponROAatp-value lessthan0.005.NPLandPPLhaspositiverelationship with beta coefficient 0.253306 and 0.0589848 respectively and NPL has significant relationship and PPL is not significant. TLTA has negative relationship with beta coefficient -

0.2809993 and significant relationship.

Table 4.9: Sobel test NPL

Significance testing of indirect effect (unstandardised)

Estimates	Delta	Sobel	Monte Carlo
Indirect effect	0.071	0.071	0.069
Std. Err.	0.030	0.030	0.031
z-value	2.382	2.382	2.235
p-value	0.017	0.017	0.025
Conf. Interval	0.013 , 0.129	0.013 , 0.129	0.019 , 0.137

Source:(STATAresult, 2022)

According to baronand Kenny approachto testing mediation

Step 1- INF← NPL(X → M) with B= 40.660 and P=0.001

Step 2- ROA← INF(X → M) with B=0.002 and P=0.001

Step 3- ROA ← NPL(X → Y)with B=0.253 and P=0.000

AsStep1, Step 2 and Step 3 as well as the sobel's test above are significant the mediation is partial. The ratio of indirect to total effect (Indirect effect/ Total effect) 0.71/0.324 = 0.218 meaningthatabout22%ofROAismediatedbyINF andtheratioofindirecteffectto directeffect(Indirecteffect/directeffect)=0.71/0.253=0.279thatmeans,themediatedeffect isabout 0.3timesaslargeasthe direct effect ofNPL onROAsothat,the null hypothesis inflation hasno mediation effectbetween NPL andROAhasrejected.

Table4.10 Sobeltest For PPL

Significance testing of indirect effect (unstandardised)

Estimates	Delta	Sobel	Monte Carlo
Indirect effect	0.001	0.001	0.000
Std. Err.	0.028	0.028	0.029
z-value	0.038	0.038	0.006
p-value	0.970	0.970	0.995
Conf. Interval	-0.054 , 0.056	-0.054 , 0.056	-0.052 , 0.062

Source:(STATAresult, 2022)

According to baronandKenny approachto testing mediation

Step 1- INF → PPL(X → M) with B= 0.605 and P=0.970

Step 2- ROA → INF(M → Y) with B= 0.002 and P=0.001

Step 3- ROA ← PPL(X → Y)with B=0.589 and P=0.393

AsStep1,andStep3aswellarenotsignificantsothat,thenullhypothesisinflationhasno mediation effectbetween PPL and ROAhasaccepted.

Table4.11:Sobeltest For LTA

Significance testing of indirect effect (unstandardised)

Estimates	Delta	Sobel	Monte Carlo
Indirect effect	0.052	0.052	0.050
Std. Err.	0.022	0.022	0.022
z-value	2.395	2.395	2.247
p-value	0.017	0.017	0.025
Conf. Interval	0.009 , 0.094	0.009 , 0.094	0.014 , 0.101

Source:(STATAresult, 2022)

According to baron and Kenny approach to testing mediation

Step 1- INF ◂LTA (X ▸ M) with B= 29.21 and P=0.001

Step 2- ROA ◂INF (M▸ Y) with B= 0.002 and P=0.001

Step 3- ROA ◂ LTA (X ▸ Y) with B=-0.281 and P=0.000

As Step 1, Step 2 and Step 3 as well as the sobel's test above are significant the mediation is partial. The ratio of indirect to total effect (Indirect effect/ Total effect) 0.052/0.229 =0.227 meaning that about 23% of ROA is mediated by INF and the ratio of indirect effect to direct effect (Indirect effect /direct effect) =0.052/0.281=0.185 that means, the mediated effect is about 0.2 times as large as the direct effect of NPL on ROA .so that, the null hypothesis inflation has no mediation effect between PPL and ROA has rejected.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

The precedingchapterpresentedthe resultsanddiscussion,while thischapterdealswiththe conclusionsandrecommendationsbased onthefindingsof thestudy.Accordingly, thischapter isorganizedintotwosubsections.The first Sectionpresentsthe conclusionsandthe next presentstherecommendations.

5.1 Conclusion

Thisstudyaimedtoidentifythe relationshipbetweencredit riskandperformance ofEthiopian private banks,the moderatingeffect ofGDPandthe mediatingeffect ofInflation.Doingso, previous studieson creditrisk havebeen reviewed and it is summarized that theperformanceof bankisusuallyaffectedbynon-performingandtotal loan.Bothare originatedfrom bank accounts(balancesheetsand/orprofitand lossaccounts)andthereforecouldbetermedmicroor bank-specificfactorsfor performanceincluded inassetquality.Empiricalresultsfromprevious studiesconclude that creditrisk factorsexplain alargeproportion of banksperformance.

Toachieve the intendedobjectives,the studyhasusedquantitative method.The data were collectedthroughsurveyofdataminingfrom asample oftwelvebanksoverthetime period from 2016-2021.The collecteddata were analyzedbyemployingmultiple linerregressionvia general lestsquare measuresusing statisticalpackageSTATAversion 13.

Inordertoconducttheempiricalanalysis,onedependentvariableand threeindependent variableswere selectedfrom prominentpreviousresearchworksnamelynon-performingloan rate,pre-provisionprofit andloantototal asset ratioand.the resultsofordinaryleast square estimationmodelshowedtheexistenceoftherelationshipbetweenperformanceandindependent variables.

The empirical findingsoncredit riskandperformance ofEthiopianprivatecommercial banks for thesamplesuggest thefollowing conclusions.

First,Non-performingloanhadstatisticallysignificantpositiverelationshipwithouttheaddition

ofmediatingandmoderatingvariable andit hasdirectlyrelationshipwithROA,whichwasnot inline withpriorexpectation.Anegative signsuggeststhat bankswithhighdefault rate affect profitabilitynegativelyandGDPhasnot a significant moderatingimpact betweenNPL and ROA.

Regarding totheconsequenceofPre-provision profitofbanksin thisstudy, theresultshowsthat astherewaspositiveandstatisticallyinsignificantrelationshipwithperformancethereisno relationship,GDPand INFhasno moderating andmediating effectbetween PPL and ROA regarding to the consequence of loan to total asset of banks in this study, the result shows that as there was negative and statistically significant relationship with performance. Negative relationship is inversely related with performance. GDP and INF has moderating and mediating effect between TLTA and ROA.

5.2. Recommendation

Inlightofthemajorfindingobtainedfromtheresults,thefollowingrecommendationsaremade.

Bank'sNPL,LTAare significant keycredit riskdriversofprofitabilityofPrivate Banksin Ethiopia.Therefore,banksshouldpaygreaterattentiontothese significant variablesin determining their creditriskmanagementpolicy.

The studyalsoshowsthat,performance ofbanksinEthiopia mainlynegativelyinfluencedby TLTAthereforeitisrecommendable forbanksincreasingloanisnotindicateincrement of performance ofprivatebanks.Otherincome generatingwaysmust be improvedtoincrease performance.

According to the finding of the study management group, the board of the banks, policy maker of banks when they set policy and guidelines must give attentionon macroeconomic factor such as INF and GDPto improve the performance of the banks.

5.3. Further Research Consideration

Onthe otherhand,the researchislimitedondetectingthe relationshipbetweencredit riskand profitabilityofEthiopianprivatecommercialbanks,moderatingandmediatingeffectThus,other financialriskandmediatingandmoderatingvariablesarenotdiscussed.Basedonthisstudyit ishelpfultootherresearchertoinvestigatingotherriskssuchasliquidity,Interestrateandothers asmediatingvariable monetarypolicyandmoderatingvariable management

efficiency,Additionally,othervariablesthat controlperformanceofbanksare needtoinvestigate separately.

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APPENDICES

DATA

BankID	Year	ROA	NPL	PPL	LTA	GDP	INF	_est_fe	_est_re
1	2016	0.0222712	0.01215	0.063242	0.476086	0.182	9.7	1	1
1	2017	0.0211148	0.0143	0.056501	0.549945	0.17	7.4	1	1
1	2018	0.0100176	0.01317	0.04972	0.55595	0.214	14.6	1	1
1	2019	0.0200198	0.03702	0.048152	0.596045	0.233	12.6	1	1
1	2020	0.020015	0.04613	0.033087	0.646821	0.25	19.9	1	1
1	2021	0.012922	0.03358	0.036133	0.726545	12.8	29.9	1	1
2	2016	0.0243042	0.02041	0.06519	0.503588	0.182	9.7	1	1
2	2017	0.0237737	0.01626	0.063773	0.559471	0.17	7.4	1	1
2	2018	0.0270034	0.0101	0.063434	0.56179	0.214	14.6	1	1
2	2019	0.0325962	0.01112	0.07337	0.627787	0.233	12.6	1	1
2	2020	0.0290202	0.01729	0.074399	0.630324	0.25	19.9	1	1
2	2021	0.026386	0.01937	0.096763	0.668505	10.8	29.9	1	1
3	2016	0.0243035	0.01854	0.077839	0.420731	0.182	9.7	1	1
3	2017	0.0210027	0.01317	0.062123	0.496955	0.17	7.4	1	1
3	2018	0.0100205	0.03983	0.054138	0.507591	0.214	14.6	1	1
3	2019	0.0180861	0.04668	0.039989	0.575722	0.233	12.6	1	1
3	2020	0.0225154	0.42248	0.044212	0.616272	0.25	19.9	1	1
3	2021	0.0182292	0.02653	0.043399	0.651026	10.8	29.9	1	1
4	2016	0.0200273	0.01709	0.003234	0.493881	0.182	9.7	1	1
4	2017	0.0004374	0.00806	0.001847	0.545324	0.17	29.4	1	1
4	2018	0.0004205	0.0202	0.007523	0.530482	0.214	14.6	1	1
4	2019	0.0210518	0.02891	0.049235	0.604755	0.233	12.6	1	1
4	2020	0.0207807	0.01895	0.044105	0.634547	0.25	19.9	1	1
4	2021	1.915E-05	0.1326	0.044641	0.657123	12.8	29.9	1	1
5	2016	0.0232009	0.04167	0.069969	0.457567	0.182	9.7	1	1
5	2017	0.0248255	0.04058	0.075828	0.482967	0.17	29.4	1	1
5	2018	0.0289715	0.04167	0.075155	0.539779	0.214	14.6	1	1
5	2019	0.0208587	0.05152	0.051099	0.540674	0.233	12.6	1	1
5	2020	0.021801	0.03093	0.053002	0.60926	0.25	19.9	1	1
5	2021	0.0031956	0.05135	0.037737	0.656582	12.8	29.9	1	1
6	2016	0.0272164	0.02775	0.089643	0.43972	0.182	9.7	1	1
6	2017	0.0272655	0.02881	0.104534	0.408892	0.17	7.4	1	1
6	2018	0.0217005	0.04384	0.073158	0.404261	0.214	14.6	1	1
6	2019	0.0329341	0.02881	0.083617	0.518042	0.233	12.6	1	1
6	2020	0.039962	0.03306	0.121853	0.411422	0.25	19.9	1	1
6	2021	0.0583504	0.03581	0.146365	0.400724	12.8	29.9	1	1
7	2016	0.0361022	0.02775	0.102116	0.515199	0.182	9.7	1	1

7	2017	0.0301093	0.02881	0.085072	0.501316	0.17	7.4	1	1
7	2018	0.0233044	0.02881	0.061711	0.50235	0.214	14.6	1	1
7	2019	0.0238844	0.04275	0.063925	0.523319	0.233	12.6	1	1
7	2020	0.0259042	0.02669	0.057964	0.586048	0.25	19.9	1	1
7	2021	0.0072406	0.01019	0.0422	0.633795	12.8	29.9	1	1
8	2016	0.0221653	0.03008	0.069419	0.459096	0.182	9.7	1	1
8	2017	0.0178754	0.03338	0.064764	0.433953	0.17	7.4	1	1
8	2018	0.03058	0.03821	0.09594	0.418905	0.214	14.6	1	1
8	2019	0.0234698	0.03413	0.075325	0.482195	0.233	12.6	1	1
8	2020	0.025446	0.04051	0.062058	0.507297	0.25	19.9	1	1
8	2021	0.0209155	0.02945	0.040331	0.52671	12.8	29.9	1	1
9	2016	0.0242005	0.06036	0.067377	0.696551	0.182	9.7	1	1
9	2017	0.0230128	0.01327	0.064319	0.502594	0.17	7.4	1	1
9	2018	0.0245088	0.01667	0.066885	0.511225	0.214	14.6	1	1
9	2019	0.0219114	0.01895	0.04676	0.553553	0.233	12.6	1	1
9	2020	0.018679	0.02648	0.043089	0.575504	0.25	19.9	1	1
9	2021	0.1570776	0.03003	0.036736	0.613094	12.8	29.9	1	1
10	2016	0.0343856	0.01833	0.011178	0.421341	0.182	9.7	1	1
10	2017	0.0277488	0.02041	0.079951	0.454023	0.17	7.4	1	1
10	2018	0.0267803	0.01937	0.076409	0.483519	0.214	14.6	1	1
10	2019	0.0288783	0.04822	0.081419	0.48025	0.233	12.6	1	1
10	2020	0.0328355	0.02987	0.380333	0.531542	0.25	19.9	1	1
10	2021	0.4002806	0.40845	0.123487	0.035364	12.8	29.9	1	1
11	2016	0.03219	0.02881	0.090694	0.526859	0.182	9.7	1	1
11	2017	0.0211269	0.01523	0.067384	0.495664	0.17	7.4	1	1
11	2018	0.0272889	0.03616	0.071931	0.514961	0.214	14.6	1	1
11	2019	0.0977421	0.15999	0.30013	0.48025	0.233	12.6	1	1
11	2020	0.0202349	0.04722	0.053804	0.600391	0.25	19.9	1	1
11	2021	0.0103881	0.16867	0.04751	0.677829	12.8	29.9	1	1
12	2016	0.0225314	0.03423	0.065397	0.474531	0.182	9.7	1	1
12	2017	0.0245695	0.04395	0.067546	0.509584	0.17	7.4	1	1
12	2018	0.0192909	0.03918	0.052217	0.505777	0.214	14.6	1	1
12	2019	0.0213761	0.02555	0.051697	0.570935	0.233	12.6	1	1
12	2020	0.0245769	0.03306	0.052274	0.602195	0.25	19.9	1	1
12	2021	0.0274345	0.03705	0.056096	0.618449	12.8	29.9	1	1

MEDETION RESULT

	OIM Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Structural						
ROA <-						
INF	.0017366	.000507	3.43	0.001	.0007428	.0027303
NPL	.253306	.0566376	4.47	0.000	.1422983	.3643137
PPL	.0589848	.0690227	0.85	0.393	-.0762971	.1942667
LTA	-.2809993	.0413191	-6.80	0.000	-.3619832	-.2000154
_cons	.1363548	.0229931	5.93	0.000	.0912892	.1814204
INF <-						
NPL	40.66042	12.26156	3.32	0.001	16.62821	64.69264
PPL	.6050009	16.04322	0.04	0.970	-30.83913	32.04913
LTA	29.92141	8.93327	3.35	0.001	12.41252	47.4303
_cons	-1.472197	5.341613	-0.28	0.783	-11.94157	8.997173
var(e.ROA)	.0008683	.0001447			.0006263	.0012037
var(e.INF)	46.90975	7.818292			33.83734	65.03244

Significance testing of indirect effect (unstandardised)

Estimates	Delta	Sobel	Monte Carlo
Indirect effect	0.071	0.071	0.069
Std. Err.	0.030	0.030	0.031
z-value	2.382	2.382	2.235
p-value	0.017	0.017	0.025
Conf. Interval	0.013 , 0.129	0.013 , 0.129	0.019 , 0.137

Baron and Kenny approach to testing mediation
STEP 1 - INF:NPL (X -> M) with B=40.660 and p=0.001
STEP 2 - ROA:INF (M -> Y) with B=0.002 and p=0.001
STEP 3 - ROA:NPL (X -> Y) with B=0.253 and p=0.000
As STEP 1, STEP 2 and STEP 3 as well as the Sobel's test above are significant the mediation is partial!

RIT = (Indirect effect / Total effect)
(0.071 / 0.324) = 0.218
Meaning that about 22 % of the effect of NPL on ROA is mediated by INF!

RID = (Indirect effect / Direct effect)
(0.071 / 0.253) = 0.279
That is, the mediated effect is about 0.3 times as large as the direct effect of NPL on ROA!

Note: to read more about this package help medsem

Significance testing of indirect effect (unstandardised)

Estimates	Delta	Sobel	Monte Carlo
Indirect effect	0.001	0.001	0.000
Std. Err.	0.028	0.028	0.029
z-value	0.038	0.038	0.006
p-value	0.970	0.970	0.995
Conf. Interval	-0.054 , 0.056	-0.054 , 0.056	-0.052 , 0.062

Baron and Kenny approach to testing mediation
STEP 1 - INF:PPL (X -> M) with B=0.605 and p=0.970
STEP 2 - ROA:INF (M -> Y) with B=0.002 and p=0.001
As either STEP 1 or STEP 2 (or both) are not significant,
there is no mediation!

RIT = (Indirect effect / Total effect)
(0.001 / 0.060) = 0.018
Meaning that about 2 % of the effect of PPL
on ROA is mediated by INF!

RID = (Indirect effect / Direct effect)
(0.001 / 0.059) = 0.018
That is, the mediated effect is about 0.0 times as
large as the direct effect of PPL on ROA!

Note: to read more about this package help medsem

Significance testing of indirect effect (unstandardised)

Estimates	Delta	Sobel	Monte Carlo
Indirect effect	0.052	0.052	0.050
Std. Err.	0.022	0.022	0.022
z-value	2.395	2.395	2.247
p-value	0.017	0.017	0.025
Conf. Interval	0.009 , 0.094	0.009 , 0.094	0.014 , 0.101

```
Baron and Kenny approach to testing mediation
STEP 1 - INF:LTA (X -> M) with B=29.921 and p=0.001
STEP 2 - ROA:INF (M -> Y) with B=0.002 and p=0.001
STEP 3 - ROA:LTA (X -> Y) with B=-0.281 and p=0.000
         As STEP 1, STEP 2 and STEP 3 as well as the Sobel's test above
         are significant the mediation is partial!

RIT  =   (Indirect effect / Total effect)
         (0.052 / 0.229) = 0.227
         Meaning that about 23 % of the effect of LTA
         on ROA is mediated by INF!

RID  =   (Indirect effect / Direct effect)
         (0.052 / 0.281) = 0.185
         That is, the mediated effect is about 0.2 times as
         large as the direct effect of LTA on ROA!
```

Note: to read more about this package help medsem

Moderation result

```
. regress ROA NPL PPL LTA GDP NPLGDP PPLGDP LTAGDP
```

Source	SS	df	MS		
Model	.138618615	7	.019802659	Number of obs	= 72
Residual	.02822402	64	.000441	F(7, 64)	= 44.90
				Prob > F	= 0.0000
				R-squared	= 0.8308
				Adj R-squared	= 0.8123
Total	.166842634	71	.002349896	Root MSE	= .021

ROA	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
NPL	.0320006	.0524164	0.61	0.544	-.0727131	.1367144
PPL	.1515976	.0520029	2.92	0.005	.0477099	.2554853
LTA	-.0049508	.0436494	-0.11	0.910	-.0921504	.0822489
GDP	.0287322	.0052043	5.52	0.000	.0183353	.039129
NPLGDP	.015575	.0083908	1.86	0.068	-.0011876	.0323377
PPLGDP	-.061964	.0215805	-2.87	0.006	-.105076	-.018852
LTAGDP	-.0406747	.0068531	-5.94	0.000	-.0543654	-.026984
_cons	.0147507	.0237303	0.62	0.536	-.0326561	.0621575

Panel regression results

```
. xtreg ROA NPL PPL LTA GDP INF, re

Random-effects GLS regression                   Number of obs      =        72
Group variable: BankID                          Number of groups   =        12

R-sq:  within  = 0.7223                         Obs per group: min =         6
       between = 0.4927                                        avg =       6.0
       overall = 0.6466                                        max =         6

                                                Wald chi2(5)       =    144.44
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0000
```

ROA	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
NPL	.2438563	.05374	4.54	0.000	.1385278	.3491849
PPL	.06428	.0665616	0.97	0.334	-.0661784	.1947384
LTA	-.3183517	.0423057	-7.53	0.000	-.4012694	-.235434
GDP	.0024506	.0011531	2.13	0.034	.0001906	.0047106
INF	.0007633	.0007292	1.05	0.295	-.0006658	.0021924
_cons	.1665831	.0234672	7.10	0.000	.1205881	.212578
sigma_u	.01368814					
sigma_e	.02621986					
rho	.21416923	(fraction of variance due to u_i)				

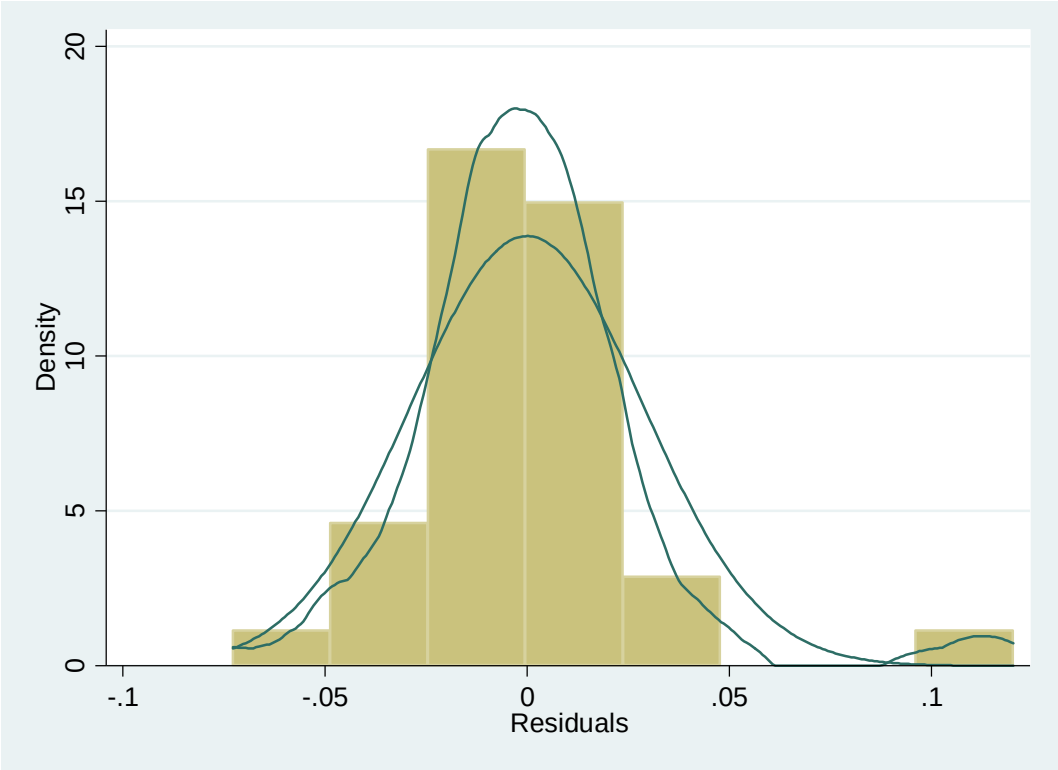
```
. estimate store re
```

CORRELATION

```
. corr ROA NPL PPL LTA GDP INF
(obs=72)
```

	ROA	NPL	PPL	LTA	GDP	INF
ROA	1.0000					
NPL	0.5903	1.0000				
PPL	0.2590	0.1439	1.0000			
LTA	-0.5988	-0.2620	-0.2767	1.0000		
GDP	0.2962	0.2515	-0.0653	0.1806	1.0000	
INF	0.2100	0.2646	-0.0481	0.2812	0.7940	1.0000

NORMALITY



VARIANCE INFLATION FACTOR

```
. vif
```

Variable	VIF	1/VIF
INF	2.99	0.334787
GDP	2.74	0.364944
LTA	1.33	0.752012
NPL	1.25	0.800969
PPL	1.09	0.913316
Mean VIF	1.88	

HETEROSKEDASTICITY

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of ROA

         chi2(1)      =     0.56
         Prob > chi2  =   0.4533
```

HAUSMAN TEST

```
. hausman fe re
```

	Coefficients (b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
NPL	.237146	.2438563	-.0067103	.01144
PPL	.0727458	.06428	.0084658	.0196621
LTA	-.3626406	-.3183517	-.0442889	.0193889
GDP	.0023457	.0024506	-.0001049	.0000351
INF	.0009991	.0007633	.0002358	.0001027

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 8.93
Prob>chi2 = 0.1120
(V_b-V_B is not positive definite)