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Determinants of Non- Performing Loans in Ethiopia Private Commercial Banks: With Emphasis on Domestic Trade and Service and Export Sectors

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A Thesis submitted in, Partial fulfillment of the requirements of the award of the Degree of Master of Science in Accounting & Finance

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Statement of Declaration

I am, Frehiwot Hailu, have carried out independently a research work Determinants of Non-Performing Loans in Ethiopia Private Commercial Banks: With Emphasis on Domestic Trade and Service and Export Sectors in partial fulfillment of the requirement for the Degree of Master of Science in Accounting & Finance with the guidance and support of the research advisor.

This study is my own work that has not been submitted for any degree or diploma program in this or any other institution.

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Abstract

Bank profitability and sustainability can only be provided through a proper flow of interest income generated through the lending function of banks. However, since banks are no longer able to generate enough interest income through classical safe credit and are required to maintain reserves in the form of provisions to cover for eventual loan losses, bank capital decreases together with their health, which is becoming weak, increasing the trend of NPLs. The issue of non-performing loans is one of the factors that reflect the soundness of the banking sector. This study examine the determinants of NPLs in Ethiopian private commercial bank in the period of 2016 to 2018. Specifically the study sought to establish the effect of macroeconomic variables (exchange rate and real interest rate), bank specific (capital adequacy ratio, loan to deposit ratio, loan growth rate of DTS sector, loan growth rate of export sector and credit monitoring and follow-up) and business characteristic (nature of business). The study used primary and secondary data collected from all private commercial banks in Ethiopia. The study use mixed methods research approach by combining documentary analysis and in-depth interviews. Explanatory research is conducted in order to identify the relationships between dependent and independent variables and panel data is analyzed using econometric regression analysis to establish the significance of the relationship. The findings of the study show that exchange rate and loan growth rate of export sector has a positive and significant relationship between NPLs of EPCBs. Furthermore, capital adequacy ratio, loan growth rate of DTS sector and nature of the business has negative significant relationship with banks' NPLs. On the other hand, variables like real interest rate and loan to deposit ratio has negative and statistically insignificant relationship between NPLs of Ethiopian private commercial Banks. Therefore, the study suggest that to reduce the occurrence of loan default the Bank should strengthen its applicant screening criteria and due diligence assessment to select potential risk taking applicants and review appropriate pre and post credit risk assessments. Besides, all private commercial banks need to make sure that borrowed funds are being used for the intended purpose through enhanced credit monitoring.

Keywords: Non-Performing Loans, Bank specific factors, Macroeconomic factors, Business characteristics.

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List of Acronyms/Abbreviations

AB - Abay bank

AdIB - Addis international bank

AIB - Awash international bank

BB - Buna international bank

BOA - Bank of Abyssinia

BIB - Berhan international bank

CAR - Capital Adequacy Ratio

CLRM - Classical Linear Regression Model

COOP - Cooperative bank of Oromia

DB - Dashen bank

DGB - Debub Global bank

DTS - Domestic Trade and Service

DW - Durbin-Watson

EB - Enat bank

ER - Exchange Rate

IMF - International Monetary Fund

JB - Jarque-Bera

LIB - Lion international bank

LGRDTS - Loan Growth Rate Domestic Trade and Service Sector

LGREX - Loan Growth Rate Export Sector

LTD - Loan to Deposit Ratio

NBE - National Bank of Ethiopia

NIB - Nib international bank

NPL - Non-Performance Loans

OIB - Oromia international bank

OLS - Ordinary Least Square

RIR - Real Interest Rate

UB - United bank

WB - Wegagen bank

ZB - Zemen bank

CHAPTER ONE

INTRODUCTION

1.1. Background of the Study

Banking sector is one of the major financial intermediaries that play a vital role in saving and investment process. The main function of banks is to collect funds through deposit from units in surplus and lend fund to units in deficit. In addition, one of the main features of banks is that they reduce transaction costs by exploiting scale and scope economies and often they owe their extra profits to superior information. (Casu et al, 2006).

Bank loans are contracts between creditors and debtors, that is, between banks who lend money and other legal persons who borrow it, usually with the promise of repayment of the principal plus interest in the future (Molyneux, 2017).

Loans generating process is considered the primary activity by commercial banks in terms of maximizing profits. The effectiveness of bank credit is extremely important since the revenue generated by loans is the main source of profit for commercial banks compared to other sources. The 2007-2008 international financial crises can be seen as a failure of commercial banks mainly due to the institutional and individual non-performing loans, such failures can emerge from other socio-economic and political causes such as, transparency, corporate governance, and accountability issues are major concerns regarding the efficient functioning of the financial institutions. (Maltah et al, 2014)

The deterioration in the quality of the loan portfolio of banks was the main cause of problems in the banking system and in financial crises in developed economies. Indeed, the increase in loan defaults, banking mortgage in the United States, underlines the links between macroeconomic and financial shocks and the relationship between the friction in the credit market and the risk of financial instability. The theme of non-performing loans has attracted more attention in recent decades. Banks still have a high level of impaired loans before the bankruptcy. Therefore, the

large amount of bad loans in the banking system generally results in a bank failure. The NPL are among the main causes of the problems of economic stagnation. Each impaired loan in the financial sector increases the possibility to lead company to difficulty and unprofitability. (Messai and Jouini, 2013)

Casu et al (2006) also mentioned that the main difficulty lies in the fact that the commercial banks are exposed to the failure of borrowers to repay their obligations on time or upon the agreed terms. Analyzing the reasons behind banks failure, reveals that problem of loans in banks has been very significant in all banking crises in recent years. Banking in modern economies is all about risk management because the economic implications of a bank failure could be catastrophic on the entire financial system. Credit risk is the potential that a credit borrower/counter party fails to meet the obligations on agreed terms. There is always scope for the borrower to default from his commitments for one or the other reason resulting in crystallization of credit risk by the financial institution. These losses could take the form of outright default or alternatively, losses from changes in portfolio value arising from actual or perceived deterioration in credit quality. Credit Risk management is necessary to minimize the risk and maximize financial institution's risk adjusted rate of return by assuming and maintaining credit exposure within the acceptable parameters (Pandey, 2004).This is commonly measured by non- performing loan ratios such as non-performing loans to total loans. However, according to Rehman and Zhang (2016) non-performing loan can be measured through logarithm of impaired loans.

The failure of bank's clients to repay their obligations caused the emergence of NPLs. Therefore commercial banks, development bank and all other lending institutions in Ethiopia try to avoid this serious non-performing loans problem by selecting the suitable or the appropriate way to deal with those loans, when they do appear.

1.2. Overview of Merchandises Export in Ethiopia

As per NBE annual report (2018) Ethiopia mainly export Coffee, Oilseeds, Leather and Leather Products, Pulses, Meat & Meat Products, Fruits & Vegetables, Live Animal, Chat, Gold, Flower, Electricity and Others. The value of export items at 2018 was 275.6 million of USD.

Total merchandise export earnings declined by 2.3 percent over last year due to lower earnings from export of coffee (5.0 percent), pulses (3.7 percent), gold (52.0 percent), live-animals (9.6 percent), chat (3.6 percent) and other export items (2.9 percent). Hence, the ratio of merchandise export to GDP declined to 3.1 percent from 3.6 percent a year ago.

The major export destinations for Ethiopian goods were Asia, Europe and Africa. Asia accounted for 39.8 percent of the total exports. China, mainland was the largest market for Ethiopia's export with a 21.3 percent share in total export earnings from Asia, followed by Saudi Arabia (16.8 percent), United Arab Emirates (9.8 percent), Israel (8.6 percent), Japan (8.0 percent), India (5.5 percent), South Korea (4.1 percent), Yemen (4.1 percent), Indonesia (3.4 percent) and Hong Kong (1.5 percent). All these countries accounted for 83.1 percent of Ethiopia's total export to Asia.

On the other hand, about 20.9 percent of Ethiopia's export earnings originated from markets in Africa, mainly Somalia (38.5 percent), Djibouti (21.1 percent), Sudan (17.4 percent), Kenya (7.0 percent), Nigeria (2.4 percent), Egypt (1.7 percent) and South Africa (1.4 percent) which altogether accounted for 89.6 percent of the total exports to Africa.

America accounted for 9.9 percent of Ethiopia's total export earning, of which 90.1 percent was from exports to the United States and 6.2 percent to Canada. (NBE 2017/18 Annual Report)

1.3. Overview of Domestic Investment in Ethiopia

During 2017/18 fiscal year, 1,550 projects become operational under Ethiopian Investment Commission and regional investment offices; which were 231.2 percent higher than a year earlier. All of which were private and at operational stage. These projects command investment capital Birr 25.9 billion; showing 190.8 percent annual growth. Of the total investment projects, 1,496 (96.5 percent) were domestic with a capital of Birr 20.7 billion (80 percent); and 54 projects were foreign having Birr 5.2 billion capital. (NBE 2017/18 Annual Report)

The average capital per project for domestic investors was Birr 13.8 million and that of foreign investors Birr 95.9 million, signifying that foreign investment projects were more of capital intensive than domestic ones.

It is estimated that these investment projects have created job opportunities for about 332,003 permanent and 36,214 casual workers; showing 1,502.9 and 270.5 percent expansion respectively compared with the previous year. (NBE 2017/18 Annual Report)

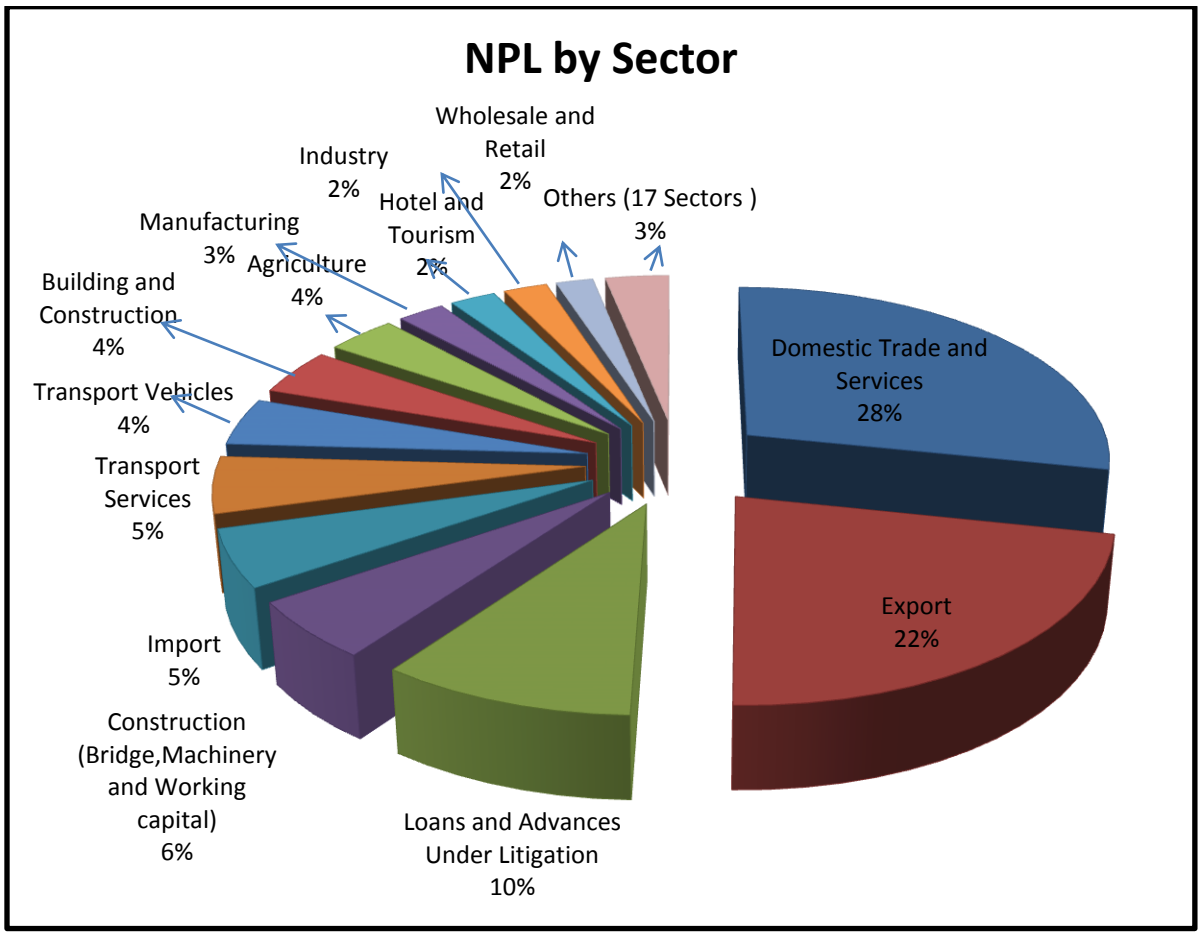
1.4. Statement of the problem

Non-performing loans are important because they reflect the credit quality of the loan portfolio of banks, and in aggregate terms, reflect the credit quality of the loan portfolio of the banking sector in a country. An understanding of the factors that influence the level of non-performing loans is crucial for the risk management function of banks and for national bank supervisors responsible for banking stability. The determinants of nonperforming loans within and across countries is a major theme in the non-performing loan academic literature (Louzis et al, 2012; Nkusu, 2011, etc).

Bank profitability and sustainability can only be provided through a proper flow of interest income generated through the lending function of banks. However, since banks are not generating enough interest income through classical safe credit and are required to maintain reserves in the form of provisions to cover for eventual loan losses, bank capital decreases together with their health, which is becoming weak, increasing the trend of NPLs. As per 2018 annual report of all private commercial banks in Ethiopia, banks maintain 2.6 billion birr reserve in the form of provision to cover doubtful loans. Provisions reduce the value of the assets on the balance sheet. The consequence of this asset reduction is a lower income during that period and therefore lower equity. In extreme cases, these losses can reduce the bank's capital to below the minimum requirement and bring insolvency and losses for the shareholders. Beside, Ethiopia Council of Ministers Regulation No. 410/2017, forced to add back 20% of loss reserve as non-allowable expense, it indicate 20% of bad debt expense are not considered as an expense and banks will incur additional tax by having large amount of NPLs. In the other hand, National Bank of Ethiopia imposed restriction on the proportion of NPLs not to be exceeding 5% of their total loan outstanding (NBE 2008). However, in previous empirical studies the issue of preventing NPLs in Ethiopian Commercial banks is still in question. Banks are not fulfilling the maximum (5%) allowable limit of NPLs. This will affect the sustainability of Banks in Ethiopia.

In addition to the above problem, banks use different managerial judgmental approach to classify their credit quality of loan and advance, from sixteen private commercial banks eight of them locate NPL amount in individually impaired loans and others locate NPL amount in both individually impaired loans and pass due but not impaired category. According to this, to trace the sector that cover high portion of NPL amount the researcher use the data of eight banks in which exactly classify NPL amount by sector in individually impaired category. As a result, the chart (sector analysis) of eight banks from 2016 to 2018, indicates among different loan sector domestic trade and service covers (28%) and export sectors covers (22%) NPL amount from the total NPL amount. Therefore, banks are required to take proactive action to deal with the phenomenon of bad choice of borrowers by identifying and understanding the all factors that contribute to the rise of classified credit in banking system.

Figure 1.1 NPL by Sector



Source: Private Commercial Banks Annual Report (2018)

1.5. Objective of the Study

1.5.1. General Objective

In the context of the problems highlighted above, the general objective of the study is to examine the determinants of non-performing loans in Ethiopian private commercial banks with emphasis on DTS and Export sector.

1.5.2. Specific Objective

Specifically, the study aims to achieve the following specific objective;

- To examine the effect of exchange rate on NPL of private commercial banks of Ethiopia.
- To examine the effect of real interest rate on NPL of private commercial banks of Ethiopia.
- To examine the effect of capital adequacy ratio on NPL of private commercial banks of Ethiopia.
- To examine the effect of loan to deposit ratio on NPL of private commercial banks of Ethiopia.
- To examine the effect of loan growth rate of DTS sector on NPL of private commercial banks of Ethiopia.
- To examine the effect of loan growth rate of Export sector on NPL of private commercial banks of Ethiopia.
- To examine the effect of credit monitory and follow-up on NPL of private commercial banks of Ethiopia.
- To examine the effect of nature/characteristics of the business on NPL of private commercial banks of Ethiopia.

1.6. Research Questions

The study attempt to address the following specific questions;

- What is the effect of exchange rate on NPL?
- What is the effect of real interest rate on NPL?
- What is the effect of capital adequacy ratio on NPL?

- What is the effect of loan to deposit ratio on NPL?
- What is the effect of loan growth rate of DTS sector on NPL?
- What is the effect of loan growth rate of export sector on NPL?
- What is the effect of credit monitory and follow-up on NPL?
- What is the effect of nature of business on NPL?

1.7. Hypotheses of the Study

The hypotheses of this study were developed by referring to the existing theories and past empirical studies that have been conducted on the topic. The broad objective of the study is examining the determinants that affecting non-performing loans of private commercial banks in Ethiopia. Based on this broad objective the following hypotheses were developed.

Exchange rate (ER); According to empirical study of (Nkusu, 2011, Pasha and Khemraj, 2009, Yonas, 2017, Sitina, 2018 and Fofack, 2005) exchange rate can also affects borrowers' debt servicing capacity through different channels and its impact on NPL can be positive or negative. i.e. it can adversely affect the loan payment capacity of export oriented firms on the other hand it can positively affect the loan payment capacity of import oriented firms.

H1: Exchange rate has positive and significant effect on NPLs of EPCBs.

Real interest rate (RIR); Lending rates or interest rates are one of the primary economic determinant of non-performing loans/bad loans. An increase in interest rate weakens loan payment capacity of the borrower therefore non-performing loans and bad loans are positively correlated with the interest rates Nkusu, (2011); Yonas (2017); and Messai and Jouini (2013).

H2: Real interest rate has positive and significant effect on NPLs of EPCBs.

Capital adequacy (CAR); empirically, there is no consensus on the relation between capital adequacy and NPLs. Sinkey and Greenawalt (1991) and Mekdes (2017) show that banks with adequate capital ratio experience lower rates of NPLs. Other found positive relationship between NPLs and capital adequacy ratio. Banks with high levels of CARs might be encouraged to embark in riskier activities leading to riskier credit portfolios (Saba et.al. 2012 and Rime 2011). Makri et al., (2014) suggest that negative relationship with NPLs since CAR increase absorb a risky loan portfolio is marked by a high NPL. The study expected negative relation with NPLs.

H3: Capital adequacy ratio has negative and significant effect on NPLs of EPCBs.

Loan to deposit (LTD) ratio: According to (Louzis et al., 2012; Makri et al., 2014 and Swamy 2012, Anisa (2015). LTD ratio has positive and significant effect on the level of NPLs of banking sectors. As disclosed by Jimenez and Saurian (2006) loan growth is considered as one of the most important causes of problem associated NPLs. An increase in this ratio is indicative of the bank deploying more funds to loans. Such a situation reflects a less liquid position for the bank.

H4: Loan to deposit ratio has positive and significant effect on NPLs of EPCBs.

Loan growth rate (LGR): According to the literature (Salas and Saurina, 2002; Jimenez and Saurina, 2005) Rapid credit growth may lead to an adverse selection, and may be associated with reduced credit quality as risk taking intensifies during such periods, adversely affecting the level of non-performing loans. However, the empirical studies shows inconsistent result Amuakwa-Mensah (2015) and Yonas (2017) finding indicate that LGR has a negative and significant effect on NPL. On the other hand the empirical study of (Mesay, 2017) indicate that LGR has a positive and significant effect on NPL.

H5: Loan growth rate of DTS sector has positive and significant effect on NPLs of EPCBs.

H6: Loan growth rate of export sector has positive and significant effect on NPLs of EPCBs.

Credit Monitoring and Follow-up: Thus as "bad managers" they have poor credit scoring, collateral evaluating and loan monitoring and controlling skills. When mangers are inefficiently managing the current banking operations then it will lead to future growth in NPLs (Berger and DeYoung, 1997, Arega et al, 2017).

H7: Credit monitoring and follow-up has negative effect on NPLs of EPCBs.

Nature of the Business: Nguta and Huka (2013) and Mesay (2017) study finding concludes that there are various factors influencing non repayment of loans which could arise from businesses characteristics. Nguta and Huka (2013) also mentioned that knowledge of borrower, the type of loan, the schedule and the amount of loan installment, incentive for borrower, loan amount,

flexibility for borrowers to use the borrowed money, government policy have an effect on nonperforming loan.

H8: Nature of the business has negative effect on NPLs of EPCBs.

1.8. Significance of the study

The findings of this study is expect to contribute a lot for different bodies' stakeholders, bank managers or supervisors and regulators. The study help to present the current picture of NPLs in Ethiopia private commercial banks and it also help to show the significant internal and external factors that determine NPLs. Secondly, the finding of the study used for supervisors and regulators in their attempt to identify the variables that causes a rising nonperforming loans and how to reduce non-performing loans in the banking sector. Thirdly, the study serve as a starting point for other studies, which may focus on similar topics and issues related to nonperforming loan in Ethiopia baking industry. Furthermore, the study enable commercial banks (lenders) how to overcome potential factors that are highly affects the level of nonperforming loan in Ethiopia banking industry.

1.9. Scope of the study

The study focuses on examining the determinant of nonperforming loans of private commercial banks in Ethiopia with particular focus on DTS and Export loan sector. The reason for limiting the scope to private Commercial Banks is because of their reporting system. All private banks in Ethiopia use reporting system of IAS 39 (incurred loss model), hence commercial bank of Ethiopia implement IFRS 9 (expected loss model). Allied to this to get unvarying output the study focus only private banks.

Generally, the study limited to five bank specific (loan to deposit, loan growth rate of DTS, loan growth rate of export sector, capital adequacy ratio and credit monitory and follow-up), two macroeconomic factors (real interest rate and exchange rate) and business characteristics (nature/characteristics of the business) specially in DTS and Export sector of NPLs in private commercial banks in Ethiopia. The period of assessment also limited to 2016-2018; this is because, Commercial banks in Ethiopia didn't specifically require to publishing the actual figure of nonperforming loan in annual financial reports (by GAAP). According to this, researches done

in Ethiopia related to NPL uses different data as nonperforming loans figure, some researchers use provision for loans and advance balance and others use unpublished Survey data of each Banks. Allied to this there is inconsistence figure of non-performing loan. However, banking sector in Ethiopia implements international financial reporting system (IFRS) in 2018 fiscal year to prepare their annual financial reports and all banks convert 2016 and 2017 financial reports base on IFRS 1 requirement (IFRS first time adoption) for a comparative purpose. On the other hand, incurred loss model of IAS 39 required to mention individually impaired and collectively impaired figures and its sector in annual reports of the banks.

1.10. Limitations of the study

While doing this research, the researcher encounter various limitations, the first limitation of the study was due to the nature of the subject area. This subject area is complex due to; excessive confidentiality policy of the banking business secrets, limited to access nonperforming customers and lack of consistent information in connection with bad debts, as a result it wouldn't be easy to get all previous unpublished relevant information from respective banks. The study also limited to banks credit managers and credit officer's personal perception and officially disclose financial data of banks. Finally, the banking sector in Ethiopia implements international financial reporting system (IFRS) in 2018 fiscal year to prepare their annual financial reports and all banks convert 2016 and 2017 financial reports base on IFRS 1 requirement (IFRS first time adoption) for a comparative purpose. According to this the research is limited only in three years data.

1.11. Organization of the research paper

This study organized in five chapters. The first chapter discussed the background of the study, statement of the problem, research objectives, research questioner, hypothesis of the study, significance of the study, scope of the study, limitation of the study and organization of the study. The second chapter provides the literature review which constitutes theoretical and empirical literature. Methodology of the research and the research design employed, data collection methods, and the data analysis technique presented under chapter three. The fourth chapter presents the results and discussion of the study. Lastly, the fifth chapter presents conclusion and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1. Theoretical and Conceptual Literature Review

2.1.1. Definition of Non-Performing Loans

The concept of non-performing loans has been defined in different literatures. According to Ozili (2019) Non-performing loans reflect the credit quality of the loan portfolio of banks, and in aggregate terms, reflect the credit quality of the loan portfolio of the banking sector in a country. An understanding of the factors that influence the level of non-performing loans is crucial for the risk management function of banks and for national bank supervisors responsible for banking stability.

IMF (2005), define nonperforming loan as any loan in which payments of interest and/or principal are past due by 90 days or more, or interest payments equal to 90 days or more have been capitalized, refinanced, or delayed. As per NBE directive No. SBB/52/2012 NPLs are defined as "loans or advances whose credit quality has deteriorated such that full collection of principal and/or interest in accordance with the contractual repayment terms of the loan or advances in question".

NPLs can be defined as default loans, which banks are unable to profit from. Non-performing loans are loans that have not expired, but it is uncertain whether the borrowers would be often to repay their debts. (Clementina and Isu, 2014). According to Krueger (2002) the June 2002 consultative meeting on the draft Compilation Guide on Financial Soundness Indicators, there was widespread agreement on use of the 90-day standard to define nonperforming loans.

The New Capital Accord of Basel II, introduced in 2007, NPLs are those whose interest and principal payments are past due for more than 90 days or for which there is a good reason to consider that these payments will never be made in full. It is important to notice that the definition provided considers NPLs gross of provisions and accounts for the total amount of defaulted outstanding loans. A still high level definition of defaulted loans distinguishes then between non-performing loans and sub performing loans. These last are the ones that have

already defaulted but still do not meet Basel II requirements to be considered non-performing. A further sub segmentation can be found by identifying watch list loans, that are performing loans with a high probability of defaulting in the upcoming future and an internal rating equal or worse than B. (Scardovi, 2016)

The well accepted threshold for classifying a loan as non performing is when obligations related to the loan become over 90 days past due. Multilateral organizations define nonperforming along the same lines. The Basel Committee on Banking Supervision defines default for capital calculation purposes as follows: "a default is considered to have occurred with regard to a particular obligor when either or both of the two following events have taken place: (i) the bank considers that the obligor is unlikely to pay its credit obligations to the banking group in full, without recourse by the bank to actions such as realizing security; and (ii) the obligor is past due more than 90 days on any material credit obligation to the banking group." The IMF Financial Soundness Indicators (FSIs), which are vastly used for cross-country comparability, also establishes as criteria for defining a loan as nonperforming past due of principal or interest over 90 days. Basing the criteria only on the number of days past due would pose challenges for balloon payment loans or overdraft type credits. Moreover, information can be available that the borrower is likely to default, even if the loan is not yet past due. Thus, in general, a loan is considered to be non performing when the probability of full repayment is considered to be low or when a loan is in default or highly likely to default. Criteria for classifying a loan as non performing are thus number of days past due, as well as the overall financial performance or creditworthiness of the borrower, sometimes even combined with the assessment of collateral. (D'Huslter, et al, 2014)

2.1.2. Theoretical Framework

The study guided by theories which have previously been developed and that have called for more research on the subject matter over the years. These theories include Information Asymmetry Theory, Financial Intermediation Theory, Loan Pricing Theory, and Capital Market Theory.

2.1.2.1. Information Asymmetry Theory

Borrower is likely to have more information than the lender about the risks of the project for which they receive funds. This leads to the problems of moral hazard and adverse selection. These problems reduce the efficiency of the transfer of funds from surplus to deficit units. The banks overcome these problems in three respects: First by providing commitment to long-term relationships with customers, Secondly through information sharing and thirdly through delegated monitoring of borrowers. Under direct financing, it is necessary for a lender to collect information to try to redress the information asymmetry. (Stiglitz and Weiss, 1981)

The theory of asymmetric information tells us that it may be difficult to distinguish well from bad borrowers (Richard, 2011), which may result into adverse selection and moral hazards problems. The theory explains that in the market, the party that possesses more information on a specific item to be transacted is in a position to negotiate optimal term for the transaction than the other party. The party that knows less about the same specific item to be transacted is therefore in a position of making either right or wrong decision concerning the transaction. According to Bester (1994), adverse selection and moral hazards have led to significant accumulation of nonperforming loans in banks.

2.1.2.2. Financial Intermediation Theory

This theory proposed by point out that banks are able to effectively monitor borrowers and thus play the role of delegated monitoring. Financial intermediation refers to the process by which financial institutions bring deficit spending units and surplus spending units together. Banks are able to effectively monitor borrowers and thus play the role of delegated monitoring. If the role of delegated monitoring is performed efficiently, then the intermediation process will run smoothly and there will be less or no market frictions. (Allen and Santomero, 1997)

Financial intermediation theory emphasizes on the role of banks as reducing the frictions of transaction costs and asymmetric information. It projects that a proper intermediation process leads to profitable and stable financial institutions. Screening as a role of financial institutions is to be enhancing profitability, growth and stability by weeding out borrowers with low probability of success. (King and Levine, 1993)

2.1.2.3. Loan Pricing Theory

From the reasoning of Stiglitz and Weiss, (1981) Banks cannot always set high interest rates, and trying to earn maximum interest income. Banks should consider the problems of adverse selection and moral hazard since it is very difficult to forecast the borrower type at the start of the banking relationship. According to Chodecai, (2004) if banks set interest rates too high, they may induce adverse selection problems because high-risk borrowers are willing to accept these high rates. Once these borrowers receive the loans, they may develop moral hazard behavior or so called borrower moral hazard since they are likely to take on highly risky projects or investments. Stiglitz and Weiss (1981), also mentioned that, it is common that in some cases we may not find that the interest rate set by banks is proportionate with the risk of the borrowers.

2.1.2.4. Credit Market Theory

According to Ewert et al, (2000) a model of the neoclassical credit market postulates that the terms of credits clear the market. If collateral and other restrictions remain constant, the interest rate is the only price mechanism. With an increasing demand for credit and a given customer supply, the interest rate rises, and vice versa. It is thus believed that the higher the failure risks of the borrower, the higher the interest premium.

2.1.3. Loan Provisioning

NBE directive require all banks to retain provision for loan losses account which charges to provision expense in the income statement to absorb potential losses in the loan portfolio. Additional to or reductions of the provisions for loan losses account should be made only through charges to provisions in the income statement at least every calendar quarter.

Classification Category	Minimum provision
Pass	1%
Special Mention	3%
Substandard	20%
Doubtful	50%
Loss	100%

Source: NBE Directive SBB/69/2018

2.1.4. Impairment Loss

A financial asset or group of assets is impaired, and impairment losses are recognized, only if there is objective evidence as a result of one or more events that occurred after the initial recognition of the asset. An entity is required to assess at each balance sheet date whether there is any objective evidence of impairment. If any such evidence exists, the entity is required to do a detailed impairment calculation to determine whether an impairment loss should be recognized. [IAS 39.58] The amount of the loss is measured as the difference between the asset's carrying amount and the present value of estimated cash flows discounted at the financial asset's original effective interest rate. [IAS 39.63]

Assets that are individually assessed and for which no impairment exists are grouped with financial assets with similar credit risk statistics and collectively assessed for impairment. [IAS 39.64]

If, in a subsequent period, the amount of the impairment loss relating to a financial asset carried at amortized cost or a debt instrument carried as available-for-sale decreases due to an event occurring after the impairment was originally recognized, the previously recognized impairment loss is reversed through profit or loss. Impairments relating to investments in available-for-sale equity instruments are not reversed through profit or loss. [IAS 39.65]

2.1.5. Impairment Assessment of Ethiopian Private Commercial Banks

According to banks annual report, Banks assesses its impairment for the purpose of IFRS reporting using a two-way approach which includes an Individual assessment and portfolio assessment.

(a) Individual assessment

Banks reviewed and revised existing impairment triggers for each loan asset portfolio to ensure that a trigger identifies a loss event as early as possible, which would result in the earliest possible recognition of losses within the IFRS framework and then Banks estimated the impairment based on the shortfall between the present value of estimated future cash flows and the asset carrying amount.

(b) Collective assessment

Loans and receivables that are not specifically impaired are assessed under collective impairment.

For the purpose of collective impairment, financial assets are grouped on the basis of similar credit risk characteristics that are indicative of the debtors' ability to pay all amounts due according to contractual terms.

Banks are generally use analyses on historical experience. The collective assessment takes account of data from the loan portfolio (such as historical losses on the portfolio, levels of arrears, credit utilization, loan to collateral ratios and expected receipts and recoveries once impaired) or economic data (such as current economic conditions, unemployment levels and local or industry– specific problems). The approximate delay between the time a loss is likely to have been incurred and the time it will be identified as requiring an individually assessed impairment allowance is also taken into consideration. The impairment allowance is reviewed by credit management to ensure alignment with the Bank's overall policy.

2.1.6. Consequence of NPLs

For the bank, the immediate consequence of an increase in NPLs is higher capital requirements to absorb potential losses, and the ensuing rise in funding, management and administrative costs. The rising costs are usually transferred to the borrowers e.g. households and private sector, slowing credit and GDP growth. In a worst-case scenario, there might be systemic failures leading to bank and borrower insolvencies. This, in turn, leads to price declines and a rise in the real debt burden due to the higher number of forced liquidations. High levels of real debt make borrowers less willing to spend, reducing the income even for the individuals and the firms that were not heavily indebted. (Islam et al, 2005)

2.1.7. Export Finance

Export trade finance is a specific topic within the financial services industry. A product is sold and shipped overseas; therefore, it takes longer to get paid. Extra time and energy is required to make sure that buyers are reliable and creditworthy. Furthermore, foreign buyers just like domestic buyers prefer to delay payment until they receive and resell the goods. Financial

management Due diligence and careful can mean the difference between profit and loss on each transaction.

Generally, there are different types of pre export financing mechanisms like Countertrade, Documentary credit, Supplier's credit, Pre-shipping financing, Factoring, Buyer's credit, and Post-shipping financing. (Mekbib, 2008)

2.1.8. Pre Shipment Export Financing

Mekbib (2008) also mentioned that access to working capital is one of the most important components of the export transaction, providing a means for companies to process and acquire goods and services to fill purchase order and to ship and extend credit to their buyers.

To cover their working capital need, exporters mainly use working capital loan programs which are normally associated with pre-shipment financing. Mostly there are three types of Pre-shipment export financing: Pre-shipment export credit, revolving export credit and advance on export bills.

The pre-shipment export credit is a loan granted to non-coffee exporters starting from the procurement of inputs until the date of shipment of goods against the guarantee given by export guarantee programs.

The revolving export credit facility is an advance extended to exporters with a limited margin before goods are loaded on board upon presentation of all relevant export documents to the bank except a bill of loading. In such kind of export credit, no guarantee is required for the loan provided by the bank.

Advance on export bills is conversely a post shipment export credit provided to exporters with a margin against presentation of all necessary export documents.

2.1.9. Risk Associated with Export Loans

In financing trade transactions, financial institutions are confronted by at least three types of risks, or perceptions of risk, associated with the pre- and post-shipment export financing:

- Nonpayment risk or buyer risk: the risk that the foreign buyer does not pay exporters.
- Nonperformance risk or supplier risk: the risk that the exporter will not fulfill the export order, cannot manufacture the product for technical reasons, or cannot deliver it on time

and according to the price and quality standards identified in the export order or the letter of credit (L/C); and

- Third party risk: other risks that are involved in the transactions process, such as risks related to transport.

If these risks, or perceptions of risks, are higher relative to the return on lending, financial institutions will not provide financing for export transactions. In response, credit enhancement instruments have been developed to cover a part of these risks, during both pre and post shipment stages of export transactions, export credit insurance and pre shipment export finance guarantees. (IFC Smart lessons, 2008)

2.1.10. Domestic Trade and Service Finance

As stated by Ghosh (2011) Exchange takes time. For example, when a seller receives a purchase order that stipulates payment after delivery, the seller has to produce before the buyer pays. This requires financing over short horizons because the seller may need to borrow working capital to complete the order or to deliver services. That is the essence of trade and service finance. It is often described as the lifeline of business transactions because more than 90% of transactions involve some form of credit, insurance or guarantee (International Trade Center, 2009).

The Domestic trade and services is a generic name given for those economic activities engaged in the distribution of agriculture products, locally manufactured and imported goods as well as services to the end user. The primary function of the domestic trade and service is to bridge the gap between production and consumption. Domestic Trade and Services are broadly classified into five main categories: agricultural products, manufactured products (locally and imported), cottage and handicraft industries products, mined products and services.

Domestic banks were major sources of finance for most domestic trade and service businesses in Ethiopian. From the total fresh loans, domestic trade was the largest beneficiary, accounting for 21.2 percent followed by industry (18.9 percent), international trade (17 percent), housing & construction (15.2 percent), agriculture (9.3 percent) and hotel & tourism (3.6 percent), the remaining balance being taken by other economic sectors. Of the total borrowing, Birr 64.0 billion (88.2 percent) was from domestic and Birr 8.6 billion (11.8 percent) from external sources. (NBE 3rd Quarter Bulletin 2019).

2.1.11. Business Incentive Schemes in Ethiopia

Federal Democratic Republic of Ethiopia: Export trade duty incentive schemes proclamation No. 768/2012 used to ensures economic development by accelerating industrial growth of the country and to improve the foreign exchange earning needed for development and investment; to achieve transformation into industry led economy, it is necessary to establish a system of reinforcing value creation in the process of production; it is essential to create conductive environment for domestic products to become competitive in international commodity markets by rendering efficient the scheme of incentives available for export trade though rectification of deficiencies noticeable in the scheme and by introducing new incentives having direct or indirect impact of motivating investors engaged in export trade. The duty incentive schemes benefits producer export; indirect producer exporters; raw material suppliers and exporters.

2.1.12. Determinants of Non-Performing Loans

2.1.12.1. Macroeconomic Factors

2.1.12.1.1. Real Interest Rate

The commercial banks that charge high interest rates, the rate of default borrowers is anticipated to increase, as a result non-performing loans will increase. Thus, interest rates are anticipated to have a positive impact on non-performing loans. A study by Waweru & Kalini (2009) on commercial banks in Kenya using statistical analysis indicates that high interest rate charged by the banks is one of the internal factors that lead to incidence of non-performing loans. In fact, several studies report that high real interest rate is positively related to this variable. (Fofack, 2005). Interest rates are one of the primary economic determinant of non-performing loans. An increase in interest rate weakens loan payment capacity of the borrower therefore non-performing loans are positively correlated with the interest rates (Nkusu, 2011). Hoque and Hossain (2008) examined interest policy play important role in growth of NPL and according to them non-performing loans are highly correlated with the high interest rates which enhances the debt burden of the borrowers and causes loan defaults. Nkusu (2011) also mentioned list of several reasons for high interest rate spread which included: lack of sufficient competition, diseconomies of scale due to small size of markets, high operating and fixed costs, high

transportation cost of funds due to expensive telecommunications, existence of regulatory controls and perceived market risks.

2.1.12.1.2. Exchange Rate

According to Nkusu (2011), exchange rate can also affects borrowers' debt servicing capacity through different channels and its impact on NPL can be positive or negative. As illustrious in Pasha and Khemraj (2009), reduction of the exchange rate can have mixed implications on borrowers' debt servicing capacity. On the other side, it can improve the competitiveness of export oriented firms. As long as the value of domestic currency lower, export oriented firms can dominate the international market at lower price since their production cost is covered in domestic currency which has lower value than foreign currency and their revenue is collected in foreign currency which has higher value as compared to the domestic currency. Therefore, depreciation of exchange rate can improve the debt servicing capacity of export-oriented borrowers. In the other side, it can adversely affect the debt-servicing capacity of borrowers who borrow in foreign currency (import oriented firms).

2.1.12.2. Bank-Specific Factors

2.1.12.2.1. Capital Adequacy Ratio (CAR)

The capital adequacy ratio measures a bank's solvency and ability to absorb risk. It is used to protect depositors, and promote stability and efficiency in the financial system. On the one hand, banks with high levels of CAR may pursue opportunities more aggressively, which means increased risk taking leading to riskier credit portfolios (Demirguc-Kunt and Huizinga, 1999). Thus, banks with low capital may be inclined to engage in risky lending, and it resulting an increased non-performing loans. Related to this, some empirical studies shows CAR have a negative effect on NPL. (Jameel 2014; Mekdes 2017)

2.1.12.2.2. Loan to Deposit Ratio

The loan to deposit ratio is a commonly used statistic for assessing a bank's liquidity and it reflects the utilization of funds policy of the bank. An increase in this ratio is indicative of the bank deploying more funds to loans. Such a situation reflects a less liquid position for the bank. The literature suggests that the LTD ratio has a positive effect on the level of non-performing

loans. The justification for such a result is that the growth of customer deposits impacts positively on a bank's lending activity. Inefficiencies in the credit administration process in such circumstances can result in a higher level of non-performing loans. (Anisa, 2015)

2.1.12.2.3. Loan Growth Rate of DTS sector and Loan Growth rate of Export Sector

Excessive lending by commercial banks is often identified as an important determinant of NPLs (Salas and Saurina, 2002; Jimenez and Saurina, 2005). Rapid credit growth may lead to an adverse selection, and may be associated with reduced credit quality as risk taking intensifies during such periods, adversely affecting the level of non-performing loans (Erdinç and Abazi, 2014). Examining the growth of loan by sector will explain as the real effect of each sector. Therefore, loan growth rate by sector is expected to have a positive effect on nonperforming loan.

2.1.12.2.4. Credit Monitoring and Follow-up

According to Berger and DeYoung (1997), the proposed justification links behind this hypothesis is bad management with poor skills in credit scoring, appraisal of pledged collaterals and monitoring borrowers. Managers in such banks do not follow the standard practices of loan monitoring, controlling and underwriting. Thus as "bad managers" they have poor credit scoring, collateral evaluating and loan monitoring and controlling skills. When mangers are inefficiently managing the current banking operations then it will lead to future growth in NPLs.

A weak Risk assessment can also play a role in increasing NPLs. The repute of borrowers to repay loan and the market value of securities are not adequately assessed while giving loans which become key reasons behind NPLs (Petersson, 2004). The study of Ning (2007) shows that the banks use their personal experiences in giving loans rather than using historical data, mature credit portfolio management skills and centralized information system. The banks should access information about creditability of the customers, so that NPLs can be reduced. In this regard responsibilities of banks should be clearly defined. It should be ensured that banks exercise effective policies and adequate risk management (Basel, 2001).

2.1.12.3. Business Characteristics Factors

2.1.12.3.1. Nature of the business

Council of Minster in Ethiopia Proclamation No. 768/2012 gives incentive mainly for raw material suppliers and export business categories to ensures economic development by accelerating industrial growth of the country and to improve the foreign exchange earning needed for development and investment. Beside, NBE requires all commercial banks to allocate high fund to export sector.

Nguta and Huka (2013) study was carried out in order to establish the causes of such repayment defaults in Kenya North District, using a descriptive survey design, collected using both structured and unstructured questionnaires were analyzed using descriptive and inferential statistics. The study concludes that there are various factors influencing non repayment of loans which could arise from businesses characteristics.

2.2. Empirical Review

Anisa (2015) conduct a research on determinants of nonperforming loan: An empirical study on commercial banks of Ethiopia. The researcher found that deposit rate; loan to deposit ratio and lending interest rate had positive and significant impact on banks nonperforming loan. Lending interest rate is a very important determinant of nonperforming loan in Ethiopia banking industry. Cost efficiency had negative and significant impact on banks nonperforming loan. Bank solvency ratio and gross national product (GDP) growth rate ad inflation rate had negative and statistically insignificant impact on banks nonperforming loan.

Messai and Jouini (2013) uses sample of 85 banks in three countries (Italy, Greece and Spain) for the period of 2004-2008 to detect micro and macro determinants of nonperforming loans. The macroeconomic variables are included the rate of growth of GDP, unemployment rate and real interest rate with respect to specific variables opted for the return on assets, the change in loans and the loan loss reserves to total loans ratio (LLR/TL) . The researchers found that growth rate of GDP, the profitability of banks have negative effect on NPL and Unemployment rate, the loan loss reserves to total loans and the real interest rate have positive impact on NPLs.

Jameel (2014) uses time series multiple regression analyses on data collected from the Pakistani banking sector, between the period 2000 and 2010, to explain and determine the factors effecting NPLs. He found a negative association between capital adequacy ratio, GDP growth rate, credit deposit ratio and maturity time period of loans and NPLs. On the other hand, there is a positive relationship between weighted average lending rate and NPLs.

Wood and Skinner (2018), in their study examine the bank-specific and macroeconomic determinants of non-performing loans of commercial banks in Barbados over the period 1991-2015. The author's empirical results indicate that the bank-specific factors: return on equity, return on assets, capital adequacy ratio and loan to deposit ratio are significant determinants of non-performing loans, and while the macroeconomic variables: GDP growth, unemployment and interest rate exerting significant influence on nonperforming loans. The researcher conclude that GDP growth, ROE, ROA and interest rate (Weighted average lending rate) negatively affect NPLs, in the other hand Unemployment, CAR and loan to deposit ratio positively affect NPLs.

Anjom and Karim (2015) found that there is a negative relationship with inflation, public debt as a percentage of GDP, return on equity, return on assets, total loan to total asset ratio, total loan to total deposit ratio and a non-interest income ratio to NPL. Moreover, Hanifan and Umanto, (2017), in a study of 20 banks listed on the Indonesia Stock Exchange (IDX) between Q1 2005 and Q4 2014, using dynamic panel data GMM, reveal that the previous period of NPL, GDP growth and inflation rate, have a significantly negative impact on NPL and that the Operations Expenses to Operations Income ratio (BOPO) and the Return on Equity (ROE) have a significantly positive relationship with NPL.

Various researchers have given a variety of findings about this relationship between Interest rate and NPLs in banks. According to some researchers high interest rate has a significant and positive relationship with Non- Performing Loans. They are of the view that when banks increase interest rate, there is an additional payment burden on borrowers resulting in increased defaults (Fofack, 2005; Asari et al, 2011; Stiglitz and Weiss, 1981; Keeton and Morris, 1987). Some of studies have also shown a weaker or insignificant relationship between interest rate and Non-Performing Loans (Kaplin et al, 2009; Patnaik and Shah, 2004). The study of Sinkey (1992) shows that increase in interest rate negatively impacts the loan defaults.

The study made by Podpiera and Weill (2008) examine empirically the relation between poor credit risk management and NPL. They conclude that there is strong evidence in favor of the bad management hypothesis and propose that regulatory authorities in emerging economies should focus on managerial performance in order to enhance the stability of financial system by reducing nonperforming loans.

Kerim, et. al,. (2010) by using the stochastic cost frontier approach and by applying normal gamma efficiency distribution model to investigate the relationship between non-performing loans and bank efficiency in Malaysia and Singapore. There result also support the hypothesis of bad management proposed by Berger and DeYoung (1997), which suggests that poor management in the banking institutions results in bad quality loans, and therefore, escalates the level of non-performing loans. Banks‟ inefficiencies might lead to higher non-performing loans.

Yonas (2017) conduct a research on determinants of NPL in commercial banks in Ethiopia in the period of 2007-2016. The researcher explain the significance of interest rate, growth in GDP, inflation rate, exchange rate, real interest rate, ROA, ROE and loan growth rate on nonperforming loans and he found that NPLs can be attributed to both macroeconomic conditions and banks' specific factors. From the macro determinants, Real interest rate has positive and statistically significant relationship with NPL. ROA, ROE and Loan growth rate from bank specific factors have negative and significant relationship with the NPLs in commercial banks in Ethiopia.

Mekdes (2017) this study conducted on determinants of nonperforming loans: evidence from commercial banks in Ethiopia. The researcher identify that return on equity and capital adequacy have negative and significant impact on NPLs. Whereas, loan loss provision and loan to deposit have positive significant relationship with NPLs.

Exchange rates, interest rates and inflation are macroeconomic factors that impact the quality of the bank's activities. Exchange rate fluctuations may have a negative impact on the quality of assets, especially in countries with a large amount of foreign currency loans. The same with interest rate increases, particularly in case of loans with flexible interest rate (Louzis et al., 2012; Zaman and Meunier, 2017). Furthermore, Muriithi (2011) investigate the causes of non-performing loans in commercial banks in Kenya, the research found that non-performing loans of

commercial banks in Kenya are positively correlated with inflation rate, negatively correlated with real interest rate and growth rate in loans in Kenya.

Fofack (2005) focuses on investigating the main causes of NPL during the economic and bank crises that struck the majority of countries in Sub-Saharan Africa in the 1990s. The researcher showed that, macroeconomic stability and economic growth are associated with a declining level of default; whereas adverse macroeconomic shocks coupled with higher cost of capital and lower interest margins are associated with a rising scope of nonperforming loans.

Murthy et al (2017) carried out a study on factors influencing non-performing loans in commercial banks: The case of banks in Selangor state of Malaysia, the researchers found that standard of living, economy of the country, consumers income and bank interest rate are statically significant influence on nonperforming loan.

Amuakwa-Mensah (2015), empirical study regarding to the determinants of non-performing loans in Ghana banking industry finding indicate that both bank-specific variables (previous year's NPL, bank size, net interest margin (NIM), and current year's loan growth) and macroeconomic variables (previous year's inflation, real gross domestic product (GDP) per capita growth and real effective exchange rate) significantly affect NPLs in the banking industry. Also the sub-sample estimations showed that bank specific (previous year's NPLs and bank size) positively affect NPLs. However, net interest margin and loan growth have a negatively impact on NPLs. Macroeconomic factors (real effective exchange rate, real GDP per capita growth, and previous year's inflation rate) negatively affect NPLs of large banks. Saba et al. (2012) in their study conducted between 1985 and 2010 on US banks, identify that inflation and general loans have an important impact on NPL.

Ikram et al (2016) carried out a study on determinants of non-performing loan: an empirical investigation of bank specific microeconomic factors, The authors formulated six hypotheses to test the effects of bank specific and SME related microeconomic factors on NPLs, namely nature of collateral, valuation of collateral, credit policy, age of the branch, repayment capacity of the firm and term of loan. The authors conclude that credit policy (nature of contract), age of the bank branch and term of the loan found to have significant impact on NPLs. While repayment

capacity of the SME, nature and valuation of collateral found to exhibit insignificant association with NPLs.

Kariuki (2014) conduct a research in Kenya to identify factors influencing nonperforming loans of microfinance institutions, according to the author institutional characteristics (Policy and Objective, Staff Training, Management information system, Incentive for staff, schedule and amount of loan installments, Incentive for borrower, type of loans and loan amount), macroeconomic variables (Interest Rate and Government Policy) and customer characteristics (Location, Saving, Income of Households, Group pressure, Flexibility for borrower to use the borrowed money, knowledge of borrower)significantly influencing nonperforming loans of microfinance institutions in Kenya.

There are several reason of borrower fail to pay their loan regularly this can be due to the economic meltdown that lead to the business activities slowdown, internal business management failure and other external factors. As a result of these factors borrower fail to satisfy their commitment and bank suffer with non-performing loan and loss of credit market. The external factors include natural disaster, government policy and the integrity of the borrower as a major factor that caused non-performing loan. (Joseph, et al., 2012).

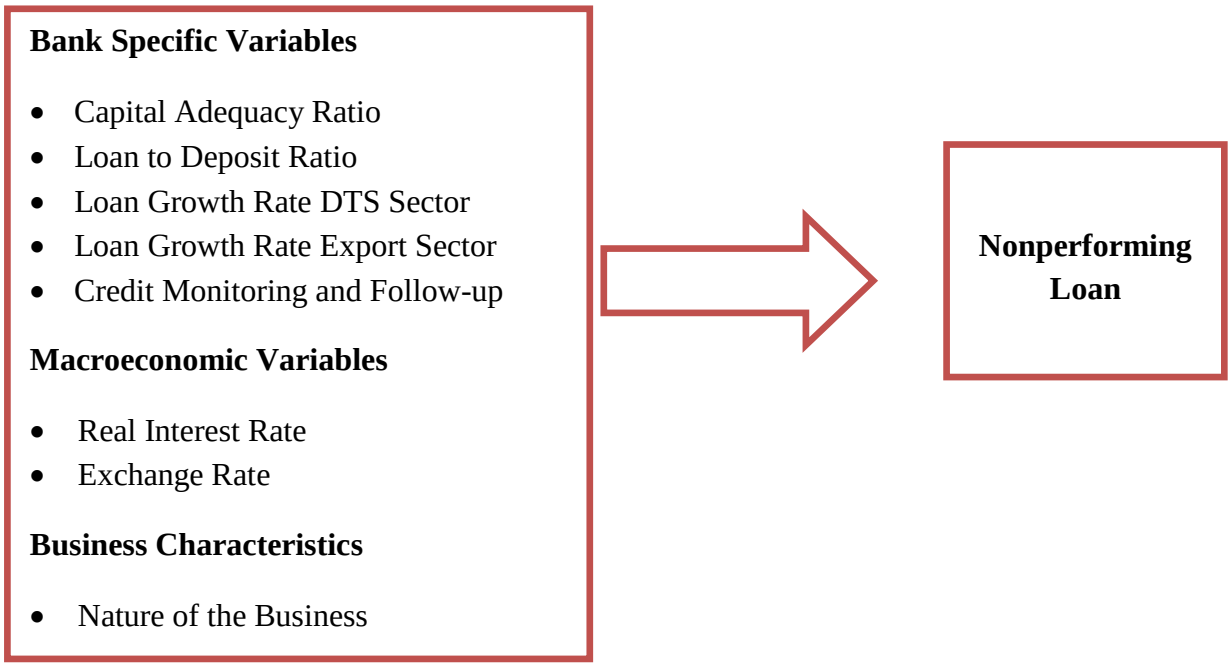
Empirical study regarding with determinant of nonperforming loans in Ethiopian private commercial banks: with emphasis on manufacturing sector, show that business profit margin, deposit interest rate, loan growth rate, loan to deposit ratio, credit monitoring and follow-up and nature of business statistically significant relationship with banks' NPLs. The researcher conclude that Deposit interest rate, loan to deposit ratio and loan growth rate have a positive impact on NPLs. However, business profit margin has a negative impact on NPLs. On the other hand, variables like exchange rate and inflation rate were found to be statistically insignificant. (Mesay, 2017). Furthermore, Nguta and Huka (2013) conduct a study on factors influencing NPL of micro finance institution and the study conclude that knowledge of borrower, the type of loan, policy and objectives, the schedule and the amount of loan installment, management information system, incentive for borrower, loan amount, flexibility for borrowers to use the borrowed money, government policy and interest rate have an effect on nonperforming loan in Kenya.

2.3. Conceptual Frame Work

The main objective of this study is to examine the determinants NPLs of private commercial banks in Ethiopia. Based on the objective of the study, the following conceptual model is framed. As previously discussed in the related literature review parts; nonperforming loans are affected by macroeconomic factors, bank specific and business characteristics. Bank specific factors are profitability, capital adequacy ratio, return equity, net interest margin, loan loss provision, poor credit assessment, failed loan monitoring, underdeveloped credit culture, lenient credit terms and conditions, aggressive lending, compromised integrity, weak institutional capacity, unfair competition among banks, willful defaults by borrower and their knowledge limitation, overdue financing deposit rate and capital structure; macroeconomic factors are real gross domestic product, interest/lending rate, inflation rate, unemployment rate, exchange rate and rate of export growth; whereas business characteristics factors are profitability of the business, incentive for borrower, knowledge of borrowers and nature of the business.

The following conceptual model is framed to summarize the main focus of the study.

Figure 2.1 Conceptual framework



Source: The conceptual framework of the study adopted from Nkusu, (2011); Yonas (2017); Salas and Saurina, (2002); Berger and DeYoung, (1997) and Nguta and Huka (2013).

2.4. Conclusions and knowledge gap

There are many empirical studies made in both developing and developed countries banking industries and abundance of variables was assessed, even if quite numbers of studies have been done in developed countries with few being done in developing countries. However still there is not a standard variable to determine non-performing loan, rather they agree on its greater impact on the overall economy. On the other hand, as per the researcher knowledge there is a few papers were done in our country among the relationship between macroeconomic factors, bank specific factors and NPL. Besides, there is only one empirical study done on the determinant of NPLs, which shows three major determinants of NPLs bank specific, macroeconomic and business characteristic factors (manufacturing sector) and there is lack of papers that are done determinant of NPLs from business characteristic perspective.

Due to governmental economic policy there is incentive to obtain more ratio of loan for export sector than other sectors and the outstanding loan amount of export sector rise throughout period of time. In the other hand, annual report of eight private commercial banks NPL by sector analysis indicate that domestic trade service and export sector are a pioneer sector that cover 50% of NPL figure than other sector. Based on the researcher knowledge there is no paper work on determinants of nonperforming loan in Ethiopian private commercial bank with an emphasis of DTS and export sector and the previous studies were measured NPL by proxy measurement which is provision but this study have tried to use the actual NPLs of EPCBs. Furthermore, this study includes all private commercial banks in Ethiopia.

Therefore, this research contribute towards filling the gap by identifying and analyzing the factors that affect level of nonperforming loans in Ethiopia private commercial banks, specifically on DTS and export sector. Beside this study incorporated some of the significant determinants of NPL like loan growth rate of DTS and Export sector that are not considered in Ethiopian context. Generally, the study is expected to fill the existing literature gap in the area of the study by examine macroeconomic, bank specific factors and business characteristics impact on NPLs of private commercial banks in Ethiopia.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Introduction

This chapter provides a research methodology that used for the study. It includes the research design, target population, data collection and data analysis procedures used in the study.

3.2. Research Approach

According to Creswell (2009) there are three types of research approach: qualitative research, quantitative research and mixed method research. Qualitative research involves emerging questions and procedures; data typically collected in the participant's setting and its purpose is describing and understanding the phenomena. The approach makes considerable use of inductive reasoning and the approach has five common strategies of inquiry. The strategies include case study, ethnography, phenomenological study, grounded theory and content analysis. Quantitative research; is an approach for testing objective theories by examining the relationship among variables. These variables in turn can be measured, typically on instruments, so that numbered data can be analyzed using statistical procedures building in protections against bias, controlling for alternative explanations, and being able to generalize and replicate the finding. Quantitative research approach has two strategies, the first is survey design which provides a quantitative or numeric description of trends attitude or opinion of a population. The second type is experimental design used to test the effect of intervention on an outcome controlling all other factors which may influence that outcome. Mixed method research it is an approach that combines both qualitative and quantitative forms.

Therefore, this study use mixed research approach to have a better insight and gain a richer understanding about the determinant of nonperforming loans in private commercial banks of Ethiopia, the quantitative method supplemented by the qualitative method of inquiry that helps to get benefits of a mixed methods approach and to mitigate the bias in adopting only either quantitative or qualitative approach.

3.3. Research Design

Research design is a master plan specifying the methods and procedures for collecting and analyzing the required data. The choice of research design depends on objectives that the researchers want to achieve (John, 2007).

Cooper and Schindler (2006) discussed that explanatory studies unlike descriptive studies, go beyond observing and describing the condition and tries to explain the reasons of the phenomenon. As noted by Kothari (2004), explanatory research design examines the cause and effect relationships between dependent and independent variables.

Thus, explanatory research design used in this research because this study examined the cause and effect relationships between NPLs and its determinants which is appropriate for the objective of the study.

3.4. Population

According to Cooper and Schindler (2006), population refers to the total collection of the elements about which the researcher wishes to make inferences. For the purpose of this study, the target population is all commercial banks in Ethiopia licensed by the National Bank of Ethiopia. NBE annual report 2017/18 show that the country has 17 commercial banks in Ethiopia, one public owned and the remaining 16 private owned. This study focus on private owned banks, these are Awash international bank (AIB), Bank of Abyssinia (BOA), Wegagen bank (WB), United bank (UB), Nib international bank (NIB), Dashen bank (DB), Cooperative bank of Oromia (COOP), Lion international bank (LIB), Zemen bank (ZB), Oromia international bank (OIB), Buna international bank (BIB), Berhan international bank (BIB), Abay bank (AB), Addis international bank (AdIB), Debub Global bank (DGB) and Enat bank (EB).

3.5. Type and Source of Data

This study use panel data. Panel data contain observation of multiple phenomena obtained over multiple time periods for the same firms or individuals. Data have the dimensions of both time series and cross-sections. The analysis uses individual banks' balance sheets, loan classification by sector and impaired loans from each private banks as well as macroeconomic indicators from NBE data base. Data is based on annual frequency for 2016-2018, and covers all private

commercial banks in Ethiopia. The baseline specification includes two explanatory macroeconomics variable exchange rate and real interest rate; five explanatory bank-level variables capital adequacy ratio, loan to deposit ratio, loan growth rate of GDP ratio, loan growth rate of export sector and credit monitoring and follow-up; one business characteristics variable nature of the business. In line with IFRS implementation, the data used as NPL classification is the same with the official/standard classification of non-performing loans.

3.6. Data Collection Methods

Data collection is the process of gathering, assembling and accumulation of information; there are two methods of data collection, that is, the primary data and secondary data. This research use both primary and secondary data to determine nonperforming loans. The secondary data of macroeconomic variable (exchange rate, inflation rate and lending interest rate) collected from NBEs data base, NBE annual report, Ministry of Finance, and data of bank specific variables (Loan, deposit, total asset and equity) collected from published audited financial statements of sixteen licensed and registered private commercial banks in Ethiopia. The information covered a period of three years from years 2016 to 2018. Primary data collected through semi structured interview. This data collected from credit managers and senior credit officers of sixteen banks and the study includes interview sixteen senior loan officers and sixteen credit department manager.

3.7. Data Analysis

As stated by Brooks (2008) panel data is favored for situation often arises in financial modeling where we have data comprising both time series and cross-sectional elements. In addition, we can address a broader range of issues and tackle more complex problems with panel data than would be possible with pure time-series or pure cross-sectional data alone. Accordingly, the study model focused on panel data technique that comprises both cross-sectional elements and time-series elements; the cross-sectional element is reflected by the different Ethiopian private commercial banks and the time-series element is revealed by the period of study (2016-2018).

Therefore, to achieve the objective of the study, the data collected from different sources is coded, checked and entered to simple excel program to make the data ready for analysis, then the collected panel data is analyzed using descriptive statistics, correlation matrix and multiple linear

regression analysis. The descriptive statistics (mean, standard deviation, minimum and maximum) might use to analyze the general trends of the data from 2016 to 2018, and the correlation matrix may also use to examine the linear relationship between the dependent variable and independent variables. Finally, a multiple linear regression model is used to determine the relative importance of each independent variable in explaining the variation of NPLs in EPCBs.

The multiple linear regressions model was conducted by the ordinary listing square (OLS) method using EVIEWS 10 econometric software package. The rational for choosing OLS is that, if the Classical Linear Regression Model (CLRM) assumptions hold true, then the estimators determined by OLS will have a number of desirable properties (Brooks 2008).

Furthermore, various diagnostic tests such as normality, multicollinearity, heteroscedasticity and autocorrelation tests were conducted to decide whether the model may use in the study is appropriate and to fulfill the assumption of classical linear regression model. Finally, a multiple linear regression model was used to determine the relative importance of each independent variable in explaining the variation of NPLs in EPCBs.

3.8. Model Specification

The aim of this study is to examine determinants of NPLs in Ethiopia private Commercial Banks. The study use non-performing loans ratio as dependent variables whereas the independent variables includes real interest rate and exchange rate as macroeconomic factors and loan to deposit ratio, loan growth rate of DTS sector, loan growth rate of export sector and capital adequacy ratio as bank specific factors. These variables were selected since they are widely existent for the EPCBs. Accordingly, this the study examine the determinants of NPLs of EPCBs by adopting a multiple regression model. The regression model which is existed in most literature has the following general form;

$Yit = \beta o + \beta Xit + \varepsilon it$

Where: -

Yit	is non-performing loan for firm 'i' in year't'
β0	is the constant term
β	is the coefficient of the independent variables of the study,
Xit	is the independent variable for firm 'i' in year't' and
εit	the normal error term.

The study used the above general model to examine the determinant of NPL based on selected variables as follows:

$Yit = \beta o + \beta 1X1t + \beta 2\ X2t + \beta 3\ X3t + \beta 4\ X4t + \beta 5\ X5t + \beta 6\ X6t + \varepsilon it$

Where:-

Yit = is the dependent variable for individual i at time t in this case the Log NPLs.

βo is the constant term (intercept).

β1...β6 are the coefficients of the independent variables of the study.

X1t …. X6t are the independent variables (real interest rate, exchange rate, Loan to deposit ratio, loan growth rate DTS sector, loan growth rate export sector and capital adequacy ratio).

εit is the normal error term.

3.9. Variables of the Study

For the analyses purpose, nonperforming loan treated as the dependent variable; NPL rate calculated by using the logarithm of impaired loan, whereas Loan to deposit ratio, loan growth rate DTS sector, loan growth rate export sector and capital adequacy treated as independent variable from bank specific factors and real interest rate and exchange rate are independent variables of determinants of NPL from macroeconomic factors. Table: 3.1 Summary of variables, their definition and expected sign.

Table 3.1 Summary of Variables measurement and expected relation between dependent and independent variables

Explanatory Variable	**Measurement**	**Expected sign**
Nonperforming loan	Logarithm of NPL loans	
Real Interest Rate (RIR)	The difference between average lending interest rate and inflation rate	+
Exchange Rate (ER)	Annual Average exchange rate of Ethiopian birr in term of USD	+/-
Capital adequacy ratio (CAR)	Total equity/Total asset	-
Loan to deposit ratio (LTD)	Loan/Deposit	+
Loan growth rate of DTS sector (LGRDTS)	Average annual loan growth rate DTS sector	+
Loan growth rate of Export sector (LGREX)	Average annual loan growth rate export sector	+
Credit monitoring and follow-up	Semi structured interview questions	-
Nature of the business	Semi structured interview questions	-

Notes: A positive sign "+" indicates direct impact; whereas a negative sign "–" indicates an inverse impact of explanatory variables on dependent variable.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND INTERPRETATION

4.1. Introduction

The main objective of the study was to determine the factors affecting non-performing loans in Ethiopian private commercial banks. The chapter presents findings of data analysis and their interpretations. It commences with the test of regression assumptions to determine the suitability of the data including test of normality, multicollinearity, heteroscedasticity and autocorrelation tests. After the diagnostic testing, the chapter further applied a multiple regression analysis using panel data collected for a period of three years. The multiple regression was done using OLS (Ordinary Least Square) regression analysis to determine the influence of the independent variables on the dependent variable.

4.2. Descriptive statistics

Table 4.1 presents the descriptive statistics and the distribution of the variables considered in this research: the dependent variable Non-performing loans while explanatory variables are Real GDP Growth, Exchange Rate, Capital Adequacy Ratio, Loan to Deposit Ratio, Loan Growth Rate DTS Sector, Loan Growth Rate Export Sector and Loan to Asset Ratio. The descriptive statistic considered were minimum, maximum, mean, standard deviation, skewness and kurtosis. Mean is a measure of central tendency used to describe the most typical value in a set of values. Standard deviation shows how far the distribution is from the mean. A small standard deviation implies that most of the sample means will be near the center population means thus the sample mean has a good chance of being close to the population mean and a good estimator of the population mean. On the other hand, a large standard deviation explains that the given sample mean will be a poor estimator of the population mean (Harvill, 1991). Skewness and kurtosis were also taken into account. Skewness is a measure of symmetry, or more precisely, the lack of symmetry. A distribution, or data set, is symmetric if it looks the same to the left and right of the center point. Kurtosis is a measure of whether the data are peaked or flat relative to a normal distribution. The pertinent results are presented in Table 4.1.

Table 4.1 Descriptive statistics

	NPL	ER	RIR	CAR	LTD	LGRDTS	LGREX
Mean	5.236667	23.21427	0.044019	0.148125	0.660417	0.311667	0.683409
Median	5.300000	22.41370	0.058824	0.140000	0.670000	0.275000	0.442057
Maximum	6.290000	26.12320	0.073232	0.250000	0.780000	1.410000	5.967413
Minimum	3.970000	21.10590	0.000000	0.080000	0.500000	-0.190000	-0.074323
Std. Dev.	0.518658	2.147577	0.032012	0.036592	0.070740	0.281941	0.920307
Skewness	-0.551597	0.511618	-0.598980	0.809821	-0.560768	1.310199	4.377205
Kurtosis	3.046683	1.500000	1.500000	3.765271	2.609117	6.590028	24.54202
Jarque-Bera	2.438433	6.594026	7.370214	6.417764	2.821265	39.50958	1081.397
Probability	0.295462	0.036994	0.025094	0.040402	0.243989	0.000000	0.000000
Sum	251.3600	1114.285	2.112896	7.110000	31.70000	14.96000	32.80362
Sum Sq. Dev.	12.64327	216.7682	0.048164	0.062931	0.235192	3.736067	39.80734
Observations	48	48	48	48	48	48	48

Source: own computation from secondary data using Eview10

Table 4.1 above shows that non-performing loans had a mean of 5.24 percent and standard deviation of 0.52 with a minimum of 3.97 percent and a maximum of 6.29 percent. The result show that, on average, non-performing loans is, 5.24 across all the years under study it was more than the maximum value of the NPL ratio required by National Bank of Ethiopia. Consistent to previous empirical studies done in our country, this study also find out some banks are not fulfilling the maximum (5%) allowable limit of NPLs and it will affect the sustainability of private banks in Ethiopia.

Exchange rate has a mean value of 23.21 birr, minimum value 21.11 birr and maximum value of 26.12 birr. This result tells us that the depreciation of Ethiopian birr against USD dollar was very high during the period 2016 to 2018. I.e. the USD dollar against birr was appreciated from birr

21 in 2016 to birr 26 in 2018 which is about 23.81% inflated. Furthermore, The real interest rate, which is the difference between average lending interest rate and inflation rate, has mean value of 4.4 percent, minimum value of 0 percent and the maximum value was 7.32 percent.

From the banks specific determinant variables of NPL, capital adequacy ratio has mean value of 14.81 percent, minimum value 8 percent and maximum value of 25 percent with a standard deviation of .037. This indicates that CAR of private commercial banks in Ethiopia during study period was above the minimum requirement of NBE, which is 8%. The high levels of CAR increased risk taking leading to riskier credit portfolios.

Loan to deposit indicate how far the bank used the depositors fund on credit activity which is prone to default risk .The mean value of Loan to deposit was 66.04 percent, with a minimum value of 50 percent, a maximum value of 78 percent and a standard deviation of 7.07 percent. This result shown as, on average from one birr deposit 0.66 cent will be distributed to loan. The average 66.04 percent shows that EPCBs on average provide 0.66 cent loan from one birr collected deposit. The result indicate that Ethiopian private commercial banks are highly exposed to risk.

Loan growth rate of DTS sector of banks has a mean value of 31.17 percent, with a minimum value of -19 percent, a maximum value of 141 percent and a standard deviation of 0.28 percent. This showed that the DTS sector loan of private commercial banks has been grown, on average, at 31.17 percent per year. Furthermore, Loan growth rate of Export sector of banks had a mean value of 68 percent. This indicate that the loan of private commercial banks has been grown on average at 68 percent per year for export sector.

4.3. Tests of regression assumptions

The study performed the test of regression assumptions. The linearity of the parameter is assumed since the model applies linear ordinary least square (OLS). The objective of the model is to predict the strength and direction of association among the dependent and independent variables. Thus, in order to maintain the validity and robustness of the regression result of the research in classical linear regression model, it is better to satisfy basic assumption classical linear regression model. As noted by Brooks (2008), when these assumptions are satisfied, it is considered as all available information is used in the model. However, if these assumptions are

violated, there will be data that left out of the model. Accordingly, before applying the model for testing the significance of the slopes and analyzing the regressed result, normality, multicolinearity, autocorrelation and heteroscedasticity tests are made for identifying misspecification of data if any so as to fulfill research quality.

4.3.1 Normality test

Statistical errors are common in scientific literature. Many of the statistical procedures including correlation, regression, t- tests and analysis of variance are based on the assumption that the data follows normal distribution. Normality is important because if the assumptions do not hold, it is the impossible to draw accurate and reliable conclusions about reality. Since the assumptions are not always the case, the test of normality is usually carried out to assess the extent to which the variables of interest assume a normal probability distribution. In the event that normality is not achieved for some of the variables, then these variables would end up depicting the wrong picture of the relationships between the variables.

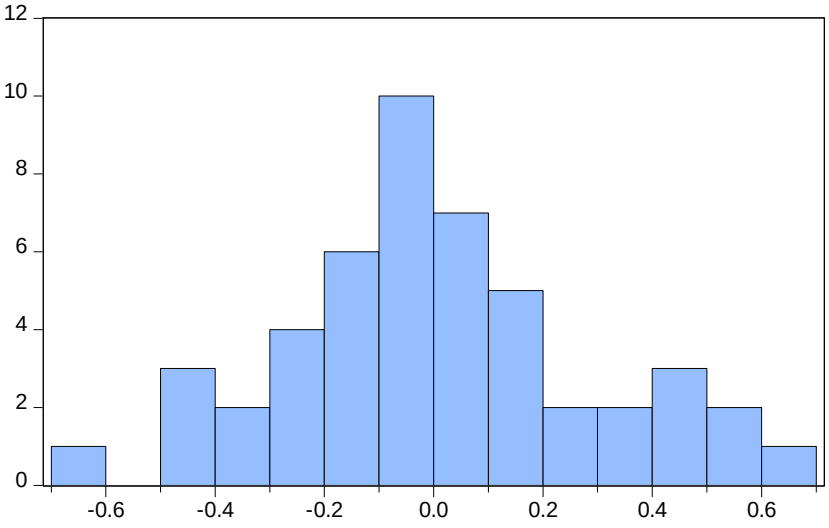
This study also relies on the Jargue-Bera test where a null hypothesis of normality is tested against the alternative hypothesis of non-normal distribution. For normal distribution the JB statistic is expected to be statistically greater than 5%. (Brooks, 2008)

H0: JB > 5% (normally distributed)

H1: JB < 5% (not normally distributed)

Rejection of the null for any of the variables would imply that the variables are not normally distributed.

Figure 4.1 Normality test



Series: Standardized Residuals	
Sample 2016 2018	
Observations 48	
Mean	-6.98e-16
Median	-0.022100
Maximum	0.671918
Minimum	-0.621649
Std. Dev.	0.281840
Skewness	0.310524
Kurtosis	2.906630
Jarque-Bera	0.788837
Probability	0.674072

Source: own computation from secondary data using Eview10

From Figure 4.1 the result of the regression analysis above, JB (Jarque-Bera) statistic has p-Value of 0.67, this implies that P-Value of JB test is greater than 0.05 which indicates there is no evidence for the presence of abnormality in the data. Therefore, the error term is normally distributed and the normality assumption is not violated. I.e. the Null hypothesis of the error term is normally distributed is cannot be rejected.

4.3.2 Multicollinearity test

Multicollinearity is a test that evaluates whether the independent variables are highly correlated. It occurs when two or more predictors in the model are highly correlated leading to unreliable and unstable estimates of regression coefficients hence causing strange results when attempting to study how well individual independent variables constitute to an understanding of the dependent variable. The consequences of Multicollinearity are increased standard error of estimates of the Betas, meaning decreased reliability and often confusing and misleading results. According to Gujarati (2004) multicollinearity could only be a problem if the pair-wise correlation coefficient amongst repressors is above 0.80.

The test for Multicollinearity was conducted to assess whether one or more of the variables of interest is highly correlated with one or more of the other independent variables. This was tested using correlations and results are presented in Table 4.2.

Table 4.2. Multicollinearity Tests

	CAR	ER	LGRDTS	LGREX	RIR	LTD
CAR	1	-0.139964	0.341007	0.150133	0.090062	0.087437
ER	-0.139964	1	-0.291202	-0.389718	0.082770	0.027697
LGRDTS	0.341007	-0.291202	1	-0.097029	-0.468551	0.075707
LGREX	0.150133	-0.389718	-0.097029	1	0.465230	-0.053954
RIR	0.090062	0.082770	-0.468551	0.465230	1	-0.020567
LTD	0.087437	0.027697	0.075707	-0.053954	-0.020567	1

Source: own computation from secondary data using Eview10

From the above result (table 4.2), the researcher has concluded that there is no indication of perfect multicollinearity between the independent variables. This is an indication of the absence of multicollinearity between the explanatory variable in the research study. Thus, the assumption of no multicollinearity is not violated. Therefore, the researcher concluded that there is no linear association between the explanatory variables included in the study of the determinants of NPLs.

Multicollinearity problem can increase the variance of the coefficient estimates and make the estimates very sensitive to minor changes in the model. In other words, by overinflating the standard errors, multicollinearity makes some variables statistically insignificant when they should be significant. Without multicollinearity those coefficients might be significant. The result is that the coefficient estimates are unstable and difficult to interpret. High association among independent variables reduces the impact of individual independent variables to the non-performing loan of the EPCBs.

4.3.3 Heteroscedasticity test

In the classical linear regression model, one of the basic assumptions is Homoscedasticity assumption that states as the probability distribution of the disturbance term remains same for all observations. That is the variance of each ui is the same for all values of the explanatory variable. However, if the disturbance terms do not have the same variance, this condition of nonconstant variance or non-homogeneity of variance is known as heteroscedasticity (Bedru and Seid, 2005). Accordingly, in order to detect the heteroscedasticity problems, Breusch-Pagan test was utilized in the study. The results were as presented in table 4.3.

Table 4.3. Heteroscedasticity test

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.561698	Prob. F(6,41)	0.1829
Obs*R-squared	8.929268	Prob. Chi-Square(6)	0.1776
Scaled explained SS	6.210656	Prob. Chi-Square(6)	0.4000

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 01/14/20 Time: 04:33

Sample: 1 48

Included observations: 48

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.331019	0.250467	1.321608	0.1936
ER	-0.006916	0.008433	-0.820140	0.4169
RIR	-1.200424	0.644636	-1.862174	0.0698
CAR	-0.075745	0.468147	-0.161798	0.8723
LTD	0.040407	0.217842	0.185489	0.8538
LGRDTS	-0.143754	0.070529	-2.038225	0.0480
LGREX	-0.006129	0.008134	-0.753518	0.4554

R-squared	0.186026	Mean dependent var	0.077779
Adjusted R-squared	0.066908	S.D. dependent var	0.108534
S.E. of regression	0.104840	Akaike info criterion	-1.538721
Sum squared resid	0.450650	Schwarz criterion	-1.265837
Log likelihood	43.92930	Hannan-Quinn criter.	-1.435598
F-statistic	1.561698	Durbin-Watson stat	1.583339
Prob(F-statistic)	0.182947		

Source: own computation from secondary data using Eview10

This test states that if the P-value is significant at 95% confidence interval, the data has heteroscedasticity problem, whereas if the p value is insignificant (greater than 0.05), the data has no heteroscedasticity problem. The third version of the test statistic, Scaled explained SS, which as the name suggests is based on a normalized version of the explained sum squares from the auxiliary regression also indicated there is no evidence of heteroscedasticity. Thus, the researcher concluded that the variance of the errors term is constant or homoscedasticity. Therefore, the null hypothesis that there is heteroscedasticity in the error term should be rejected.

4.3.4 Autocorrelation test

Furthermore, the researcher tested the autocorrelation assumptions that imply zero covariance of error terms over time. That means errors associated with one observation are uncorrelated with the errors of any other observation. As noted by Gujarati (2004), the best renowned test for detecting serial correlation is Durbin Watson test. The null hypothesis of the test is that there is no serial correlation in the residuals up to the specified order. The results are as indicated in Table 4.4.

Table 4.4. Autocorrelation test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	3.256831	Prob. F(2,39)	0.0492
Obs*R-squared	6.869493	Prob. Chi-Square(2)	0.0322

Test Equation:

Dependent Variable: RESID

Method: Least Squares

Date: 01/14/20 Time: 04:48

Sample: 1 48

Included observations: 48

Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.

C	-0.062610	0.685629	-0.091318	0.9277
ER	0.000398	0.023084	0.017260	0.9863
RIR	-0.257013	1.782557	-0.144182	0.8861
CAR	0.444282	1.291681	0.343957	0.7327
LTD	0.016502	0.603064	0.027364	0.9783
LGRDTS	-0.042675	0.195112	-0.218719	0.8280
LGREX	-0.000298	0.022344	-0.013333	0.9894
RESID(-1)	0.409326	0.160407	2.551799	0.0147
RESID(-2)	-0.163769	0.171541	-0.954692	0.3456

R-squared	0.143114	Mean dependent var	-8.46E-16
Adjusted R-squared	-0.032657	S.D. dependent var	0.281840
S.E. of regression	0.286405	Akaike info criterion	0.504539
Sum squared resid	3.199079	Schwarz criterion	0.855389
Log likelihood	-3.108939	Hannan-Quinn criter.	0.637126
F-statistic	0.814208	Durbin-Watson stat	1.968364
Prob(F-statistic)	0.594541		

Source: own computation from secondary data using Eview10

The results reveal that the coefficients are statistically significant and the fit is very tight. The test accepts the hypothesis of no serial correlation. The LM test indicate that the residuals are not correlated. Accordingly, if the Durbin-Watson computed nearest to 2 in application, it is assumed that there is no autocorrelation problem. Thus, as shown in Table 4.4 the computed "Durbin-Watson" in this study was 1.968 which are nearest to 2 implying the absence of autocorrelation problem. Thus, this implies that error terms are not correlated with one another for different observation in this study.

4.4. Results of Regression Analysis

The study run the overall regression analysis to determine the level of significance of the effects of macroeconomics and bank's specific factors on Non-performing loans. Macroeconomics factors were exchange rate and real interest rate whereas Bank's specific factors were capital adequacy ratio, loan to deposit ratio, loan growth rate of DTS sector and loan growth rate of export sector.

Regression analysis is a statistical process that helps to know the relationships among variables. It includes many techniques for modeling and analyzing several variables, when the focus is on the relationship between a dependent variable and one or more independent variables. More specifically, regression analysis helps one understand how the typical value of the dependent variable changes when any one of the independent variables is varied, while the other independent variables are held fixed.

Table 4.5. Regression analysis

Dependent Variable: NPL

Method: Panel Least Squares

Date: 01/14/20 Time: 20:36

Sample: 2016 2018

Periods included: 3

Cross-sections included: 16

Total panel (balanced) observations: 48

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CAR	-9.505321	1.347453	-7.054288	0.0000**
ER	0.054104	0.024272	2.229060	0.0314*
LGRDTS	-0.472197	0.203001	-2.326081	0.0250*
LGREX	0.047929	0.023413	2.047124	0.0471*
RIR	-2.757763	1.855434	-1.486317	0.1448
LTD	-0.088871	0.627009	-0.141738	0.8880
C	5.633736	0.720912	7.814735	0.0000**

R-squared	0.704714	Mean dependent var	5.236667
Adjusted R-squared	0.661501	S.D. dependent var	0.518658
S.E. of regression	0.301758	Akaike info criterion	0.575657
Sum squared resid	3.733380	Schwarz criterion	0.848540
Log likelihood	-6.815760	Hannan-Quinn criter.	0.678780
F-statistic	16.30807	Durbin-Watson stat	0.991736
Prob(F-statistic)	0.000000		

Source: Own Eview10 computation using data from NBE

*** Significant at 1% level of confidence*

** Significant at 5% level of confidence*

The above Table 4.5 presented econometric regression result of nonperforming loan as dependent variable and two macroeconomic and four bank specific independent variables from all private commercial banks in Ethiopia. The results presented in Table 4.5 broadly confirm that both bank specific and macroeconomic factors play a role in affecting the banks NPL, although the contribution of macroeconomic factors is relatively low.

Using the result above, we can rewrite the model by including the coefficients of the result as follows:

NPL=5.63+0.054ER-2.758RIR-9.505CAR-0.089LTD-0.472LGRGDP+0.048LGREX+Ût

R^2 is a statistic that will give some information about the goodness of fit of a model. Besides, R^2 is a number that indicates the proportion of the variance in the dependent variable that is predictable from the independent variable. In regression, the R^2 coefficient of determination is a statistical measure of how well the regression line approximates the real data points. An R^2 of one indicates that the regression line perfectly fits the data. It provides a measure of how well observed outcomes are replicated by the model, based on the proportion of total variation of outcomes explained by the model.

Table 4.5 shows that the value of the R-Squared is 0.70, this figure suggested that the explanatory variable exchange rate, real interest rate, capital adequacy ratio, loan to deposit ratio, loan growth rate of DTS and Export sectors of commercial banks together explained about 70% change or variation in the dependent variable or nonperforming loans. Thus, 70% of changes in nonperforming loans of private commercial banks are due to change in the explanatory variables identified by the researcher.

The Adjusted R-Squared is 0.66, the explanation of this statistic is almost the same as R2 but it penalizes the statistic as extra variables are included in the model. It showed that the overall fitness of the model as one extra variable is included in the model. Thus, the value of 0.66 indicated the goodness of the model 66% of the change in NPLs in private commercial banks in Ethiopia is due to change in the above macroeconomic and bank specific variables.

Accordingly, the F-test result shows that the null hypothesis is rejected as the probability of F-statistic is 0.0000. In other words, the change in exchange rate, real interest rate, capital adequacy ratio, loan to deposit ratio, loan growth rate of DTS and Export sectors collectively explain 66% of the variation in NPLs ratio of EPCBs.

The following section demonstrate, the relationship between dependent variable and all independent variables and the overall results of the study were discussed in detail based on the above regression result.

4.4.1. Nonperforming Loans and Exchange Rate

The research result (Table 4.5) has indicated that there is positive relationship between exchange rate of birr for dollar and nonperforming loan. The empirical and existing literature reviews have supported the result. The coefficient of 0.0541 interpreted as keeping other explanatory variable constant, an increase of 1% in exchange rate will result an increase in 5.41% in nonperforming loans in private commercial banks in Ethiopia which is statistically significant at 5% level of confidence. Thus, the researcher fails to reject the null hypothesis exchange rate and nonperforming loan in private commercial banks in Ethiopia has positive relationship.

According to Pasha and Khemraj (2009) As far as relationship of the exchange rate is concerned literature provides mixed reviews. There is a positive relationship between exchange rate and non-performing loans. An appreciation in exchange rates may have different implications i.e. it can adversely affect the loan payment capacity of export oriented firms (Fofack, 2005) on the other hand it can positively affect the loan payment capacity of those borrowers who borrow in foreign currency, the relationship between nominal exchange rate (includes inflation) and non-performing loans is indeterminate.

4.4.2. Nonperforming Loans and Real Interest Rate

The regression result (Table 4.5), real interest rate and nonperforming loan has negative relationship with nonperforming loan in private commercial bank in Ethiopia. The result was contradict with the existing literature and empirical evidence discussed above. Besides, as per p-value result which is 0.145, it is statistically insignificant even at 10% level of confidence. The coefficient -2.76 interpreted as other thing remain constant, an increase in real interest rate by one percent will result a decrease in 276% of nonperforming loan of private commercial banks in

Ethiopia. Thus, the researcher reject the null hypothesis, that real interest rate and nonperforming loan has a positive relationship.

Real interest rate shows prices of loans and real costs which are incurred by economic agents. For this reason, the change of real interest rate will influence individuals' and enterprises' debt payment to commercial banks. Also, together with decline in GDP growth, high unemployment rate, the increase in real interest rate and high inflation rate is considered an alert for banking crisis Demirguc (1998). The previous experimental studies also find the existence of strong correlations between real interest rate and credit risk at commercial banks such studies conducted by Bofondi and Ropele (2011) or Berge and Boye (2007) and Louzis (2010). A win-win correlation between real interest rate (Realirt) and credit risk (NPLs) is expected by the author.

4.4.3. Nonperforming Loans and Capital Adequacy Ratio

Table 4.5 showed that the coefficient of Capital adequacy ratio and nonperforming loans has a negative relationship. The empirical and existing literature reviews have supported the result. The coefficient of -9.505, implies that 1% change in banks capital adequacy ratio, keeping other explanatory variables constant had resulted 951% changes on the level of nonperforming loans in private commercial banks in Ethiopia in opposite direction which is statistically significant at 1% level of confidence. Thus, the researcher fails to reject the null hypothesis Capital adequacy has a negative significant effect on Ethiopian private commercial banks of NPL.

The result is consistent with Rahman (2017). However, the finding is inconsistent with the result of (Sinkey and Greenawlat 1991; Salas and Saurina 2002; Boudriga et.al. 2009; Ahmad and Ariff, 2007; and Makri et.al. 2014). The result indicates that higher capital requirement protects Ethiopian private commercial banks from providing loans to more risky projects. The capital increase improves the bank ability to with stand financial shocks. Ethiopian private commercial banks if they have higher capital adequacy banks not interested for risky activity also high capital adequacy is measure the overall financial strength of a bank and indicator of efficient management. Efficient management leads to high screening, monitoring and controlling to borrowers of inferior quality (Negera 2012). If during the study period when Ethiopian private commercial banks hold higher amount of capital, they had low non-performing loan and when they hold lower amount of capital, EPCBs had high nonperforming loan.

4.4.4. Nonperforming Loans and Loan to deposit ratio

Table 4.5 showed that the coefficient of loan to deposit is -0.089. The coefficient indicate that there is insignificant and negative relationship between loan to deposit ratio and Ethiopian private commercial bank NPL even at 10% significant level. This means, holding other factors constant, an increase in Loan to deposit by one unit will result 8.9% decrease of Ethiopian private commercial banks NPL. Thus, reject the null hypothesis since there is a positive significant relationship between Loan to deposit and non-performing loans. This result is consistent the findings of (Swamy 2012; Rahman 2017; Jimenez and Saurian 2005 and Sinkey and Greenwalt 1991), although some studies such as (Makri et al. 2014; Saba et al. 2012; Louzis et al. 2010; and Ranjan and Chandra 2003) found that there is a negative relationship between LTD and NPLs.

According to Ahmad and Bashir (2013) the reason for the positive relation is that with the increase in deposit rate, the interest spread rate and competitiveness of the banks decline, because of which deposit holders demand higher rates, in order to attract deposits banks has to pay higher rates. To pay for deposit holders banks lend funds at higher rates to the low quality borrowers and by using unethical practices, or any other means, as a result low quality borrowers do not repay loans, thus end result in the growth of NPLs.

4.4.5. Nonperforming Loans and Loan growth rate DTS sector

Referring to the regression result above (Table 4.5), loan growth rate DTS sector in private commercial banks in Ethiopia has showed negative relationship to NPL. The coefficient of-0.473 interpreted as keeping other explanatory variables kept constant, an increase in loan growth rate by one birr will resulted in a decline in 47.3 % of NPLs of private commercial banks in Ethiopia which is statistically significant at 0.05 percent level of confidence. But as the existing empirical evidence from different countries, the loan growth rate and nonperforming loan has positive relationship. Thus, the researcher reject null-hypothesis that loan growth rate DTS sector and nonperforming loan has positive relationship.

4.4.6. Nonperforming Loans and Loan growth rate Export sector

The regression result above (Table 4.5), loan growth rate export sector in private commercial banks in Ethiopia has showed positive relationship with nonperforming loan. The empirical and

existing literature reviews have supported the result. The coefficient of 0.048 interpreted as keeping other explanatory variables kept constant, an increase in loan growth rate of export sector by one birr will resulted an increase in 4.8 % of NPLs of private commercial banks in Ethiopia which is statistically significant at 5% level of confidence. Thus, the researcher fails to reject the null-hypothesis that loan growth rate export sector and nonperforming loan has positive relationship. The coefficient is also very small indicating that change in loan growth has very small effect on change in nonperforming loan in private commercial banks in Ethiopia.

Rapid credit growth may lead to an adverse selection, and may be associated with reduced credit quality as risk taking intensifies during such periods, adversely affecting the level of non-performing loans (Erdinç and Abazi, 2014). Besides, rapid credit growth often occurs in the period of fierce competition among commercial banks, causing the reduction in credit standards and the increase in credit risk in the future (Salas and Saurina, 2002; Jimenez and Saurina, 2005).

4.4.7. Credit Monitoring and Follow-up

As researcher mentioned in previous discussion this variable is covered by semi structured in-depth interview with the credit managers and senior loan officers in each sixteen private commercial banks. As per the interview conducted with credit managers and senior credit officer of EPCBs, in order to have information about the current practices regarding to the determinant of NPL in EPCBs. As per the finding of the interview banks didn't assign a specialized man power to select appropriate export or DTS sector projects, most of loan officers and managers get adequate skill through experience. Related to this, some loan officers have lack of skill to assess adequately customer risk level and sometimes they accept un-bankable project which eventually failed to the repayment of the loan. In the view of credit managers, poor credit appraisal techniques by loan can be a reason for some loans becoming delinquent.

Furthermore, according to the interview finding there is no central separated organized information center to access/evaluate of credit financing of DTS or export sectors. The analysis done based on the data supplied by the borrower, in connected to this the information is more biased by the borrower.

The interview indicate that if the bank has strong knowledge about the credit history of the borrower, it leads to high loan quality. Furthermore the study also indicated that poor risk

assessment can also lead to high NPLs. The five Cs (Character, Condition, Collateral, Capital and Capacity) are cornerstone principles that should be considered for every lending decision. (Strischek, 2000).

The survey results showed that almost all of the respondents agreed that tight monitoring of loans enhance credit quality. This has been verified in the literature as stated that regular and adequate monitoring of a loan would deduce the result of Non-Performing Loans. The Interview results also show that if a loan is poorly assessed then it can be partially avoided from default by adequate monitoring. Generally, the interview results indicates that credit monitoring directly affects the occurrence of NPLs.

As per the literature review and hypostasis derived earlier credit monitoring and follow-up have negative correlation with the growth rate NPLs. That means when the other thing is constant, the efficiency of the bankers is increase from the application of loan until the final loan repayment, then the quality of the loan gone be good. The finding is also consistent with, the previous studies expressed that the loans are more secured if the banks keep a continuous check on the borrowers. Salas and Saurina (2002), (Berger and DeYoung, 1997). The result is also parallel with previous studies such as Deininger and Liu (2009); Papias and Ganesan (2009) and Olomola (2000) which found that loan monitoring is an important factor in increasing/decreasing loan repayment rate among borrowers. Thus, the researcher fails to reject the null-hypothesis that credit monitoring and follow-up and nonperforming loan has negative relationship.

4.4.8. Nonperforming Loans and Nature of the Business

This variable also the second variables that used a primary data through semi structured in-depth structured in-depth interview in order to know the actual perception of the banks personals regarding to the default of DTS and export sector in Ethiopian private commercial banks. The finding of the interview implies that the most significant factors that cause the defaults of Export sector by the side of exporters are fund diversion (borrowers use the financing to other activities) and lack of business knowledge. Furthermore, the loan officers and managers who are on the field also assign different factors that cause DTS sector defaults by the borrower side, this are lack of foreign currency, political instability, liquidity problem regarding to high inflation rate, commodity problem, traditional business practice, lack of monitoring, inadequate business skill, negligence, poor management skill and seasonal business environment.

Generally as per the interview result export sector have special incentive than other business sector except manufacturing sector. However, most of interviewees suggest that financing incentive in a special sector didn't achieve the intended target. The intended purpose of the incentive is to ensure economic development by accelerating industrial growth of the country and to improve the foreign exchange earning needed for development and investment. However, to achieve the requirement and to maintain high amount of foreign currency, private banks disburse large amount of loan to export sector sometimes without having a collateral and this situation create high computation between private commercial banks. Besides, some exporters didn't use this incentive for the intended purpose.

In the other hand, the finding of the interview implies that the significant factors that cause the default of Export sectors in side of the banks are excess loan disbursement some times without having a collateral and lack of credit monitoring and follow up and DTS sectors defaults are occurred through inadequate loan disbursement, dalliance of loan disbursement related to loan portfolio, high interest rate, wrong timing of credit delivery and lack of credit monitoring and follow-up. In both domestic trade and service and export sectors there is scarcity in well trained employees and this scarcity drop down the profit of the sector.

As per the interview conducted with the credit managers and senior credit officer of EPCBs, business characteristic/nature is one of the major factors that can affect Ethiopian banks NPLs negatively. The result also consistent with the finding of Mesay (2017); Nguta and Huka (2013). Thus, the researcher fails to reject the null-hypothesis that nature of the business and nonperforming loan has negative relationship.

CHAPTER FIVE

SUMMARY OF MAJOR FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1. Introduction

This chapter summarizes the study and makes conclusion based on the findings. The recommendations of the study and areas for further research are also presented. This section presents the findings from other studies in comparison to what other scholars have said as noted under literature review. This chapter is organized into the following sub-sections; Introduction, Summary of major findings, Conclusion, Recommendations, and Suggestions for further studies.

5.2. Summary of major findings

The main objective of the study was to determine the factors affecting non-performing loans of Ethiopian private commercial banks. To achieve this broad objective, the study used mixed methods research approach. More specifically, quantitative research approach along with review of published annual financial report and NBE data was used. In addition, to have a better insight and to gain a richer understanding about the research problem, the quantitative method was supplemented with the qualitative method of semi structured interviews.

To this end, the collected data from all sixteen private bank of Ethiopian private commercial banks over the period of 2016 to 2018 were analyzed using descriptive statistics and multiple linear regression analysis. The analyses were made in line with the stated hypotheses and specific research questions formulated in the study. In doing so, previous studies on determinants of bank's NPLs have been reviewed and as per the literature NPLs of banks' usually expressed as a function of internal and external determinants.

Accordingly, in this study, five bank specific variables (i.e., Capital adequacy ratio, loan to deposit ratio, loan growth rate of DTS sector, loan growth rate of export sector and credit follow-up and monitoring) and two macroeconomic variables (i.e., Exchange rate and real interest rate) and one borrower characteristic (nature of business) were included. Therefore, the empirical findings indicate that:

- Exchange rate were found to be a major determinant of NPLs in EPCBs with 5% significance level. The finding show that there is positive relationship among exchange rate and NPLs in Ethiopia private commercial banks. The result is consistence with literatures and most empirical studies.
- Real interest rate were found to be statistically insignificant determinants of NPLs in EPCBs. In particular, it association has a negative with the levels of NPLs.
- Capital adequacy ratio, were found to be a major determinant of NPLs in EPCBs with 1% significance level. The findings also suggested there is a negative relationship among capital adequacy ratio and NPLs of EPCBs which was consistence with the prior studies.
- Loan growth rate of DTS sector, were found to be a major determinant of NPLs in EPCBs with 5% significance level. There is a negative relationship between loan growth rate of DTS sector and NPLs of EPCBs which was inconsistent with the prior expectation.
- Loan growth rate of export sector were found to be a major determinant of NPLs in EPCBs with 5% significance level. There is a positive relationship between loan growth rate of Export sector and NPLs of EPCBs which was consistent with the prior expectation.
- Loan to deposit ratio were found to be statistically insignificant determinants of NPLs in EPCBs and particular, loan to deposit ratio had a negative association with the levels of NPLs.
- According to the loan officers and credits managers perception credit monitoring and follow-up has a negative and significant relationship with the NPLs.
- Lastly, as per the interview conducted with the credit managers and senior credit officer of EPCBs, business characteristic/nature is one of the major factors that can affect Ethiopian banks NPLs negatively.

5.3. Conclusion

According to the researcher findings, it was possible to document the factors affection nonperforming loans in EPCBs as derived from the study findings. It is noteworthy that the research findings compare closely with previous findings in other parts of the world as well as

findings of similar studies carried out in Ethiopia. Consequently, the empirical findings of this particular study suggested the following conclusions:

- In this study an increase in the change in exchange rate against US dollar will increase the level of NPLs since the local borrower fail to pay due to the burden of deterioration of birr. But, when the country‘s source of foreign currency is from export related business, the relationship between exchange rate and NPLs will be negative.
- Real interest rate shows price of loans and real cost which are incurred by economic agents. It is the difference between average lending interest rate and inflation rate of the country. For this reason, the change of real interest rate will influence individuals’ and enterprises’ debt payment to commercial banks. In this study, the result showed that the relationship between real interest rate and non-performing loans in Ethiopia private commercial banks is statistically insignificant. The researcher believed that the time period of the study have some impact on the regression result.
- CAR negative relationship with NPLs of Ethiopian private commercial bank. The result indicates that higher capital requirement protects Ethiopian private commercial banks from providing loans to riskier projects. This indicates banks with strong CAR have a tendency to absorb possible loan losses and thus, reduce the level of NPLs due to efficient utilization of its capital. In the other meaning, If EPCBs hold higher amount of capital, they had low non-performing loan and when they hold lower amount of capital, EPCBs had high nonperforming loan.
- As per the existing literature and most empirical studies, the growth rate of bank‘s loans was found to contribute to higher NPLs in the subsequent periods. But, the study result showed the opposite. An increase in DTS sector loan will result in decline in the level of NPLs of private commercial banks in Ethiopia. This indicated that further study will be under taken specially, in the disbursement time. I.e. if high disbursement rate is observed at year end or 4^{th} quarter, the NPLs amount will automatically decline. Because, when there is high amount of disbursement rate at the end of fiscal year the impaired loans are categorized on performing loan classification. In this scenario, the non performing figure DTS sector will be decline.

- The level of NPLs increase when the loan growth rate of export rate is increased. Meanwhile, aggressive lending, bank's excessive risk appetite and compromised integrity in approving credit and rapid credit growth were believed to cause for occurrence of loan default. This finding is in line with and supports the empirical study of Keeton and Morris (1987) that reported banks with greater risk appetite tend to record higher losses.
- The loan to deposit ratio is a commonly used statistic for assessing a bank's liquidity and it reflects the utilization of funds policy of the bank. An increase in this ratio is indicative of the bank deploying more funds to loans. The study finding indicate that the relationship between loan to deposit ratio and non-performing loan of Ethiopia private commercial banks is statistically insignificant. The researcher believed that the time period of the study have some impact on the regression result.
- As the interview suggested, other internal factors such as absence of adequate man power, lack of comprehensive studies on the credit applicants, lack of follow-up on the borrower's activities or failure to follow up the collateral provided by the borrowers were also the major internal determinants of NPLs in ECBs.
- Lastly, interview advocated that, factors related to the borrowers such as providing false information to the bank, using the loan for other purposes that are undesirable from the banks' point of view (fund diversion), political instability, commodity problem, inadequate business skill, negligence, poor management skill, seasonal business environment and operational losses of borrower were also the part of business characteristics that determinants of NPLs in EPCBs.

5.4. Recommendations of the study

Based on the findings of the study the following recommendations were forwarded;

- Exchange rate can have mixed (positive or negative) implications on borrowers' debt servicing capacity. On the one hand, it can improve the competitiveness of export oriented firms. As long as the value of domestic currency lower, export oriented firms can dominate the international market at lower price since their production cost is covered in domestic currency which has lower value than foreign currency and their revenue is collected in foreign currency which has higher value as compared to the domestic currency. Hence, depreciation of exchange rate can improve the debt servicing

capacity of export-oriented borrowers. In the other side, it can adversely affect the debt-servicing capacity of borrowers who borrow in foreign currency (import oriented firms). According to the finding, the researcher recommend that government should work out to reduce import oriented borrowers (firms) and increasing export oriented borrowers to reduce the level of nonperforming loans in EPCBs.

- The higher capital adequacy measure the overall financial strength of a bank and it is indicator of efficient management. Regarding to this, National Bank of Ethiopia minimum requirement of CAR is 8%. Therefore, the study recommend that National Bank of Ethiopia and private commercial bank managers should strictly follow the requirement of capital adequacy ratio to protect banks from providing loans to more risky projects.
- The expansion of credit may not be a problem by itself, but such expansion leads to poor screening and lending. Therefore, in order to protect the occurrence of loan default or to reduce the negative impact of loan growth rate, Private Banks in Ethiopia should review pre-and post-credit risk assessments and monitoring process.
- The growth of customer deposits impacts positively on a bank's lending activity. Therefore, the study recommend that private banks in Ethiopia should considered their loan to deposit ratio and riskiness of their loan portfolio before lending decision.
- To reduce the level of nonperforming loan, private commercial banks needs to make sure that borrowed funds are being used for the intended purpose through enhanced timely credit monitoring after the loan is being disbursed. Furthermore, government and the private banks need to quickly improve their policy regarding risk assessment and credit follow-up and monitoring techniques.
- As per the interviewees, borrowers related factors such as fund diversion and providing false information are quite important determinants of NPLs in Ethiopian private commercial banks. Thus, Ethiopian private commercial Banks should put in place active credit policy that would encompass issues of proper customer selection, monitoring and follow up and clear recovery strategies for sick loans.

5.5. Suggestions for further studies

This research tried to meet the gap between the existing literatures. Even if there are so many bank specific, macroeconomic and borrower specific variables the study only see determinants of NPLs by taking only two macro, five bank specific and one business characteristics variables. However, there are other variables other than the above ones that can determine banks nonperforming loan. Furthermore, the study only consider three years data because of early implementation of IFRS. Thus, the researcher recommend other researchers to conduct a research in the future by extending the time period.

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Appendixes

Appendix A: Interview guide lines for credit managers and credit officers

1. What is your opinion on the basic factors that determine occurrence of nonperforming loans in general from the bank side?
2. What would be your suggestion on the significant factors that cause default on export and domestic trade service loans?
3. Do you believe the banks could have credit rating schema prior financing to export and DTS loans?
4. Does the managers or officers in credit process have the specialized man power to select appropriate export and domestic trade service projects? If no what is the reason?
5. What are the credit assessment technique in your bank to know your customer risk level?
6. Do you have any special incentives for domestic trade service and export sectors? If there is how?
7. After disbursing the loan how to follow up your customer until the final repayment? What is the bank policy of loan follow up after disbursement?
8. What are basic challenges faced while financing export and domestic trade service sector?
9. Do you think that financing incentives in a specific sectors has achieved its intended target?

Appendix B: Loan Classification

According to the NBE Directive No. SBB/69/2018 Ethiopian government and private banks classified their loans into the following five classification categories using the loans criteria.

- ✓ **Pass**: Loans or advances classified in this category are fully protected by the current financial and paying capacity of the borrower and not subject to any criticism. In general, any loan or advance, which are fully secured, both as to principal and interest by cash or cash substitutes, classified under this category regardless of past due status or other adverse credit factors

- ✓ **Special Mention**: Loans or advance categories in this category if potential weaknesses exist in the obligor's financial position. Loan or advance with pre-established repayment program pas due 30 days or more, but less than 90 days; and overdrafts and loans or advance that do not have a pre-established repayment program, if; the debt remains outstanding for 30 consecutive days or more beyond the scheduled payment date or maturity, but less than 90 days; or the debt exceeds the borrower's approved limit for 30 consecutive days or more, but less than 90 days; or interest is due and uncollected for 30 consecutive days or more; but less than 90 days; or for overdrafts, the account has been inactive for 30 consecutive days or more, but less than 90 days or the accounts fails to show debit balance of one to four percent of the approved limit at least once over 360 days preceding the date of loan review.
- ✓ **Substandard**: Loans or advance categories in this category if it has one or more well-defined weaknesses exist in the obligator's financial conditions that make the full collection of the principal and interest questionable. Loan or advance with pre-established repayment program pas due 90 days or more, but less than 180 days; and overdrafts and loans or advance that do not have a pre-established repayment program, if; the debt remains outstanding for 90 consecutive days or more beyond the scheduled payment date or maturity, but less than 180 days; or the debt exceeds the borrower's approved limit for 90 consecutive days or more, but less than 180 days; or interest is due and uncollected for 90 consecutive days or more; but less than 180 days; or for overdrafts, the account has been inactive for 90 consecutive days or more, but less than 180 days or the accounts

fails to show debit balance of five to nineteen percent of the approved limit at least once over 360 days preceding the date of loan review.

- ✓ **Doubtful**: Loans or advance categories in this category when weaknesses exists which make collection or repayment in full highly questionable and improbable based upon currently existing circumstances of the obligator's. Loan or advance with pre-established repayment program pas due 180 days or more, but less than 360 days; and overdrafts and loans or advance that do not have a pre-established repayment program, if; the debt remains outstanding for 180 consecutive days or more beyond the scheduled payment date or maturity, but less than 360 days; or the debt exceeds the borrower's approved limit for 180 consecutive days or more, but less than 360 days; or interest is due and uncollected for 180 consecutive days or more; but less than 360 days; or for overdrafts, the account has been inactive for 180 consecutive days or more, but less than 360 days or the accounts fails to show debit balance of twenty to forty nine percent of the approved limit at least once over 360 days preceding the date of loan review.
- ✓ **Loss**: Loans or advance categories in this category when if it is uncollectible. Loan or advance with pre-established repayment program pas due 360 days or more; and overdrafts and loans or advance that do not have a pre-established repayment program, if; the debt remains outstanding for 360 consecutive days or more; or the debt exceeds the borrower's approved limit for 360 consecutive days or more; or interest is due and uncollected for 360 consecutive days or more; or for overdrafts, the account has been inactive for 360 consecutive days or more; or the accounts fails to show debit balance of fifty percent and above of the approved limit at least once over 360 days preceding the date of loan review.

National Bank of Ethiopia defined NPLs as "loans or advances whose credit quality has deteriorated such that full collection of principal and/or interest in accordance with the contractual repayment terms of the loan or advances in question".

Therefore, loans or advances categories in substandard, doubtful and loss are available for nonperforming loan, respectively due to doubt and difficulty collection.

Appendix C: Summary of eight banks nonperforming loans figure by sector (2016 - 2018)

	Loan Sector	NPL (Birr'000)		Loan Sector	NPL (Birr'000)
Dashen Bank			**Awash Bank**		
	Loans and advances under litigation	811,154.00		Domestic trade and services	711,540.00
	Domestic trade and services	452,868.00		Export	238,581.00
	Transport	204,777.00		Building and construction	179,603.00
	Construction, Machinery and Working capital	158,428.00		Transport	83,790.00
	Manufacturing	63,225.00		Import	35,835.00
	Export	57,178.00		Agriculture	34,902.00
	Real Estate	21,365.00		Manufacturing	30,442.00
	Import	21,075.00		Personal loans	5,259.00
	Personal	17,705.00		Personal	3,274.00
	Agriculture	14,919.00		Merchandise	1,291.00
	Staff Housing Loans	600.00		Staff Loans	116.00
	Advances on Letters of Credit	512.00		Staff Loans and Advance	104.00
	Total	**1,823,806.00**		**Total**	**1,324,737.00**
Abyssinia Bank			**Zemen Bank**		
	Domestic trade and services	254,022.00		Domestic trade and services	519,502.00
	Export	117,339.00		Export	309,858.00
	Industry	73,161.00		Import	183,506.00
	Import	68,298.00		Agriculture	113,226.00
	Transport	49,481.00		Industry	61,850.00
	Construction	25,579.00		Building and Construction	53,212.00
	Agriculture	7,461.00		Hotel and tourism	32,892.00
	Consumer or personal	4,690.00		Transportation	23,727.00
	Total	**600,031.00**		Transport and Communication	16,275.00
				Consumer	456.00
				Personal Loans Customers	267.00
				Staff loans	223.00
				Total	**1,314,994.00**

	Loan Sector	NPL (Birr'000)		Loan Sector	NPL (Birr'000)
Oromia Int. Bank	Domestic trade and services	315,870.00	**Wegagen Bank**	Export	991,469.00
	Hotel and tourism	123,957.00		Transport vehicles	365,425.00
	Export	122,519.00		Construction Bridge	178,263.00
	Interest Free Export Facility Financing	91,621.00		Wholesale and Retail	157,955.00
	Construction	64,618.00		Building Construction	124,397.00
	Agriculture	49,098.00		Manufacturing	106,668.00
	Transport and communication	41,394.00		Import	71,653.00
	Industry	37,853.00		Agriculture	66,801.00
	Import	28,345.00		Domestic services-Miscellaneous	48,055.00
	Murahabah Financing-Import	15,904.00		Hotel and Tourism	37,901.00
	Murahabah Financing- DTS	13,662.00		Mortgage	32,647.00
	Murahabah Financing-Agriculture	11,342.00		Transport services	14,270.00
	Hotel and Construction	8,257.00		Staff Loans	10,011.00
	Murahabah Financing-Transport and Communication	7,883.00		Automobile	9,244.00
	Murahabah Financing-Industry	3,432.00		Health Service	335.00
	Mortgage Loan customer	3,022.00		**Total**	**2,215,094.00**
	Mortgage Loan staff	2,882.00			
	Consumer loan Customer	538.00			
	Total	**942,197.00**			
Enat Bank			**Debub Global Bank**		
	Domestic trade and services	32,026.00		Domestic trade and services	44,101.00
	Import	26,644.00		Export	29,129.00
	Construction	16,064.00		Construction	11,779.00
	Industry	12,305.00		Import	9,043.00
	Agriculture	10,335.00		Staff loans and advances	3,562.00
	Transport	1,380.00		Agriculture	325.00
	Personal	41.00		**Total**	**97,939.00**
	Total	**98,795.00**			

Source: Private Commercial Banks Annual Report (2018)

Appendix D: Raw Data

Bank	Year	NPL in "000"	Nominal simple average Lending Interest rate	Average Exchange Rate Birr/USD (ER)	Capital adequacy ratio (CAR)	Loan to deposit ratio (LTD)	Loan growth rate of DTS sector (LGRDTS)	Loan growth rate of Export sector (LGREX)
AB	2016	77,574	12.75	21.11	0.1509	0.7002	0.2628	0.2031
	2017	67,836	12.75	22.41	0.1504	0.6815	0.2177	0.4370
	2018	198,181	13.50	26.12	0.1463	0.6341	0.5600	0.9292
BOA	2016	170,301	12.75	21.11	0.1491	0.5912	0.1817	0.6355
	2017	195,151	12.75	22.41	0.1290	0.6744	0.6974	0.7891
	2018	234,578	13.50	26.12	0.1327	0.6975	0.1363	0.4497
AdIB	2016	11,063	12.75	21.11	0.2538	0.6694	0.2591	0.6288
	2017	20,462	12.75	22.41	0.2189	0.6865	0.9766	0.5335
	2018	41,814	13.50	26.12	0.2131	0.6925	0.3105	0.3638
AIB	2016	304,694	12.75	21.11	0.1503	0.6779	0.3308	0.4364
	2017	437,163	12.75	22.41	0.1355	0.7377	0.5361	0.3835
	2018	582,879	13.50	26.12	0.1175	0.7204	0.1708	0.6838
BIB	2016	104,997	12.75	21.11	0.1449	0.7113	0.3571	0.8106
	2017	111,652	12.75	22.41	0.1743	0.7056	0.2690	0.5054
	2018	200,003	13.50	26.12	0.1565	0.6633	0.3579	0.3625
BB	2016	121,485	12.75	21.11	0.1363	0.7823	0.3654	0.7298
	2017	148,444	12.75	22.41	0.1380	0.7647	0.2228	0.3837
	2018	267,669	13.50	26.12	0.1523	0.7585	-0.0152	1.5823
COOP	2016	1,278,424	12.75	21.11	0.0970	0.7313	-0.1863	0.5802
	2017	575,228	12.75	22.41	0.0814	0.7035	0.4412	0.7782
	2018	534,203	13.50	26.12	0.0795	0.5980	-0.1232	0.9960
DB	2016	402,823	12.75	21.11	0.1516	0.5623	0.0173	0.0619
	2017	625,326	12.75	22.41	0.1453	0.6545	0.2623	0.7094
	2018	795,657	13.50	26.12	0.1291	0.6471	0.0417	0.4405
DGB	2016	16,960	12.75	21.11	0.2384	0.6833	0.6987	5.9674
	2017	27,038	12.75	22.41	0.1866	0.5486	0.5789	-0.0743
	2018	53,962	13.50	26.12	0.2092	0.7341	0.1904	2.9902
EB	2016	9,236	12.75	21.11	0.1963	0.6500	0.5710	0.3458
	2017	32,502	12.75	22.41	0.1837	0.6402	0.5632	0.2458
	2018	57,056	13.50	26.12	0.1831	0.6551	0.2447	0.6516
LIB	2016	146,128	12.75	21.11	0.1285	0.6868	0.3337	0.4436
	2017	222,544	12.75	22.41	0.1265	0.6323	0.3254	0.0764
	2018	263,931	13.50	26.12	0.1263	0.6496	0.1193	1.3370
NIB	2016	390,466	12.75	21.11	0.1603	0.6143	0.0254	0.0179
	2017	270,795	12.75	22.41	0.1405	0.6542	0.5685	0.4220
	2018	599,850	13.50	26.12	0.1267	0.6339	0.1504	0.2506
OIB	2016	200,252	12.75	21.11	0.1163	0.5619	-0.0069	0.1322
	2017	275,094	12.75	22.41	0.1017	0.5364	0.4636	0.2586

	2018	466,852	13.50	26.12	0.1089	0.5049	0.2131	1.0023
UB	2016	156,919	12.75	21.11	0.1172	0.6580	0.3262	0.3429
	2017	91,768	12.75	22.41	0.1128	0.7294	0.3688	0.4258
	2018	308,410	13.50	26.12	0.1054	0.7624	0.1320	0.3789
WB	2016	129,041	12.75	21.11	0.1657	0.6835	0.3590	0.4924
	2017	131,797	12.75	22.41	0.1537	0.7342	1.4061	0.6221
	2018	1,954,255	13.50	26.12	0.1397	0.7500	-0.1528	1.2468
ZB	2016	205,679	12.75	21.11	0.1391	0.5582	0.3675	0.4353
	2017	823,259	12.75	22.41	0.1384	0.5227	0.2808	0.3496
	2018	286,054	13.50	26.12	0.1364	0.5106	0.1702	0.0287

Source: Private Banks Annual Financial Report and NBE Data Base