

**The Determinants of Foreign Exchange Risk in Ethiopian
Commercial Banks**

Gelane Amenu

A Thesis Submitted to

The Departments of Accounting and Finance

**Presented in partial Fulfillment of the Requirements for the Degree
of Master of Science (Accounting and Finance)**

**Addis Ababa University
Addis Ababa, Ethiopia**

June, 2012

Addis Ababa University
School of graduate studies

This is to certify that thesis prepared by **Gelane Amenu**, entitled: *The determinants of Foreign exchange risk in Ethiopian commercial banks* and submitted in partial fulfillment of the requirement for the degree of Master of science (Accounting and Finance) complies with the regulations of the university and meets the accepted standard with respect to originality and quality.

Signed by the examining committee:

Examiner _____ Sign. _____ Date _____

Examiner _____ Sign _____ Date _____

Advisor Dr. Vulelo P. Sign  Date 28/06/2012

Chair of the Department or Graduate Program Coordinator

ABSTRACT

The Determinants of Foreign Exchange Risk in Ethiopian Commercial Banks

Gelane Amenu

Addis Ababa University, 2012

This study tends to identify the determinants of foreign exchange risk in Ethiopian commercial banks. In this study the quantitative research approach was adopted. The source of data in the study was secondary data collected from commercial banks and the National Bank of Ethiopia covering the period from 2006-2010 was used. The panel data collected was statistically analyzed specifically, classical linear regression model used in the study. The findings of the study show that the quick ratio and return on equity have statistically significant relationships with foreign exchange risk of commercial banks. In other cases, the sizes, debt to asset ratio, and dividend payout ratio have no statistically significant relationship with commercial banks foreign exchange risk.

Acknowledgements

First and foremost, I thank the Almighty God for supporting me throughout my life. Next, I extend my sincere gratitude to my supervisor Dr.Venkati Ponala For his invaluable and immeasurable assistance and guidance during my study. My thank also goes to Addis Ababa University for providing me this opportunity and financial assistance.

Besides, I would like to thank to the staff and management of the commercial banks and National Bank of Ethiopia for providing me financial and other relevant data that supported my studies. I am also grateful to all my friends and colleagues for their intellectual and moral support.

Last, but not least I would like to extend my gratitude and thanks to my family for their material and moral support. A special gratitude goes to my mother w/o Raji Anbesa for her invaluable encouragement and support.

Table of contents

| | Page |
|--|------|
| List of tables..... | viii |
| List of figures..... | vii |
| List of Acronyms..... | ix |
| CHAPTER ONE..... | 1 |
| 1.1. Introduction..... | 1 |
| 1.2. Statement of the problem..... | 5 |
| 1.3. The General objective of the study..... | 6 |
| 1.4 The Specific objectives of the study..... | 6 |
| 1.5. The Research Hypotheses..... | 7 |
| 1.6 Significance of the Study..... | 11 |
| 1.7. Limitations and Scope of study..... | 12 |
| 1.8. Organization of the study..... | 13 |
| CHAPTER TWO..... | 14 |
| LITERATURE REVIEW..... | 14 |
| 2.1 INTRODUCTION..... | 14 |
| 2.2. The Brief Banking History in Ethiopia..... | 14 |
| 2.3 Exchange Rate Developments in Ethiopia..... | 16 |
| 2.4. The concept and definition of Foreign Exchange Risk Exposure..... | 19 |
| 2.5. Types of Foreign Exchange Risk Exposure..... | 21 |
| 2.6. Foreign Exchange Rate Volatility..... | 24 |
| 2.7 Foreign Currency Exposure of Commercial Banks..... | 25 |
| 2.8 The Relationship between Firm Value and Foreign Exchange Rate..... | 30 |
| 2.9 Size and Direction of the Exposure..... | 30 |
| 2.10 The Determinants of the Foreign Exchange Risk Exposure..... | 32 |
| 2.10.1 Firm Size..... | 37 |
| 2.10.2 Leverage (debt-to-assets)..... | 34 |
| 2.10.3. Return on Equity..... | 35 |

| | |
|---|----|
| 2.10.4 Quick ratio and dividend payout ratio..... | 36 |
| 2.11. Empirical Study Analysis..... | 36 |
| 2.12. Summery and Conclusion | 41 |
| CHAPTER THREE..... | 45 |
| RESEARCH METHODOLOGY..... | 45 |
| 3.1 Introduction..... | 45 |
| 3.2 Methods Adopted..... | 45 |
| 3.2.1 Survey design..... | 45 |
| 3.2.2 Sample Design | 46 |
| 3.3 Data Collection Method..... | 47 |
| Data Analysis Method..... | 47 |
| CHAPTER FOUR..... | 52 |
| DATA PRESENTATIONS, RESULTS AND DISCUSSIONS..... | 52 |
| 4.1 Introductions | 52 |
| 4.2. Data presentations..... | 53 |
| 4.3. Regression Model Specification..... | 58 |
| 4.4. Diagnostic test..... | 59 |
| 4.4.1. Goodness of fit..... | 59 |
| 4.4.2. Test of Heteroscedasticity | 61 |
| 4.4.3. Test of Normality of residuals..... | 62 |
| 4.4.4. Multicollinearity test | 63 |
| 4.2. Analysis of the result..... | 64 |
| 4.2.1. Descriptive statistics..... | 64 |
| 4.3. Result and Discussions..... | 66 |
| CHAPTER FIVE..... | 74 |
| CONCLUSIONS AND RECOMMENDATIONS..... | 74 |
| 5.1. Conclusions..... | 74 |
| 5.2. Recommendations | 76 |
| References..... | 78 |
| Appendences | 86 |

List of figures

| Figures | page |
|--|-------------|
| Figure 4.1: Average net foreign exchange risk relative to net asset of commercial banks... | 53 |
| Figure 4. 2: size of banks..... | 54 |
| Figure 4. 3 Returns on Equity..... | 55 |
| Figure 4.4: Debt to Asset ratio of banks..... | 56 |
| Figure 4.5: Banks Quick Ratio..... | 57 |
| Figure 4. 6: Dividend payout ratio of banks..... | 57 |
| Figure 4.7 normality test | 62 |

List of tables

Pages

| | |
|--|----|
| Table 3.1 proxies of independent variables..... | 50 |
| Table 4.1. Test of random effect | 58 |
| Table 4.2: Goodness of fit through R Square..... | 60 |
| Table 4.3: White test regression..... | 61 |
| Table 4.4: Test of multicollinearity..... | 63 |
| Table 4.5: Descriptive Statistics..... | 64 |
| Table 4.6 Estimation result..... | 66 |

List of tables

| | Pages |
|--|--------------|
| Table 3.1 proxies of independent variables..... | 50 |
| Table 4.1. Test of random effect | 58 |
| Table 4.2: Goodness of fit through R Square..... | 60 |
| Table 4.3: White test regression..... | 61 |
| Table 4.4: Test of multicollinearity..... | 63 |
| Table 4.5: Descriptive Statistics..... | 64 |
| Table 4.6 Estimation result..... | 66 |

CHAPTER ONE

1.1. Introduction

In the process of providing financial services, Commercial banks assume various kinds of financial risks much has been written on the role of the commercial banks in the financial sector, both in the academic literature and in the financial press, in other words, Commercial banks are in the risk business. It is possible to say that market participants seek the services of these financial institutions because of their ability to provide market knowledge, transaction efficiency and funding capability. In performing these roles they generally act as a principal in the transaction. As such, they use their own balance sheet to facilitate the transaction and to absorb the risks associated with it (Santomero 1997).

The risks associated with the provision of banking services differ by the type of service rendered. Different authors have grouped these risks in various ways to develop the frameworks for their analyses but the common ones which are credit risk, market risks (which includes liquidity risk, interest rate risk and foreign exchange risk), operational risks which sometimes include legal risk, and more recently, strategic risk. Among these, this study focuses on the foreign exchange risk.

Foreign exchange is an exchange rate, defined as the amount of one currency that can be exchanged per unit of another currency or the price of one currency in terms of another currency. Foreign exchange risk is the risk that exchange rate changes can adversely affect the value of the financial institution's assets and liabilities denominated in foreign currency (Sunder and Cornet 2007).

To facilitate the exchange of one currency to another currency, foreign exchange market plays a great role. According to Shapiro 1991, The Foreign Exchange Market is the financial market in which currencies are bought and sold, that is a transaction entered into where a given amount of currency is exchanged for another amount of currency. The need for the Foreign Exchange Market (commonly referred to as the forex market) developed to facilitate International trade, where currencies were required to be settled from the country of both the importer and the exporter. Therefore, it plays an extremely important role in facilitating cross-border trade, financial transactions and investment. More recently, it allows borrowers to have access to the International capital markets in order to meet their financing needs in the currency which is most conducive to their requirements.

The major participants in the foreign exchange market are the large commercial banks, foreign exchange brokers in the interbank market, commercial customers' primarily multi-national corporations and Central Banks which intervene from time to time in the market to facilitate exchange rate fluctuations or to maintain target exchange rates. Commercial Banks participate in the market by offering to buy and sell foreign exchange on behalf of their retail or wholesale customers as a part of their financial service. They also trade in foreign exchange as an intermediary and market maker. Market makers quote a buy and sell price on a currency or financial instrument hoping to make a profit on the spread that is the difference between the buying and the selling price. Other financial Institutions, such as brokers, institutional investors, insurance companies, Pension and Mutual Fund Managers need to manage various portfolios on behalf of their clients, and thus participate in the foreign exchange market (Shapiro 1991).

Banks face foreign exchange risk due to dealing in foreign currencies, result of the operations in foreign countries or dealing with foreign exchange for their own account or for customers account (Shapiro, 1991).

There are factors that affect commercial banks to expose them for foreign exchange risk. Tschoegl (1997), classify the factors claims regarding competitiveness of international banks in the foreign exchange market due to country specific and firm specific factors. The firm specific factors distinguish itself from other firms from the same country. Country specific factors influence the firms from specific countries in the global market.

Chamberlain, Howe and popper(1996) try to find firm specific factors of foreign exchange rate exposure in 30 us bank holding companies and observe that, the more foreign debt banks have, the more it is exposed to foreign exchange risk. They also find that little foreign exchange exposure can be explained by the use off-balance sheet hedged. The estimated exposure is strongly correlated with most of the accounting measures. And it is most highly correlated with the size of the firm.

Similarly, Choi et al. (1992),conducted a study on 48 largest US commercial banks, Atindehou & Gueyie (2001),studied on Canadian banks stock prices responded positively with the depreciation of foreign currencies, Shamsuddin (2009)mentioned that the adoption of exchange rate regime along with financial system globalization have exposed Australian banks to foreign exchange risk and other previous studies conducted across the developed countries.

In Ethiopia, Martins (2007) studied the determinant of the real exchange rate in Ethiopia. In particular, he assessed whether large capital inflows have an impact on the real exchange rate.

Obviously, like any other macroeconomic factor, the exchange risk factor will not have the same affect in all firms. Choil & Presed (1995) argued that, rather, the exchange rate risk sensitivity of firms will depend on their operating profits, financial strategies and other firm specific variables. A firm level study is necessary to understand whether and why individual firms display varying sensitivity to exchange risk.

However, in Ethiopia here there are no as such detail empirical studies conducted on the determinants of foreign exchange risk in commercial banks. Therefore, to fulfill the existing gap, this paper aims to identify the determinants of foreign exchange risk of commercial banks in Ethiopia.

The remaining part of this chapter is organized into six sections. Section 1.2 presents statements of the problem, while sections 1.3 show the broad objectives of the study, 1.4 specific objectives, 1.5 research hypotheses, 1.6 presents the Significance of the study, 1.7 limitations and scope of the study and 1.8 present the organization of the paper.

1.2. Statement of the problem

Each company engaged in international trading is exposed to foreign exchange risk since foreign revenues, for example, are generally denominated in foreign currency. Revenues and costs incurred in a foreign currency are exposed to exchange rate risk. A firm without any foreign assets or liabilities, or without any international trade, can also be exposed to currency risk. Exchange rate volatility can affect a firm's competitive position on its home market and as a consequence its profitability (Popov & Stutzmann(2003)).

Financial activities, such as foreign-currency borrowing or lending, guarantees, etc, represent another kind of source of foreign exchange risk. Allayannis and Ofek (2001) find that exchange rate exposure is positively and significantly related to the level of foreign debt that the firm has. At this time, foreign debt can be another way to hedge foreign currency exposure since it represents a cash outflow in a foreign currency. It can only be used as a hedge when a firm has foreign revenues.

According to Souder and Cornet (2007), financial institutions usually create open positions by taking unhedged position in a foreign currency in its financial exchange trading with other financial institutions. Any unhedged position in a particular currency gives rise to foreign currency risk and such a position is said to be open position in that particular currency. Specifically, commercial banks, actively deal in foreign currencies holding assets and liabilities in foreign denominated currencies, are continuously exposed to Foreign Exchange Risk.

Obviously, like any other macroeconomic factor, the exchange risk factor will not have the same effect in all firms. Rather, the exchange rate risk sensitivity of firms will depend on their operating profits, financial strategies and other firm specific variables. A firm level study is

necessary to understand whether and why individual firms display varying sensitivity to exchange risk (Choil & Presed (1995).

Whenever a commercial bank deals in foreign currency, it is exposed to risk of exchange rate. When these transactions are done on the behalf of customers, the risk is also transferred to them and the bank has no exposure, this uncertain movement poses a threat to the earnings and capital of bank indirectly.

Both government owned and private commercial banks operating in Ethiopia. Since, commercial banks actively deal in foreign currencies; they are continuously exposed to foreign exchange risk. So, the principal concern of this study is to identify determinants of foreign exchange risk of commercial banks in Ethiopia.

1.3. The General objective of the study

In the context of the problems highlighted above, the general objective of the study is to identify the determinants of foreign exchange risk in Ethiopian commercial banks.

1.4 The Specific objectives of the study

The specific objectives of the study are;

- To identify the relationship between net foreign exchange risk relative to net asset and size of the commercial banks.
- To assess the relationship between net foreign exchange risk relative to net asset and Return on Equity of the commercial banks.
- To identify the relationship between net foreign exchange risk relative to net asset and banks debt to asset ratio of commercial banks.

- To assess the relationship between net foreign exchange risk relative to net asset and quick ratio of the commercial banks.
- To assess the relationship between net foreign exchange risk relative to net asset and dividend payout ratios of the commercial banks

1.5. The Research Hypotheses

As already discussed, the main objective of the study is to identify determinants of foreign exchange risk in commercial banks. To achieve the objective of the study, based on the literature and prior empirical studies the researcher develops the following hypotheses.

Hypothesis # 1

Tsecoegl (1997) identifies that a bank with larger asset scale is more competitive in the foreign exchange market and size matters for banks competitiveness. There might be a relationship between foreign exchange market and size of the banks. Also according to Rhodes (1982) who argued that, large banks might have higher probability to have more customers. Especially, large and international clients favor large banks and also have higher currency exposure. The evidence provided by Griffin *et al* (2006) also supported the idea that there is less exposure in small stock group because smaller firms in some countries have stable and growing international scales.

However, on the other hand, Dominguez and Tesar (2006) argued that small, rather large and medium-sized firms were more likely to be influenced. This is also supported by Hsin *et al.* (2007) who concluded that smaller firms have a more significant exposure than larger firms because large firms tend to react to information more efficiently. Large firms that have large scale international activities are usually involved in hedging activities that contribute to less exposure because hedging outweighs the adverse impact. Therefore, firms with a small capital

are expected to be highly exposed to the changes in the international trade environment (Verschoor and Muller, 2006b).

In addition, Jagtiani (1996) finds that large banks would give customers the safety signal and have ability to diversify their client pool to enhance risk control. Large banks would be the “too large to fail” stereotype since governments and regulators are afraid that bankruptcy of large banks might result in financial instability, even financial crises. Therefore, bank’s customers would choose large banks because of comfortable feel or psychological reasons. Size of the banks can be measured as the net asset of the bank. Based on these and other prior empirical studies the following hypothesis developed.

H0: There is no statistically significant relationship between net foreign currency exposure relative to net asset and size of commercial banks in Ethiopia.

H1: There is statistically significant relationship between net foreign currency exposure relative to net asset and size of commercial banks in Ethiopia

Hypothesis # 2

There are also firm specific factors that affect foreign exchange currency. Dominguez and Tesar (2006) focused on non-U.S. firms, examining the relationship among firms in eight industrialized and developing countries such as Germany, Japan and the Netherlands. They found that five of the eight countries, with over 20% of firms and 40% of industries, were exposed to exchange rate movements. They concluded that there is a statistically significant relationship between profitability as measured by Return on Equity and exchange rates.

According to Solakoglu & Demir (2007) , Higher returns on equity, can indicate higher risk-taking for higher profits and concluded that return on equity has a positive impact on the banking and insurance sub-sectors.

In other cases, Foreign exchange exposure is the risk of a firm's profitability and net cash flow to potentially change due to a change in exchange rates. Foreign exchange risk can significantly reduce a firm's profit margin on a business transaction Managers must limit a firm's exposure to changes in exchange rate because profitability and cash flow are two of the main ways investors judge a firm's value. Managers use forward contracts, options and money market transactions to hedge potential foreign exchange risk (Volkov2011). In this study the Return on Equity can be measured as Profit after Tax / Average total Shareholders' Funds of the commercial banks the following hypothesis was developed based on the these and other prior empirical evidences.

H0: There is no statistically significant relationship between net foreign currency exposure relative to net asset and Return on Equity of the commercial banks

H1: There is statistically significant relationship between net foreign currency exposure relative to net asset and Return on Equity of the commercial banks.

Hypothesis # 3

He and Ng (1997) found a strongly significant, but negative relationship between leverage and exchange exposure for their sample of Japanese firms, but Muller and Verschoor (2006b) found a negative (although Insignificant) relation for European firms.

Allayannis and Ofek (2001) find that exchange rate exposure is positively and significantly related to the level of foreign debt that the firm has. At this time, foreign debt can be another way to hedge foreign currency exposure since it represents a cash outflow in a foreign currency. Based on these and other international empirical studies this hypothesis was developed.

H0: There is no statistically significant relationship between net foreign currency exposure relative to net asset and debt to asset ratio of the commercial banks

H1: There is statistically significant relationship between net foreign currency exposure relative to net asset and debt to asset ratio of the commercial banks

Hypothesis # 4

Nance, Smith and Smithson (1993) suggest that firms can reduce the likelihood of incurring financial distress by maintaining a strong liquidity position. This can be achieved by restricting holding high levels of cash and marketable securities, so that the propensity to hedge is negatively related to measures of short-term firm liquidity. Empirical evidence on liquidity and exchange exposure is mixed. Consistent with optimal hedging theory, He and Ng (1997) find a significant positive relation between the quick ratio and exchange exposure.

H0: There is no statistically significant relationship between net foreign currency exposure relative to net asset and quick ratio of the commercial banks.

H1: There is statistically significant relationship between net foreign currency exposure relative to net asset and quick ratio of the commercial banks.

Hypothesis # 5

According to Zhang *et al* (2005), who argued that a high dividend payout ratio implies a decrease in the firm's cash reserve and may also indicate that the firm cannot use hedge techniques, it implies that there is a positive relationship between the dividend payout ratio and foreign exchange risk. And also He and Ng (1997) find that negative but not significant coefficient on the dividends payout ratio. Based on these and other international empirical studies the researcher develops the following hypothesis.

H0: There is no statistically significant relationship between net foreign currency exposure relative to net asset and dividend payout ratios of the commercial banks

H1: There is statistically significant relationship between net foreign currency exposure relative to net asset and dividend payout ratios of the commercial banks.

1.6 Significance of the Study

The main purpose of this research study is to find out and examine the main firm level determinants of foreign exchange risk of Ethiopian commercial banks. This study is conducted to allow the identification of the concept and framework of determinants of foreign exchange risk in commercial banks.

The researcher believes that the result of this research paper would have important for financial institutions those deal with foreign currency in international market, use it as a reference to identify firm specific factors that determine foreign exchange risk and Provide useful knowledge

on factors that might have impact on the foreign exchange risk in commercial banks and banking sector in general.

Finally, this paper could be used as an initiation for those who are interested to conduct a detailed and comprehensive study regarding factors affecting foreign exchange risk of Commercial Banks.

1.7. Limitations and Scope of study

Although analyzing every firm-specific factor that might explain the foreign exchange risk of firm is equally important for all types of organizations, this research is conducted mainly with a focus on the Ethiopian commercial banks operated for the past five years.

In conducting factors affecting foreign exchange risk in analysis of Ethiopian commercial banks, information was mainly gathered from financial statements and other disclosures contained in the bank's annual reports. However, the bank considers most information sensitive and for that matter detailed but keep some documents as confidential, except those contained in the annual report and official releases.

The most appropriate type of sampling design for this research would be a non probability purposive sampling method. The purposive sampling techniques the researcher used may have limitation to generalize about the whole population based on the result of the study.

Moreover, Banks face different types of risk in their operation but, due to resource constraint this study focuses only on the determinants of foreign exchange risks in Ethiopian commercial banks for the period of five years. This might not give a complete picture of risks affected Ethiopian

commercial banks. However, it is possible for the future researcher to see in detail the issues by using this study as a steep stone.

1.8. Organization of the study

The study has been organized into five (5) chapters. Chapter one deals with the introduction of the study. It focuses on the background of the study, general objectives, specific objectives, significance, scope and limitation of the study. Chapter two includes theoretical and empirical literature. Chapter three provides a methodology of the study. Chapter Four deal with data presentation, findings and discussions. Chapter five includes conclusion and recommendations

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter reviews previous literature and articles that motivated and supported this investigation into foreign exchange risk exposure. The chapter begins with the brief banking history, reviewing exchange rate developments in Ethiopia and followed by the concepts, definition and type of foreign exchange risk. After that, an overview of the relationship between firm value and foreign exchange rate is given. Then, the attributes and determinants related to the exposure are presented. Finally, it review the empirical studies, discusses on the issues of determinants of foreign currency risk in financial and non financial institution from different perspectives and with the view of giving a theoretical foundation to the study.

2.2. The Brief Banking History in Ethiopia

One can trace the history of using modern money in Ethiopia to more than 2000 years (Pankhrust in Belay, 1990). This had flourished in what is called the Axumite era which can stretch from 1000BC to around 975 AD. Leaving that long history aside, modern banking in Ethiopia started in 1905 with the establishment of Abyssinian Bank based on a 50 years agreement with the Anglo-Egyptian National Bank. In 1908 a new development bank (named Societe Nationale d'Ethiophe Pour le Development de l' Agriculture et du Commerce) and two other foreign banks (Banque de l'Indochine and the Compagnie de l' Afrique Oreintale) were also established (Pankhrust (1968) cited in Befekadu, 1995). These banks were criticized for being wholly foreign owned. In 1931 the Ethiopian government purchased the Abyssinian Bank, which was the

2.3 Exchange Rate Developments in Ethiopia.

Ethiopia's trade policy, which became increasingly inconsistent with some of the macroeconomic policies especially during the Derge regime, has long been characterized by controlled foreign exchange allocation, import quotas, high tariffs, state owned marketing exports, export prohibitions, export subsidies and export taxes (Naude and Girma, 1994 cited in Degefa 2001). For nearly half a century up until October 1992, the exchange rate of Ethiopian currency against its reference or reserve currency, the US dollar, was determined by government decree.

The currency Proclamation of 1945, defined the monetary unit of the country as the Ethiopian dollar (hereafter Ethiopian birr as it replaced the Ethiopian dollar in September 1976) with a value of 0.355745 grams of fine gold. The linkage with fine gold, which was in accord with Breton Woods Agreement of 1944, automatically established the exchange rate between the national currency and other currencies with the same arrangement.

Accordingly, the official exchange rate of Ethiopian currency with US dollar was created (with the official exchange rate of 2.48 birr per US dollar) on July 23, 1945. After almost two decades, that is, on 1 January 1964, the Ethiopian birr was slightly devalued to 2.50 birr per US dollar.

Following the collapse of the Bretton Woods System in 1971, the birr was revalued to 2.30 birr per US dollar on 21 December 1971. The subsequent 10% devaluation of the US dollar had temporarily brought about undervaluation of the birr. To realign the Ethiopian birr, it was again revalued to 2.07 birr per US dollar in February 1973. From then on, the Ethiopian currency was pegged to the US dollar at the rate of 2.07 birr per dollar until massive devaluation of October 1992. This fixed official exchange rate was left unaltered for two decades despite the floating of

the major world currencies including the US dollar. In effect, the birr became over-valued in terms of the US dollar as well as many other foreign currencies.

According to Kibret (1994) cited in Degefa 2001 , all the relevant indicators of exchange rate misalignment, particularly the prevalence of a significant parallel premium, and the fact that the real exchange rate is consistently higher than the nominal exchange rate, suggest that the Ethiopian birr has been over-valued since the mid-1970s. By considering export weighted index, import weighted index, and trade weighted index, Kidane (1994) cited in Degefa .D 2001, also arrived at the conclusion that whether we use the nominal, real or parallel exchange rate index, all results asserted the continuous appreciation of Ethiopian birr; the extent of appreciation, according to him, was higher during the 1980s than the 1970s.

The over-valuation of the birr may be portrayed by the continuous appreciation in real official exchange rate prior to huge devaluation of the birr in October 1992 contrary to that of the parallel exchange rate. Among the factors that underlie the poor performance of the Ethiopian economy in general and that of the export sector in particular, the over-valued exchange rate of the birr is considered to play a significant role (Gashaw, 1992; Asmerom, 1994; Haile, 1994; Befekadu and Kebre, 1994),Abreha (1995) cited in (Degefa D.2001) has also shown this using theoretical and empirical models. Over valuation of the exchange rate causes misallocation of resources in production and promotes investment of resources in rent-seeking and socially unproductive but privately profitable activities and, hence, reduces the growth rate of output. In line with this argument, Stefan Dercon and Lulseged Ayalew (1994) cited in Degefa 2001, attested that over-valuation of Ethiopian birr also reduced the competitiveness of legal exports and led to significant smuggling.

In the Imperial era, except for some essential consumer items, imports were free from licensing or other quantitative restrictions and exporters were required to surrender their foreign exchange to commercial banks at the prevailing official exchange rate. The existence of macroeconomic stability and a relatively liberal trade regime probably reduced misalignment of the actual exchange rate from its equilibrium in this regime. However, the Derge regime was characterized by persistent fall in real official exchange rate and steadily rising real parallel exchange rates, signifying the over-valuation of the currency. With an over-valued exchange rate, exports have been stagnating while imports have been rising over time since 1975/76 (Degefa 2001).

The Derge regime responded to the falling competitiveness of legal exports and to smuggling by tightening its control regime through stricter rationing of foreign exchange, by prohibiting the domestic trade of many exportable (notably coffee) and by providing export subsidies for loss-making state-owned exporters (Degefa 2001).

In the history of the Derge regime, significant changes occurred in the exchange and trade system during 1977. Realizing the negative effect of an over-valuation of the birr on the country's trade balance and, hence, on balance of payments, the Transitional Government of Ethiopia (TGE) devalued the birr seven times with an official exchange rate gradually reaching 6.25 birr per US dollar before the date of unification in the late 1995. The TGE also introduced the auction for foreign exchange in May 1993 in an effort to liberalize the foreign exchange market so as to achieve market determined exchange rate. The belief at the centre of successive devaluations of official exchange rates and the adoption of the auction system is to attract foreign exchange in the parallel market back to the official line and thereby strengthen official reserves.

From May 1993 up to the unification of the official and the auction exchange rates on 25 July 1995, the exchange rate was partly determined by government decree (applicable to the official rate) and partly by quasi-market forces (applicable to the auction rate) as represented by auctions. Since the date of unification, the exchange rates of the birr against the US dollar and the resultant cross-rates have been determined only through the auction system (Degefa 2001).

2.4. The concept and definition of Foreign Exchange Risk Exposure

The general concept of exposure refers to the degree of change in the firm or industry's value due to the changes in exchange rates (El-Masry, 2006). Foreign exchange exposure is commonly defined as the sensitivity of firm value or stock returns to the exchange rate movement (Verschoor and Muller, 2007; Jorion, 1990). The foreign exchange risk is also represented by the possibility of losses as a result of the adverse evolution of the foreign exchange rate (Florentina and Daniel, 2005). An exchange rate is defined as the amount of one currency that can be exchanged per unit of another currency or the price of one currency in terms of another currency. Exchange rate quotation may be either direct or indirect. Direct quote is the number of units of a local currency exchangeable for one unit of a foreign currency. An indirect Quote is the number of units of a foreign currency that can be exchanged for one unit of a local currency (Fabozzi,2003).

Bessis (2010) defines foreign exchange risk as incurring losses due to changes in exchange rates. Such loss of earnings may occur due to a mismatch between the value of assets and that of capital and liabilities denominated in foreign currencies or a mismatch between foreign receivables and foreign payables that are expressed in domestic currency.

According to Greuning and Bratanovic (2009), foreign exchange risk is speculative and can therefore result in a gain or a loss, depending on the direction of exchange rate shifts and whether a bank is net long or net short (surplus or deficit) in the foreign currency. In principle, the fluctuations in the value of domestic currency that create currency risk result from long-term macroeconomic factors such as changes in foreign and domestic interest rates and the volume and direction of a country's trade and capital flows. Short-term factors, such as expected or unexpected political events, changed expectations on the part of market participants, or speculation based currency trading may also give rise to foreign exchange changes. All these factors can affect the supply and demand for a currency and therefore the day-to-day movements of the exchange rate in currency markets.

Sounder and Cornet (2007 . P 264) identifies two types of foreign exchange rates in foreign exchange transaction. Spot and forward. A spot foreign exchange transaction involves the immediate exchange rate of currencies at the current (spot) exchange rate. When the seller of the asset agrees to deliver it immediately and the buyer agrees to pay for the asset immediately. Thus the unique feature of a spot market is the immediate and simultaneous exchange of cash for securities or what is often called delivery versus payment. Forward foreign exchange transaction is the exchange of currencies at a specified exchange rate (forward exchange rate) at some specified exchange rate date in the future. Market participants take a position in forward contracts because the future (spot) price or interest rate on asset is uncertain. Rather than risk that the future spot price will move against them.

In conclusion, the foreign exchange risk exposure is basically the level of risk or uncertainty driven by changes in foreign exchange rates. These changes affect a firm's stock returns, profitability, cash flow and etc.

2.5. Types of Foreign Exchange Risk Exposure

There are three types of foreign exchange exposure, these are; transaction, translation and economic exposure.

1. Transaction exposure

Transaction exposure occurs when accompany trades, borrow or lends in a foreign currency, or sells fixed assets of its subsidiaries in a foreign country. All these operations involve in time decay between the commitment of the transaction (sale of n asset) and the receipt or delivery of the payment. During this time interval exchange rates will most probably change and the company is exposed to a risk that could be positive or negative (Popov & Stutzmenn (2003))

According to Martin and Mauer (2003), transaction exposure arises from transactions that involve future cash flows in foreign currencies or occurs when a firm trades, borrows or lends in a foreign currency. He mentioned that the effects of exchange rate risk on specific identifiable foreign currency transactions have a short-term time dimension. Such exposure happens when this relevant exchange rate changes between the date a transaction agreement is entered into and the date of receipt and delivery of payment. For example, an importer that has purchase commitments with the United States is now carrying the foreign exchange risk because if the U.S. dollar appreciates at the time of payment, the importer has to pay more of its home currency to buy the U.S. dollar. This results in an increase in purchase price and operating cost and at the same time, decreases the firm's cash flow.

2. Translation exposure

According to Popov & Stutzmenn (2003), translation exposure arises from converting financial statements expressed in foreign currencies in to the home currency. When a company consolidates the results of all its foreign subsidiaries, it has to present a final report to shareholders and the numbers in this document should be expressed in one currency. All foreign currency denominated assets and liabilities as well as revenues and costs translated in one basic currency. Assets, liabilities, and equity on a balance sheet are expressed in historical values and the foreign exchange rate at which the currencies trade at the end of the accounting period is the most probably not the same foreign exchange rate when the accounts were booked. If a company does this conversion at a new foreign exchange rate, exchange rate losses or profits will result.

Translation risk is basically balance sheet exchange rate risk and relates exchange rate moves to the valuation of a foreign subsidiary and, in turn, to the consolidation of a foreign subsidiary to the parent company's balance sheet. Translation risk for a foreign subsidiary is usually measured by the exposure of net assets (assets less liabilities) to potential exchange rate moves.

In consolidating financial statements, the translation could be done either at the end-of-the-period exchange rate or at the average exchange rate of the period, depending on the accounting regulations affecting the parent company. Thus, while income statements are usually translated at the average exchange rate over the period, balance sheet exposures of foreign subsidiaries are often translated at the prevailing current exchange rate at the time of consolidation (Sounder and Cornet (2007 . P 376).

3. Economic exposure

Economic exposure measures the change in the present value of the firm resulting from any change in the future cash flows of the firm caused by an unexpected change in the exchange rates. Future cash flows can be divided into cash flows resulting from contractual commitments and cash flows from anticipated future transactions. In a way, economic exposure includes transaction exposure in itself. Transaction exposure is that part of economic exposure comprising future cash flow resulting from contractual commitments and denominated in foreign currency. However, to make a clear distinction between transaction exposure and economic exposure transaction exposure arises from contractual commitments and the amounts in to be paid or received are known. With economic exposure these amounts are uncertain and based on estimates. Economic exposure can be defined as the future effect of foreign exchange changes on liquidity, operations, financial structure and profit (Popov & Stutzmann (2003)).

Operating exposure, which is known as economic exposure, is defined as the potential impact of foreign exchange on future cash flow, liquidity, financial structure and profit. This exposure is usually uncertain and difficult to identify or quantify and can only be estimated. Economic exposure may arise from the change in sales price and volume based on the elasticity and change in the firm's cost of input as a result of foreign exchange rate volatility (Martin and Mauer, 2003). The adjustment of selling prices or costs due to exchange rate fluctuations will affect the competitive position of the firm and subsequently decrease the firm's cash flow and value. This risk is difficult to identify and quantify as it involves currency movements and there is no physical dealings involved. A pure domestic firm is expected to be exposed to this risk because when foreign currency depreciates, the customer tends to support imported goods that are

relatively cheaper than local products. As a result, domestic sale decreases and reduces the firm's profitability.

Martin and Mauer (2003) conducted a study that assessed the differences between the transaction and economic exposure represented by short and long-term lags respectively. Their findings showed that cash flow effects were greater for long term lags than short term lags in the exchange rate movement. This is because transaction exposure is easier to hedge compared to economic exposure, which is more difficult to assess and hedge using financial instruments. They recommended firms to focus on strategies that are able to mitigate economic exposure, for example, geographical positioning of production and sales. Griffin, Doidge and Williamson (2006) focused on economic importance and also found significant economic exposure on a firm's exchange rate in over eighteen countries.

2.6. Foreign Exchange Rate Volatility

International and domestic economic changes, interest rate and purchasing power parity influence foreign exchange rate volatility. The high volatility or fluctuation of the exchange rate is affected by the sudden change in the economy, interest rate adjustment and the demand and supply of the currency. According to Ooi *et al* (2009) the major factors that influence current exchange rates may not be the same for future exchange rate movements. For example, the current exchange rate might be affected by the export performance of a country. However in the future, the exchange rate might instead be affected by a sudden supply shock, political events, productivity loss, war, stock market crash, and hyperinflation or by other policy variables.

The foreign exchange movement tends to be unstable during the economic crisis. The decision made by the authority for interest rate changes will either increase or decrease the exchange rate

especially when the investor transfers the deposits from a foreign currency with low interest to another currency with a higher interest. Besides that, supply and demand of money will cause changes to the foreign exchange rate in the short and long run (Ooi *et al* (2009)).

2.7 Foreign Currency Exposure of Commercial Banks

Commercial banks are in the risk business. In the process of providing financial services, they assume various kinds of financial risks. Over the last decade our understanding of the place of commercial banks within the financial sector has improved substantially. Over this time, much has been written on the role of commercial banks in the financial sector, both in the academic literature and in the financial press. Suffice it to say that market participants seek the services of these financial institutions because of their ability to provide market knowledge, transaction efficiency and funding capability. In performing these roles they generally act as a principal in the transaction (Sounder and Cornet 2007).

The foreign exchange market is arguably the largest and most liquid of the international markets, and large and rapid movements in exchange rates are commonplace. In order to minimize the possibility of financial loss, it is therefore essential that banks identify measure and manage their foreign exchange risk effectively. It is important that these exposures are identified and, where necessary, hedged, on a timely basis (Anon Banking guidance note (1999)).

According to Sounder and Cornet (2007), Commercial banks represent the largest group of depository institutions measured by asset size. They perform functions similar to those of savings institutions and credit unions –they accept deposits (liabilities) and make loans (asset).Specifically, while deposits are the major source of funding, commercial banks liabilities usually include several types of non deposit source of funds.

Any unhedged position in a particular currency gives rise to foreign currency risk and such a position is said to be Open Position in that particular currency. If a bank has sold more foreign currency than he has purchased, it is said to be Net Short in that currency, alternatively if it has purchased more foreign currency than it has purchased than it is in Net Long position. Both of these positions are exposed to risk as the foreign currency may fall in value as compared to local or home currency and becomes a reason for substantial loss for the bank if it is in Net Long position or the foreign currency may rise in value and cause losses if the bank is Net Short in that currency (Sounder and Cornet (2007)).

Long Position is also known as overbought or Net Asset Position and Short Position is also known as Net Liability or Oversold Position. Sum of all the Net Asset positions & Net Liability positions is known as Net Open Position or Net Foreign Currency Exposure. Net Foreign Currency Exposure gives the information about the Foreign Exchange Risk that has been assumed by the bank at that point of time. This figure represents the unhedged position of bank in all the foreign currencies. A negative figure shows Net Short Position whereas positive figure shows Net Open Position (O'Dogherty & Schwartz(2001)).

2.8 The Relationship between Firm Value and Foreign Exchange Rate

Foreign exchange rate fluctuations appear to be affecting the performance of firms and industries with an increase in competitiveness through structural changes in the economic and business environment. The flexibility of the exchange rate has also increased the financial instability and insolvency of the firm (Besancenot and Vranceanu, 2007). The unpredictable movement of the foreign exchange rate is expected to affect export and import activities where the firm is required to closely monitor exchange rates or hedge to minimize the exchange loss from dealings. As time

evolves, firms that are domestically or internationally oriented discover that their firm value becomes more sensitive to exchange rate movements, and that is a challenging issue. Besides that, the volatility that influences trade flows between countries increases the risk exposure in international trade and financial transactions, which subsequently raises business expenses.

Over the past decades, there were many empirical studies investigating foreign exchange risk exposure, particularly on the sensitivity of stock returns against exchange rate changes including the correlation between volatilities of stock returns and exchange rate movement (e.g. Martin and Koutmos, 2003; Fraser and Pantzalis, 2003; Parsley and Popper, 2003; Schena, 2005; Chue and Cook, 2007; among others). These papers focused on the foundations of currency risk exposure and also highlighted the important parameters.

Including the cost and revenue structure in relation to the elasticity of the input and output market, competitive position and pricing strategies. Their findings summarized that there were cross sectional (Kolari, Moorman and Sorescu, 2008) and time-series exposure differences across firms, industries and countries, which produced mixed results, findings and implications.

Foreign exchange exposure varied between countries, which could probably be due to the economic situation and structure, changes in the economic policy and the foreign exchange regime adopted. For example, Turkish firms were found to be highly exposed to foreign exchange risks and their values were significantly influenced by exchange rate fluctuations due to a high inflationary environment and a rapid depreciation of its currency for the last few decades (Kiymaz, 2003). Chinese-listed firms, despite the currency peg, experienced significant foreign exchange exposure particularly against the Japanese Yen (Schena, 2005).

Furthermore, Brahmairene (2002) discovered that Thailand's real exchange rate is significantly affected the bilateral trade balance between Thailand and its major trading partners such as Japan, resulting in Thailand's trade deficits. Japanese firms were found to have an adverse impact on the depreciation of Yen, but they have actually been able to respond to the unavoidable appreciation of the Yen that was anticipated (Jayasinghe and Tsui, 2008).

Fraser and Pantzalis (2004) used the firm-specific foreign exchange indices (instead of the common foreign exchange rate index) and found a higher number of firms with significant exposure. They also commented that firms operating in Central America had more exposure than firms in the Asian crises region. This evidence supports the idea that firms with subsidiaries or affiliates in foreign countries or abroad will be affected by the currency fluctuations of both countries. Bartram (2007) also documented that nonfinancial firms were significantly exposed to (at least) one of its major trading partners' currency, such as the United States.

Dominguez and Tesar (2006) focused on non-U.S. firms, examining the relationship among firms in eight industrialized and developing countries such as Germany, Japan and the Netherlands. They found that five of the eight countries, with over 20% of firms and 40% of industries, were exposed to weekly exchange rate movements. They concluded that there is a statistically significant relationship between profitability as measured by stock returns and Exchange rates. The exposure beta magnitude towards the U.S. dollar ranged from 0.2 to 0.7.

Furthermore, the research conducted by Mun (2007), which tested the cross market correlation between the international stock market of mature markets in relation to the U.S. market, discovered that higher exchange rate variability increased local equity market volatility. However, it decreased the U.S. stock market volatility. The exchange rate exposure was strongly

correlated to local equity market returns instead of the U.S. market returns. When the local stock market was down, international investors seeking better returns in the U.S. stock markets would transfer funds out of local markets, causing the local currency to depreciate.

Although, previous literature reviews showed that the foreign exchange exposure is significant to exchange rate shocks, there are still many empirical studies that found no strong evidence to support the significance of exposure (Senteney, Bazaz and Peyvandi, 2003; Guo, Neely and Higbee, 2007). To improve research findings, Bodnar and Marston (2000) developed a model of foreign exposure using three variables such as percentage of firms' revenues, expenses denominated in foreign currency and profit rate.

However, the results still showed low exposure among the sample firms because these firms were presumed to have the ability to match their foreign currency revenues and costs, leaving them with little net exposure. Besides that, multinational firms also shielded themselves from foreign exchange exposure by creating offsetting foreign currency costs such as locating plants abroad. Tulay (2003), in his research that measured economic exposure of individual Turkish companies using the market return approach, found that only 12% of sample firms had a positive and significant economic exposure. This concludes that there is no difference in significant exposure between economic and transaction exposures.

However, the study denoted that the proportion and mean exposure coefficient were high for exporter firms compared to non-exporter. In addition, Muller and Verschoor (2007) discovered that only a small percentage of firms had significant exchange rate sensitivity and the significant level of currency risk exposure decreased when the measurement was calculated on a portfolio level instead of firm level.

2.9 Size and Direction of the Exposure

Previous studies had proven that the size and direction of exposure were not consistent across countries, firms and time. The exposure might be negative or positive depending on the business nature of the firms and industries, or nature of its foreign activities. Exposure could vary from the large positive net exposure of exporting firms to the large negative net exposure of importing firms (Mckenzie, 1998; Bodnar and Marston, 2000). The large positive exposure elasticity showed that foreign currency revenues exceeded foreign currency costs where the export-oriented firms experienced a large increase in profits when the dollar depreciated

The size of exposure due to depreciation or appreciation varies and changes across stocks and industries as time evolves. The beta coefficient used in the Aquino (2005) research represented the exposure of sixteen industry portfolios towards the exchange rate fluctuations. The results showed that all portfolios denoted negative betas and indicated that a positive change in the exchange rate that represented currency depreciation decreased the returns of the portfolio, subsequently increasing the risk premiums. The average beta of -0.0189 implied an average 1.46% monthly risk premium for the average portfolio. Apart from that, in the El-Masry (2006) study, the result also denoted a positive foreign exposure coefficient that indicated that lower (higher) returns were associated with depreciation (appreciation) of the currency. A negative exposure indicates the contrast effect.

There are studies that argue that the level of significance and sign of exposure estimates depend on the elasticity of demand and competitiveness. For the purposes of examining the exposure elasticity of competing and colluding exporters, Dekle (2005) selected Japanese firms as the sample for his research. The competitors' structure of foreign markets and firm level

characteristics – as well as substitutability between foreign and export products and type of competition among exporters – were used to determine whether a firm was competing or colluding. His findings concluded that exporters that collude in the foreign market were more exposed than when they compete, especially when foreign and Japanese goods were highly substitutable. This resulted in a fall in the profit margin of Japanese firms when the Yen appreciated because foreign sales became smaller in Yen.

Apart from that, New Hampshire exporters had a currency competitive advantage based on a purchasing power parity exchange rate with their major trading partners such as Canada and the United Kingdom, and continued to benefit from the weakening dollar (Becker-Blease and Kaen, 2005; Kaen, 2006).

In a recent study (Liu and Fung, 2009), currency depreciation actually increased export, domestic sales, total sales, value-added and productivity. Currency depreciation had a positive relationship with productivity, which showed that depreciation does improve the productivity of a firm. It concluded that a firm was actually gaining or benefiting from the depreciation of a currency, but suffered when it appreciated.

Firms with stocks with abnormally high positive or negative foreign exchange sensitivity tend to be in a financial distress and as a result, may face high volatility in cash flows, consequently lowering their expected return especially in the presence of high leverage (Kolari, Moorman and Sorescu, 2008). The relationship between expected returns and foreign exchange exposure appear to be an inverse U shape, which is illustrated in their study, and not linear as proven in past studies. The implication is that firms and investors are obviously concerned about the magnitude of foreign exchange risk exposure.

2.10 The Determinants of the Foreign Exchange Risk Exposure

The differences in exposure found in empirical studies are actually caused by many reasons. The determinants of exposure found in many studies are firm size, firms' assets, liquidity, leverage level, multinational status, the ratio of foreign sales and purchase considering the competitiveness, growth, hedging and time horizon (Chow and Chen, 1998; Williamson, 2001; Chan, 2002; Bartram, 2004; Chue and Cook, 2005; Dominguez and Tesar, 2006; Doidge *et al.*, 2006; Muller and Verschoor, 2007). Presented below are literature reviews that discuss the applicable and relevant determinants for this study.

2.10.1 Firm Size

The size of the firm plays a role in determining the exposure (El-Masry, 2006). Using U.S. pharmaceutical firms as samples, Chan (2002) discovered that stock returns of generic makers do not appear to be correlated with changes in the exchange rate because these firms tend to be smaller firms when compared to proprietary producers, who have high market capitalization. The evidence provided by Griffin *et al.* (2006) also supported the idea that there is less exposure in a small stock group because smaller firms in some countries have stable and growing international sales. These firms tend to outperform when the currency depreciates. Vygodina (2006) used the Granger causality test to explore the relationship and discovered that both large-cap and small-cap are co-integrated with the foreign exchange market but the uni-directional causality indicated that only large-cap stock prices were influenced by changes in the exchange rate from 1995 to 2003.

However, on the other hand, Dominguez and Tesar (2006) argued that small, rather large and medium-sized firms were more likely to be influenced. This is also supported by Hsin *et al.*

(2007) who concluded that smaller firms have a more significant lag exposure than larger firms because large firms tend to react to information more efficiently. Large firms that have large scale international activities are usually involved in hedging activities that contribute to less exposure because hedging outweighs the adverse impact. Therefore, firms with a small capital are expected to be highly exposed to the changes in the international trade environment (Verschoor and Muller, 2007) Jorion (1990), Booth and Rotenberg (1990) and Choi and Prasad (1995) and De Jong et al. (2006) cited in El-Masry (2007) found positive association between foreign sales ratio and exchange rate exposure. Doidge et al. (2002) cited in El-Masry (2007) found that firms' foreign activities are broadly and significantly related to exchange rate exposure and that, after controlling for these activities, large firms are more sensitive to currency movements than small firms. On the other hand, firms with a higher fraction of foreign debts have more negative foreign exchange rate exposure, though this result is statistically insignificant.

Shin and Soenen (1999) cited in El-Masry (2007) found significant evidence that the US small multinational firms are exposed to foreign exchange risk and benefit from a weakening in the international value of the US dollar. This study also argues a smaller but significant negative effect for large firms with foreign operations. Solakoglu (2005), in his study on the exchange rate exposure of Turkish companies for the period between 2001 and 2003, found that the size of the firm and the share of export revenue in total revenue have a negative effect on the exposure level.

2.10.2 Leverage (debt-to-assets)

Leverage is a common proxy for the likelihood of financial distress. Being a major 'fixed claim' against the cash flows of the firm, hedging becomes more valuable as leverage rises (Nance, Smith and Smithson, 1993). Further, potential underinvestment (Myers, 1977; Froot, Scharfstein and Stein, 1993) is more of a problem in high debt firms. Other things being equal, the theories of hedging imply that firms with higher leverage have lower levels of exposure.

He and Ng (1997) found a strongly significant negative relation between leverage and exchange exposure for their sample of Japanese firms, but Muller and Verschoor (2006b) found a negative (although insignificant) relation for European firms. They use the long-term debt-to-assets ratio as the measure of firm-specific leverage. The model of Froot, Scharfstein and Stein (1993) predicts that firms with particularly costly external financing, such as those with considerable greater growth opportunities or firms whose assets are largely intangible (Titman and Wessels, 1988), benefit the most from hedging.

Chamberlain, Howe and Popper (1996) analyze the independent variables explain 25-40% of the estimated foreign exchange exposure. They observe that the more foreign debt banks has, the more it is exposed to foreign exchange risk. They also find that little foreign exchange exposure can be explained by the use of off-balance sheet hedging. The estimated exposure is strongly correlated with most of the accounting measures. And it is most highly correlated with the size of the firm. However, we think that the size itself cannot be a source of exchange rate exposure. The bigger the firm, the more foreign traders it has, and the smaller the firm, the more it is focused on its local market. So it is not surprising to see bigger firms having a bigger exposure of foreign exchange risk.

Financial activities, such as foreign-currency borrowing or lending, guarantees, etc represent another kind of source of foreign exchange risk. Allayannis and Ofek (2001) find that exchange rate exposure is positively and significantly related to the level of foreign debt that the firm has. At this time, foreign debt can be another way to hedge foreign currency exposure since it represents a cash outflow in a foreign currency. It can only be used as a hedge when a firm has foreign revenues. By contrast, imports, which also represent a cash outflow in a foreign currency, cannot be hedged through foreign debt.

2.10.3. Return on Equity

Foreign exchange exposure is the risk of a firm's profitability and net cash flow to potentially change due to a change in exchange rates. Foreign exchange risk can significantly reduce a firm's profit margin on a business transaction. Managers must limit a firm's exposure to changes in exchange rate because profitability and cash flow are two of the main ways investors judge a firm's value. Managers use forward contracts, options and money market transactions to hedge potential foreign exchange risk (Volkov 2011).

There are also firm specific factors for foreign exchange currency. Dominguez and Tesar (2006) focused on non-U.S. firms, examining the relationship among firms in eight industrialized and developing countries such as Germany, Japan and the Netherlands. They found that five of the eight countries, with over 20% of firms and 40% of industries, were exposed to exchange rate movements. They concluded that there is a statistically significant relationship between profitability as measured by Return on Equity and exchange rates.

According to Solakoglu & Demir (2007) , Higher returns on equity, can indicate higher risk-taking for higher profits and concluded that return on equity has a positive impact on the banking and insurance sub-sectors.

2.10.4 Quick ratio and dividend payout ratio

Nance, Smith and Smithson (1993) suggest that firms can reduce the likelihood of incurring financial distress by maintaining a strong liquidity position This can be achieved by restricting the dividend payout or by holding high levels of cash and marketable securities, so that the propensity to hedge is negatively related to measures of short-term firm liquidity. Empirical evidence on liquidity and exchange exposure is mixed. Consistent with optimal hedging theory, He and Ng (1997) find a significant positive relation between the quick ratio and exchange exposure and an inverse relation between exposure and the dividend payout ratio.

Muller and Verschoor (2006b) find a negative but insignificant coefficient on the quick ratio term, but their finding on dividends being negative related to exposure is stronger. They use the quick ratio as the measure of short-term firm-level liquidity, and the dividend payout ratio. Zhang et al (2005) studied that, a high dividend payout ratio implies a decrease in the firm's cash reserve and may also indicate that the firm lacks profitable investment opportunities .the positive sign of the dividend payout ratio is consistent with the foreign exchange risk.

2.11. Empirical Study Analysis

Foreign Currency Risk is an important source of risk for the banking industry and different studies have been done in different parts of the world. Papaioannou (2006) foreign currency exposure and risk management is very important for the firm to avoid any vulnerability from exchange rates fluctuation which can affect the profits and assets values in a negative way.

A study conducted on 48 largest US commercial banks (Choi, et al 1992) for the period 1975-1987 showed that effects of exchange rate depend on the Net position of the bank in foreign currencies. According to them, when banks had positive net position, depreciation of foreign currencies negatively affected the stock prices of banks before year 1979 and after 1979 banks stock returns responded positively with the depreciation of foreign currencies as banks had changed from positive to negative net open positions. In a similar study on Canadian banks (Atindehou & Gueyie, 2001), it is found out for the Canadian Banks that stock prices responded positively with depreciation of foreign currencies.

Fluctuations in the foreign exchange rate force the changes in the portfolio returns as uncertain future exchange rates translate the returns on investments denominated in foreign currencies into US dollar returns. Foreign exchange risk can be managed if the diversification of portfolio is done across the assets in different currencies. Cash flows of a portfolio can be affected or changed by the usage of derivative securities. The usage of currency derivatives additionally reduces the risk of whole diversified portfolio (Abken & Shrikhande, 1997). Currency Derivatives are not only helpful in hedging the foreign exchange risk of the firms and institutes, however, due to information efficiency resultant of usage of currency derivatives makes the currency markets more efficient and exchange rates less forecast able (Liu, 2007).

Different traditional types of foreign exchange risk i.e. translational, transactional and economic risks were reviewed. Also different ways and strategies for managing foreign currency risk were analyzed along with advantages and disadvantages of each strategy and technique. Additionally, best practices widely spread were outlined along with data on financial derivatives and hedging practices by US firms. Sources of risks for banking sector have been investigated by many

researchers in different economies. Daugaard & Valentine, (1993) worked out different sources of risks and they found out that stock prices of banks have relationship with different variables like interest rates, exchange rates, banks profitability and market risk factor. According to them during the period from 1983 to 1991, share prices of banks responded with the appreciation of the Australian Dollar.

Irio & Faff (2000), studied foreign exchange risk in industries in Australia including the banking sector. According to them, banking industry as a whole do effective foreign exchange risk management and therefore, this type of risk is insignificant in pricing banking companies stocks.

Foreign Exchange Risk is also found out to be one of the major sources of risks in African Region. Walter & Tewodros, (2004) investigated the foreign currency exchange rate exposure of the major commercial banks in South Africa with the help of augmented market model. According to this study, all the major four banks in South Africa exhibit the foreign exchange risk and the Net Asset position in foreign currencies is a weak predictor of foreign exchange risk.

Shamsuddin, (2009) mentioned that adoption of flexible exchange rate regime in 1983 along with financial system globalization have exposed Australian Banks to new risks along with new opportunities. According to him small banks are immune to changes in interest and exchange rate. Choosing the suitable hedging strategy is often a difficult task due to the difficulties involved in measuring precisely current risk exposure and deciding on the suitable degree of risk exposure that ought to be shielded. The need for foreign exchange risk management began to arise after the fall of the Bretton Woods system and at the end of the United States dollar peg to gold in 1973(Papaioannou 2001) The issue of foreign exchange risk management for firms in

non-financial sector is independent from their principal business and is usually independently handled with by their corporate treasuries.

In most of the firms there are independent committees who function to oversee the treasuries strategy in managing the foreign exchange risk (and interest rate risk) (Lam,2003). It clearly shows the importance of the fact that firms give a significant attention to risk management issues and techniques. Contrariwise, international investors usually use their underlying assets and liabilities to manage foreign exchange risk. Since the currency exposure of international investor is majorly related to translation risks on assets and liabilities held in foreign currencies, they tend to consider foreign currencies as a separate asset class, totally separate from other assets, requiring a currency overlay mandate (Allen, 2003).

Banks use Derivatives to manage foreign currency risk. A review of literature on usage of derivatives and banks' foreign exchange risk is given here. There is much of literature which shows that foreign currency management tools significantly reduce foreign currency exposure. One of such study conducted on it (Allayannis, George, Ofek, & Eli, 2001), using S & P 500 non financial firms with the help of multivariate analysis suggested that with the use of foreign currency derivatives, foreign exchange risk is significantly reduced.

Hue Hawa Au Yong, Faff, & Chalmers, (2006) Investigated derivative activities in banks in the Asia Pacific region and tried to discover that level of derivative usage is linked with the perceptions of market about interest rate and exchange rates. They did not find any significant relationship between derivative activities of banks and exposures.

Hedging allows the commercial banks to manage foreign exchange risk but hedging itself poses additional risk to bank. (Gandhi 2006) in the paper for "The Chartered Accountant" for Instt. Of Chartered Accountants of India is mentioned that currency derivatives like currency futures, currency forwards, currency swaps and currency options help in hedging foreign exchange risk of firms and other ways of hedging including off-setting positions against the underlying assets and money markets are themselves risky. Hedging and hedging right are two different things. If the hedging is not done properly in the right way, it itself can become a serious source of risk and have potential to pose a serious financial loss to the firm.

The financial sector, several studies succeed in identifying a significant interest rate exposure for U.S. companies (Mitchell 1989, Scott/Peterson 1986, Martin/Keown 1977). There is some evidence that the size and the significance of the interest rate exposure depend on the estimation period (Kane/Unal 1988) and the type of institution (Chen/Chan 1989). A comparative study finds significant interest rate exposure for portfolios of Canadian, German, British and Japanese banks, but not for portfolios of U.S. banks with regard to changes in long-term national and international interest rates (Madura/Zarruk 1995).

Some of the most recent studies of the interest rate sensitivities of financial institutions are of particular interest in the context of this paper as they incorporate nonlinear interest rate effects by employing ARCH and GARCH modeling (e.g. Neuberger 1994, Song 1994). Interest rate risk appears to be compensated with a time-varying risk premium for periods of important interest rate volatility (Flannery et al. 1997). Results based on a GARCH-M model indicate a significant negative effect of the long-term interest rate on bank stock returns. The volatility and risk

premium of bank stocks is empirically determined by interest rate volatility (Elyasiani/Mansur 1998).

Foreign Currency options are the derivative instrument that gives the buyer of that option the right but not the obligation to exercise a specific transaction in the currency pair underlying the respective derivative contract. It entitles the buyer of the option the flexibility of exercising settlement of that option or not. The article focused on the dynamics of hedging foreign exchange risk with the usage currency options applications. Indeed, the foreign currency options are one of the best tools available for hedging foreign exchange exposures in different foreign exchange market conditions, like volatile market conditions, stagnant, bullish or bearish (Gandhi 2006).

(Martins (2007), studies the Real Exchange Rate in Ethiopia. Specifically, this paper investigates the determinants of the real exchange rate (RER) in Ethiopia. In particular, it assesses whether large capital inflows (e.g. foreign aid and remittances) have an impact on the RER. The results suggest two main (long-run) determinants of the RER in Ethiopia: trade openness is found to be correlated with RER depreciations, while a positive shock to the terms of trade tends to appreciate the RER. Foreign aid is not found to have a statistically significant impact, while there is only weak evidence that workers' remittances could be associated with RER appreciations.

2.12. Summery and Conclusion

Generally, foreign exchange risk as incurring losses due to changes in exchange rates. Such loss of earnings may occur due to a mismatch between the value of assets and that of capital and liabilities denominated in foreign currencies or a mismatch between foreign receivables and foreign payables that are expressed in domestic currency.

According to Greuning and Bratanovic (2009), foreign exchange risk is speculative and can therefore result in a gain or a loss, depending on the direction of exchange rate shifts and whether a bank is net long or net short (surplus or deficit) in the foreign currency. In principle, the fluctuations in the value of domestic currency that create currency risk result from long-term macroeconomic factors such as changes in foreign and domestic interest rates and the volume and direction of a country's trade and capital flows. Short-term factors, such as expected or unexpected political events, changed expectations on the part of market participants, or speculation based currency trading may also give rise to foreign exchange changes all these factors can affect the supply and demand for a currency and therefore the day-to-day movements of the exchange rate in currency markets.

Foreign exchange risk is generally considered to comprise of transaction risk, economic risk and revaluation risk. Transaction risk is the price-based impact of exchange rate changes on foreign receivables and foreign payables, that is, the difference in price at which they are collected or paid and the price at which they are recognized in local currency in the financial statements of a bank or corporate entity. Alternatively known as business risk, economic risk relates to the impact of exchange rate changes on a country's long-term or a company's competitive position. With increasing globalization, capital moves quickly to take advantage of changes in exchange rates and therefore devaluations of foreign currencies can lead to increased competition in both overseas and domestic markets. This phenomenon makes this component of foreign exchange risk very critical for its management.

The third component, revaluation or translation risk arises when a bank's foreign currency positions are revalued in domestic currency, and when a parent institution conducts financial

reporting or periodic consolidation of financial statements. Banks conducting foreign exchange operations are also exposed to foreign exchange risk in forms of credit risks such as the default of the counterparty to a foreign exchange contract and time-zone-related settlement risk.

A simple and common approach to exchange rate risk measurement is to limit the size of open positions in each currency. Net open position (the difference between assets and liabilities denominated in foreign currency). Measuring a bank's foreign exchange exposure is achieved in two successive steps. First the measurement of the exposure in each single currency and then the measurement of the overall foreign exchange exposure resulting from a mix of different positions in several foreign currencies. . There is much of literature which shows that foreign currency management tools significantly reduce foreign currency exposure. Generally, banks need to devise management information systems they allow access to market information and produce timely reports to effectively monitor and control their exposure to foreign exchange rate risk.

The above empirical evidences are conducted across countries regarding to foreign currency risk. Papaioannou (2006) excluding financial institution, study foreign currency exposure and risk management practices widely spread along with data on financial derivatives and hedging practices by US firms.

Daugaard & Valentine, (1993) worked out different sources of risks and they found out that stock prices of banks have relationship with different variables like interest rates, exchange rates, banks profitability and market risk factor. The study ignores the management of foreign exchange risk. It simply argues the factors that influence foreign exchange risk management.

Walter & Tewodros, (2004) investigated the foreign currency exchange rate exposure of the major commercial banks in South Africa with the help of augmented market model. It ignores the management of currency exposure. Papaioannou (2001) the issue of foreign exchange risk management for firms in non-financial sector is independent from their principal business and is usually independently handled with by their corporate treasuries. Even though it studies on foreign exchange risk management it focuses on non financial institution.

In Ethiopia. Martins 2007 studied the Real Exchange Rate in Ethiopia. This paper investigates the determinants of the real exchange rate (RER) in Ethiopia. In particular, it assesses whether large capital inflows (e.g. foreign aid and remittances) have an impact on the RER. The results suggest two main (long-run) determinants of the RER in Ethiopia: trade openness is found to be correlated with RER depreciations, while a positive shock to the terms of trade tends to appreciate the RER. Foreign aid is not found to have a statistically significant impact, while there is only weak evidence that workers' remittances could be associated with RER appreciations.

Prior empirical studies conducted across countries regarding to foreign exchange risk of both financial and non financial institution. However, as the researcher's knowledge in Ethiopia there is no detailed empirical studies conducted on the determinants of foreign currency exposure in commercial banks. To fill this gap the study conducted the determinants of foreign exchange risk in Ethiopian commercial banks.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The previous chapter reviews both theoretical and empirical literatures regarding the foreign exchange exposure of firms. The purpose of this chapter is to present the research methodology and the choice of the appropriate research method for this study.

3.2 Methods Adopted

The purpose of this study is to identify the determinants of foreign exchange risk in Ethiopian commercial banks. As it can be seen from the research problem it is more explanatory type and tries to assess the factors that expose banks to foreign exchange risk in the operation. Therefore, categorizing this research in quantitative research design is more appropriate.

3.2.1 Survey design

Survey research involves acquiring information about one or more group of people perhaps about their characteristics, opinions, attitudes, or previous experiences. The ultimate goal is to learn about a large population by surveying a sample of that population. According to Cresswell 2009, survey design provides a quantitative or numeric description of trends, attitudes or opinions of a population by studying a sample of that population and it is the economy of design. Therefore, from quantitative research strategies, the researcher used survey research method. The data collection relied mainly on secondary data, structured record reviews (documentary analysis) to collect financial information.

3.2.2 Sample Design

Sampling is indispensable technique of behavioral research; the research work cannot be undertaken without the use of sampling. The study of the total population is not possible and it is also impracticable. The practical limitation: cost, time and other factors which are usually operative in the situation stand in the way of studying the total population. The concept of sampling has been introduced with a view to making the research findings economical and accurate. The research design is based on the sampling of the study. A good research design provides information concerning with the selection of the sample population treatments and controls to be imposed (Singh, 2006 P.81).

According to Fowler (1986), the appropriateness of any sample design feature can be evaluated only in the context of the overall survey objectives. In this study, the target population would be commercial banks in Ethiopia including both government and private banks in Ethiopia.

The most appropriate type of sampling design for this research would be purposive sampling method. Purposive sampling is used where the researcher selects the sample on her particular purpose. According to Diamantopoulou and Schlegelmilch (2000), purposive sampling is used when sample members are chosen with specific purpose or objective in mind.

To examine the determinants of foreign exchange risk of commercial banks in Ethiopia, quantitative research approach is adopted. Of the total population of 17 banks in Ethiopia obtained from national bank of Ethiopia only 7 commercial banks (commercial bank of Ethiopia, dashen bank, awash international bank, bank of Abyssinia, wegagen bank, United bank and Nib bank) have been included in the study. In this study, the type of sampling method used was purposive. The reason for purposive sample selection is that depend on the objective of the

commercial banks, i.e. the term commercial distinguishes a commercial bank from other type of banks. The main objective of a commercial bank is to generate profit for its ownership by providing quality based financial services to its customers. From those commercial banks operated nowadays in Ethiopia, those aged is purposively selected. In other words, not all commercial banks registered at National Bank of Ethiopia have financial statements for more than five years. Therefore, commercial banks that have financial statements for more than five years were selected for this research. Sample sizes of seven commercial banks include both governments and private owned commercial banks operated in Ethiopia.

3.3 Data Collection Method

The secondary data were collected in the study to perform statistical analysis and reach to some conclusions. The secondary data collected from each banks financial statement and annual reports published by National bank of Ethiopia.

Data Analysis Method

There are different types of inferential statistical techniques or procedures used in quantitative research approach and their usage varies based on purpose and appropriateness for each research situation.

This study has independent variables like: size, Return on Equity, debt to asset ratio, quick ratio and dividend payout ratios. Therefore, parametric statistics is more appropriate.

From parameter statistics, regression is the appropriate one. Regression is concerned with describing and evaluating the relationship between a given variable and one or more other variables. More specifically, regression is an attempt to explain movements in a variable by

reference to movements in one or more other variables (Brooks. 2008). In this study the classical linear regression model (CLRM) tested by EVIEW .

Variables Used for Regression

Using classical linear regression model, explore the relationship between Foreign exchange risk relative net asset of commercial banks with Size, Return on Equity, debt to asset ratio, quick ratio and dividend payout ratio .The below mentioned Regression Model is used to find out the relationship between Foreign currency exposure and the factors that influence it:

$$NFXNA = \alpha + \beta_{size} + \beta_{ROE} + \beta_{DA} + \beta_{QR} + \beta_{DP} + \varepsilon$$

Model : NFX depends on Size, Return on Equity, Debt to asset ratio, Quick ratio and

Dividend payout ratio

Where,

NFXNA= Net Foreign exchange risk relative to Net Assets

Size = Size of the Bank

ROE = Return on Equity

DA = Debt to asset ratio

QR = Quick ratio

DP = Dividend payout ratio

α = Intercept

β = Regression coefficient

ε =error term

Dependent variables

Net Foreign Currency Exposure Relative to Net Assets:

Net Foreign Currency Exposure relative to Net Assets is calculated for the comparison purpose. Different commercial banks have different Net Assets that represent the size of bank and obviously different net positions. Net foreign currency exposure is divided by Net Assets so that a comparison can be done between different banks. Therefore, it shows Net foreign currency exposure of a bank relative to its size, otherwise using only Net Foreign currency in the model will show its maximum dependence on Net assets of bank and the effect of other factors will be not taken into account.

Net Foreign Currency Exposure is calculated by using the following formula:

$$\text{NFX} = \sum_{\text{currency}} \text{Asset currency} + (-\text{liabilities currency})$$

Equation 1: Calculation of NFX

Net Foreign Currency Exposure is calculated by adding Net Open Position in all currencies held by a bank. The National Bank of Ethiopia issued all banks Net foreign currency position in its annual report .hence that is used. The net foreign exchange risk relative to net asset was measured as follows

$$\text{NFXNA} = \text{NFX/NA}$$

Equation 2: NFXNA Calculation

Independent Variables

Proxies of used financial ratio

Table 3.1proxies of independent variables

| Variables | Ratio |
|------------------------|--|
| Size | Total asset |
| ROE | Profit after tax/average total shareholder value |
| Leverage | Long term debt/Asset |
| Quick ratio | Current asset/Current liability |
| Dividende payout ratio | Dividend /Net Income |

In the above chapter the econometric model developed reveals that there is a regression analysis between one dependent variable (foreign exchange risk) against five independent variables (size, return on Equity, Debt to asset Ratio, quick ratio and dividend payout ratio). And therefore, multiple regression analysis has been used for the study. In analyzing the data, the researcher used EVIEW software packages.

In general, to examine the determinants of foreign exchange risk in commercial banks, quantitative research approach is adopted. Of the total population of 17 banks in Ethiopia obtained from national bank of Ethiopia only 7 commercial banks have been included in the study. Factors that might explain the foreign exchange risk of banks are

a broad concept that needs further investigation from different perspective. This is the one which tried to investigate and analyze the determinants of foreign exchange risk commercial banks in Ethiopia. The aim of the study is to investigate and analyze the firm-specific determinants of

foreign exchange in banking industry of Ethiopia by including a certain important new explanatory variables which are empirically investigated by prior researchers.

CHAPTER FOUR

DATA PRESENTATIONS, RESULTS AND DISCUSSIONS

4.1 Introductions

The study examines the determinants of the foreign exchange risk in Ethiopian commercial banks. The sample contains seven commercial banks listed at National bank of Ethiopia for which five consecutive year's financial data for the period between the years 2006 – 2010 were used.

In examining the determinants of foreign exchange risk of commercial banks, the researcher use foreign exchange risk relative to net asset. Because if a bank has zero net foreign currency exposure, it means it has all of his assets and liabilities hedged and offset against other currencies or in the same currency. It can be analyzed either relative to Total Assets or Net Assets of the bank; however, it is more appropriate to analyze it with its relativeness to net assets (sabri 2011). Therefore, a new variable is constructed i.e. "net foreign currency exposure relative to net assets", denoted by "NFXNA".

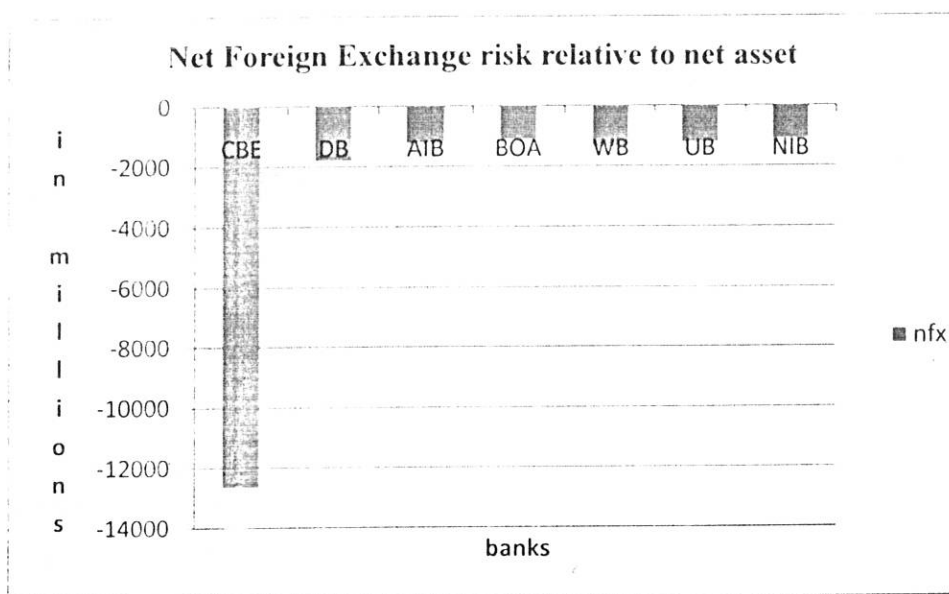
The paper used a regression analysis to test the effect of five independent (explanatory) variables on the dependent (explained) variable i.e. net foreign exchange risk relative to net assets. Thus, in this study the researcher used multiple regression analysis, in which tests have been made to examine whether one or more independent variables influence the variation on dependent variable. In relation to this, the researcher also examined whether the independent variables have a positive or negative effect on the variations of the dependent variable i.e net foreign exchange risk. In this chapter, along with the regression analysis and discussion for the study have been

made using EVIEW software package, the researcher also conduct a diagnostic test to increase the reliability of the study.

4.2. Data presentations

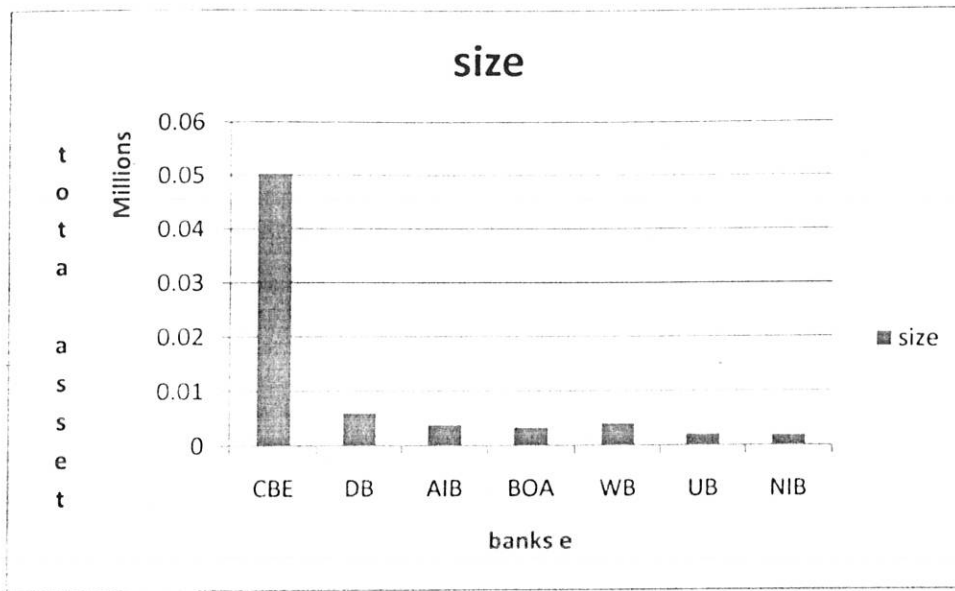
The results for the statistical analysis collected from banks financial statements are presented in the following figures and tables. First, the results indicated in the figure one below shows that the average of foreign exchange exposure relative to net asset of commercial banks in Ethiopia for over all samples.

Figure 4.1: Average net foreign exchange risk relative to net asset of commercial banks.



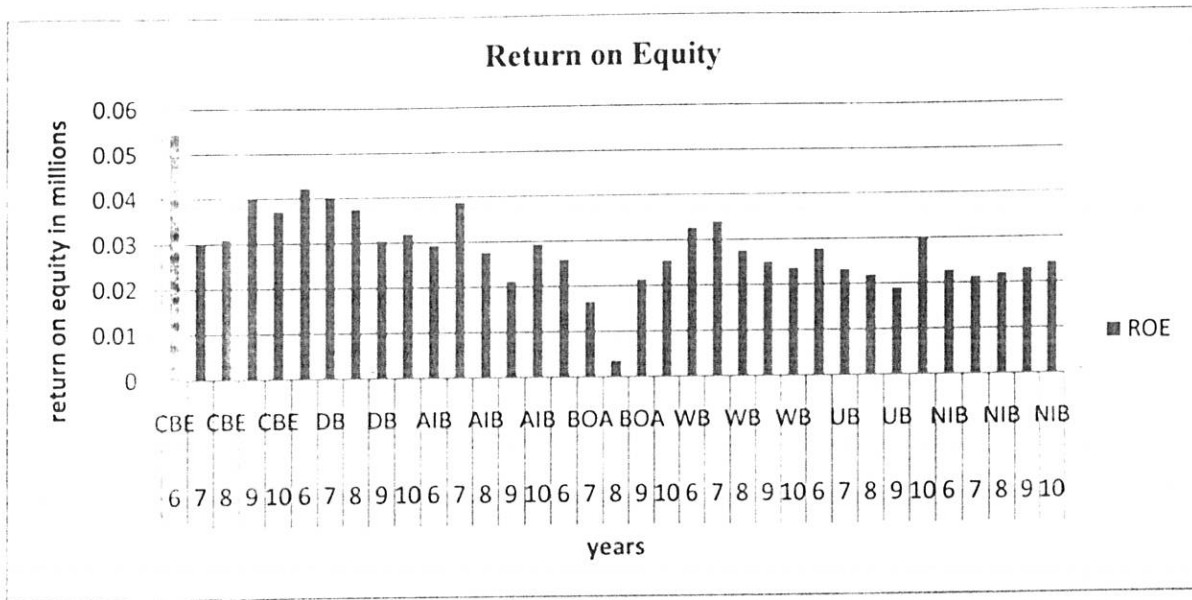
Secondly, the results shown in the figure 4.2 below shows that, the size for over all samples. The size of each banks measured by total asset of the banks. Especially, among commercial bank in Ethiopia, commercial bank of Ethiopia in the year of the study has higher total asset than the other sampled commercial banks.

Figure 4. 2: size of banks



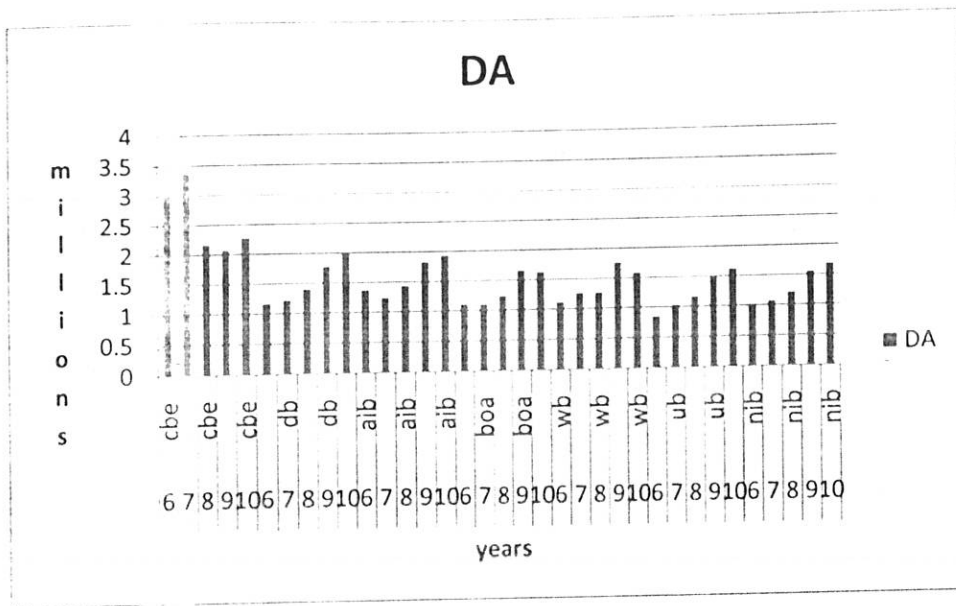
Thirdly, the results shown in the figure 4.3 below shows that, the return on equity for over all samples for the consecutive five years.

Figure 4.3 Returns on Equity



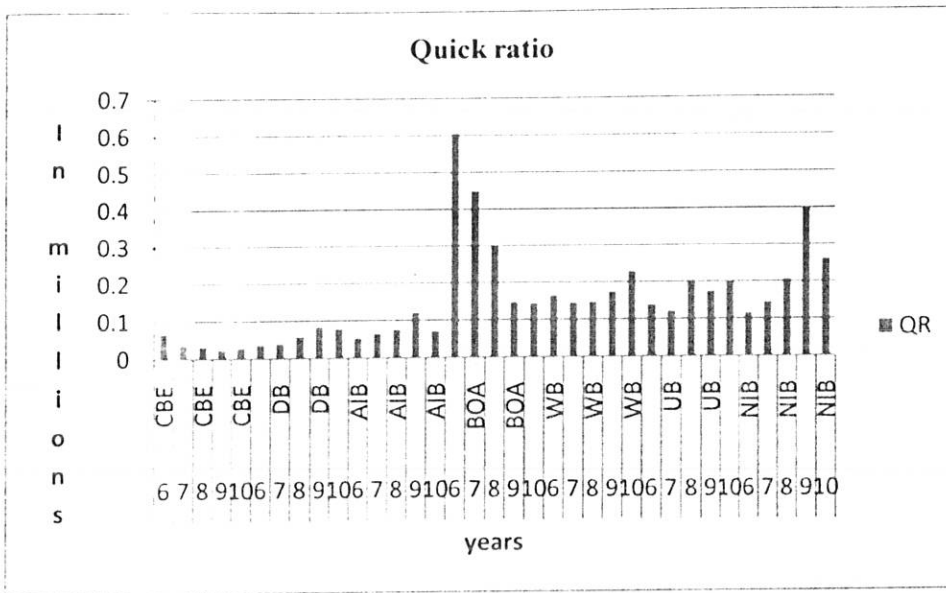
Fourthly, the below figure shows that, the debt to asset ratio for all over the samples of banks ranges from 0.8446 to 3.0428 with an average and standard deviation of 0.4829 and 0.545155 respectively.

Figure 4.4: Debt to Asset ratio of banks



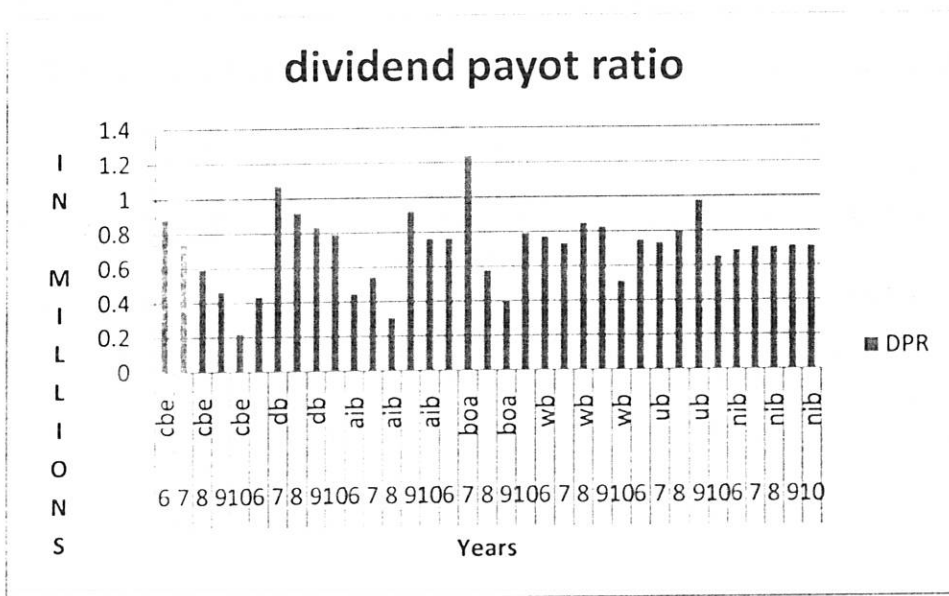
Next, the below figure shows that the quick ratio of banks measured by dividing Current asset to Current liability of the banks. The data ranges from 0 to 0.6 with an average and standard deviation of 0.152 and 0.127 respectively.

Figure 4.5: Banks Quick Ratio



Lastly, the results shown in the figure six below shows that dividend payout ratio of banks measured by dividing dividend to net income.

Figure 4.6. Dividend payout ratio



4.3. Regression Model Specification

The study used a panel data which combines the features of both time-series and cross-sectional data. As noted by Shah & Khan (2007), "Panel data follows a given sample of individuals over time, and thus provides multiple observations on each individual in the sample". They also noted that panel data provides information on a number of statistical units for a number of years (Shah & Khan(2007) P.273).

Regarding the use of panel data, Paula & Zelia (2007 P.552) mentioned two basic benefits. The first benefit of working with panel data understands the development overtime of the relationship between explained variables and explanatory variables. The other benefit of using panel data is allowing the researcher to measure the difference between companies which are not observable and these differences having the name of individual effect.

Furthermore, Shah & Khan (2007) noted that "panel data usually provides the researcher a large number of data points, increasing the degree of freedom and reducing the collinaerity among explanatory variables and therefore, it improves the efficiency of econometric efficiency". As noted by Doi (1999),cited in Guven Sayilga et al. (2006)), the panel regression equation differs from a regular time-series or cross-section regression by the double subscript attached to each variable. According to Brook (2008), there are two types of models used for estimating the coefficients, used for panel types of data. (i) Panel fixed effect model and (ii) Panel random effect model. He further mentioned the distinctive features of both types of models. In this the study a random effects model is more appropriate (see the table below).

Table 4.1. Test of random effect

Correlated Random Effects - Hausman Test

Test cross-section random effects

| Test Summary | Chi-Sq. Statistic | Chi-Sq. d.f | Prob |
|----------------------|-------------------|-------------|--------|
| Cross-section random | 3.417858 | 5 | 0.6359 |

The p -value for the test is not significant at desired significance level, indicating that the random effects model is appropriate.

4.4. Diagnostic test

In order to show how the estimation technique used for this study is appropriate and the hypothesis tests regarding the coefficient estimates are correctly made, a diagnostic test was conducted by using EVIEW software package. Here, in this section all of the necessary tests are made with the help of a series of tables.

4.4.1. Goodness of fit

In examining the determinants of foreign exchange risk of commercial banks in Ethiopia, the researcher included five explanatory variables (i.e. size, return on equity, debt to asset ratio, quick ratio and dividend payout ratio) and one dependent variable (i.e. net foreign exchange risk relative to net

asset). The functional relationship between variables in this study is therefore; foreign exchange risk is a function of size, return on equity, debt to asset ratio, quick ratio and dividend payout ratio.

However, to show how well the model containing those of five explanatory variables actually explains the variations in the dependent variables (i.e. net foreign exchange risk relative to net asset) it is necessary to test it through goodness of fit statistic.

The goodness of fit of the model can be measured by the square of the correlation coefficient also called R squared. According to Brook (2008) the most common goodness of fit statistic is R squared. He stated that R squared is the square of the correlation between the value of the dependent variable and the corresponding fitted values from the model. This square of the correlation coefficient (R squared) is always lie between 0 and 1. If this correlation is high (close to one), the model fits the data well, while if the correlation is low (close to zero), and the model is not providing a good fit to the data (Brook (2008)).

Table 4.2: Goodness of fit through R Square

Model Summary

| Model | R square | Adjusted R square | Std. Error of the Estimate |
|--------------|-----------------|--------------------------|-----------------------------------|
| 1 | 0.798804 | 0.762876 | 0.020636 |

Predictors: (Constant), size,roe , da, quick ratio, dividend payout ratio

Source: EVIEW regression output

Both R squared and adjusted R squared measure the fitness of the model i.e. they measures the proportion of the variation in dependent variable explained by the model. But since adjusted R square is the modification for the limitation of R square the value of the adjusted R square is considered to measure the fitness of the model.

Thus, as it is shown on table 4.1 above, the value of adjusted R square is 76% indicating that the independent variables in the model are explaining 76% of the variations on the dependent variable. Thus, we can understand that the model of the study is providing a good fit to the data.

4.4.2. Test of Heteroscedasticity

The other assumption for the linear regression model is that the disturbances appearing in the population regression are homoscedastic i.e the variance of the error term is constant. If the errors do not have a constant variance, they are said to be heteroscedastic (Brook(2008)).

To test whether there is a presence of hetroscedasticity, the researcher used a white test for this study. To do that, the residual square for each observation have been calculated and it was regressed against the explanatory variables. The result finally obtained from the regression is shown below.

Table 4.3: White test regression

| Model | R Square | Adjusted Square | Prob(F-statistic) |
|-------|----------|-----------------|-------------------|
| | 0.595909 | 0.018635 | 0.486348 |

Source: EVIEW regression result.

The hypothesis to be tested under white test of heterocedasticity is:

H0: No Heterocedasticity

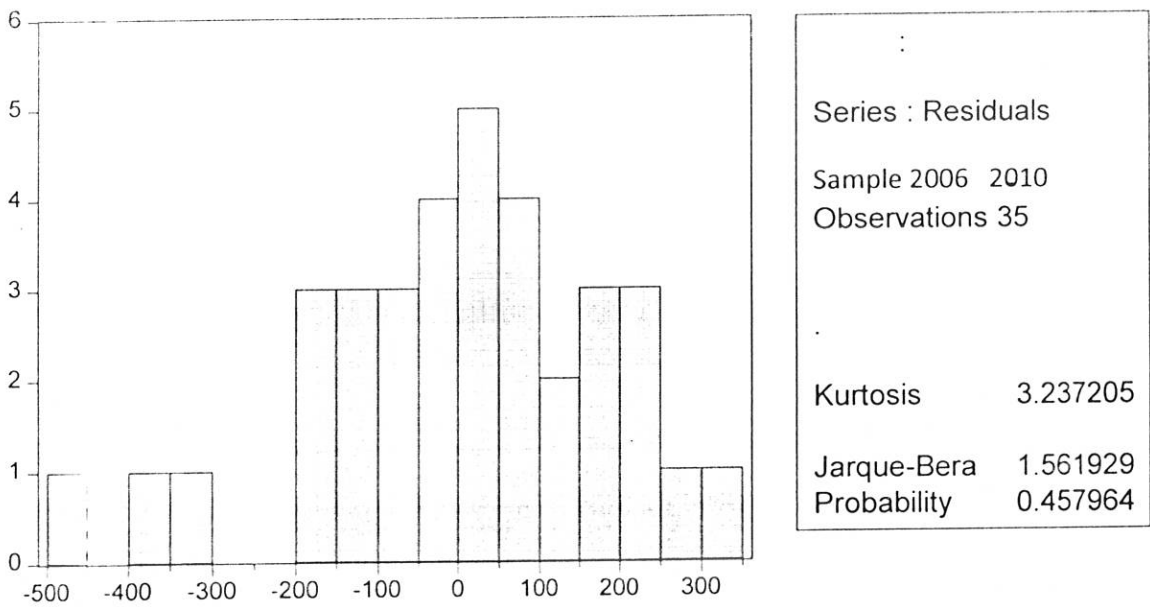
H1: Heterocedasticity

From table 4.2 p- value of the tests 0.486 thus, we fail to reject the null hypothesis of no heterocedasticity. This result indicates that there is no evidence for the presence of heterocedasticity.

4.4.3. Test of Normality of residuals

Brook (2008) noted that in order to conduct single or joint hypothesis test about the model parameter, the normality assumption must be fulfilled. For this study, testing normality has been made as the following figure.

Figure 4.7 normality test



A normal distribution is defined as have a coefficient of kurtosis of 3. It is possible to define a coefficient of excess kurtosis, equal to the coefficient of kurtosis minus 3; a normal distribution

will thus have a coefficient of excess kurtosis of zero (brook 2008).From the above figure, the kurtosis of the figure shows that 3.23.the kurtosis value is more slightly closer to the values of normality.

4.4.4. Multicollinearity test

According to Brook 2008 an implicit assumption that is made when using the OLS estimation method is that the explanatory variables are not correlated with one another. If there is no relationship between the explanatory variables, they would be said to be orthogonal to one another. If the explanatory variables were orthogonal to one another, adding or removing a variable from a regression equation would not cause the values of the coefficients on the other variables to change.

For the determinants of foreign exchange risk in commercial banks a correlation matrix for the independent variables can be constructed in eviews. The following table will be displayed that contains the correlation matrix of the series in a spreadsheet format:

Table 4.4: Test of multicollinearity.

| | ROE | DA | DPR | size | QR |
|------|-----------|-----------|-----------|-----------|-----------|
| ROE | 1.000000 | 0.008790 | -0.194571 | -0.255616 | -0.166164 |
| DA | 0.008790 | 1.000000 | -0.160807 | 0.12176 | -0.049019 |
| DPR | -0.194571 | -0.160807 | 1.000000 | 0.121276 | 0.1 86129 |
| Size | -0.255616 | 0.12176 | 0.121276 | 1.000000 | 0.012252 |
| QR | -0.166164 | -0.049019 | 0.186129 | 0.012251 | 1.000000 |

Source : Eviews

In this result, the largest observed correlation is 0.255 between size and return on equity variables. This is sufficiently small and it can reasonable ignored.

4.2. Analysis of the result

4.2.1. Descriptive statistics

The table 4.7 below shows the descriptive statistics of dependent variables, Net foreign exchange risk relative to net asset and five independent variables.

Table 4.5: Descriptive Statistics

| Variables | Mean | Median | Maximum | Minimum | Std.Dev. |
|-----------------------|----------|----------|----------|-----------|----------|
| NFXTNA | 0.045160 | 0.035730 | 0.194366 | -0.043325 | 0.042411 |
| Return on Equity | 28.38894 | 27.71069 | 54.65077 | 3.543298 | 8.962318 |
| Debt to Asset ratio | 1.521357 | 1.419165 | .369515 | 0.84600 | 0.487911 |
| Size | 8.734134 | 8.480576 | 11.21434 | 7.377134 | 0.981238 |
| Quick ratio | 0.152402 | 0.138340 | 0.605963 | 0.023529 | 0.127107 |
| Dividend payout ratio | 0.71093 | 0.733259 | 1.23880 | 0.2235 | 0.215339 |

Source: EVIEW regression output

As it is shown in the above table the net foreign exchange risk relative to net asset has a mean value of 0.045 and median of 0.035 ranging between a minimum of -0.0433 and a maximum of 0.194, and standard deviation 0.042, this means that there is a variance of foreign exchange risk relative to net asset in commercial banks. In other word "Net Foreign Currency Exposure" gives the information about the Foreign Exchange Risk that has been assumed by the bank at that point of time. The minimum value of net foreign exchange, -0.0433 shows that, there is a minimal exposure to foreign exchange risk. This may relate to the nature and frequency of foreign exchange transactions.the higher the frequency of foreign exchange transations, the higher will be its exposure to foreign exchange risk.

From the above table, the mean value of size is 8.734 and median 8.480 with the range of 7.377 minimum value and 11.2143 Maximum value, standard deviation 0.9812 ,It indicates that there is great difference in size between commercial banks in Ethiopia.

The profitability of banks can be measured by the return on Equity, the ROE in the above table shows that mean value of 28.388 and median of 27.710 ranging between a minimum of 3.543298 and maximum of 54.65077,standard deviation 8.9623,this indicate that there is a difference of profitability between commercial banks in Ethiopia .

Debt to asset ratio of commercial banks means value of 1.521 and median 1.419 with the range of 0.84 minimum values and 3.369 maximum values, with standard deviation of 0.487. It indicates that the debt of commercial banks is 1.66 times greater than their asset.

Quick ratio shows a mean value of 0.15, median of 0.1383 with the minimum, maximum and standard deviation of 0.0235, 0.605 and 0.127 respectively. this means that the commercial banks

current (liquid assets) assets are less than short term liabilities in other words the current assets of the commercial banks unable to cover their short term liabilities and it shows the variance of quick ratio among commercial banks in Ethiopia. The dividend payout ratio, as shown in the table above, the mean value and median of 0.7109 and 0.7332 respectively; with the standard deviation of 0.21533.

4.3. Result and Discussions

Table 4.6 shows the empirical result of the study under panel random estimators. All of the total five explanatory variables tested in this study are size, return on equity, debt to asset ratio, quick ratio and dividend payout ratio found are the commonly significant variables that affect the foreign exchange risk relative to net asset of the commercial banks

Table 4.6 Estimation result

| Dependent variable :NFXTNA | Coefficient | Standard error | P-value |
|-------------------------------|-------------|----------------|--------------|
| Independent variables | | | |
| SIZE | -1.15 | 5.99 | 0.8491 |
| ROE | 0.003207 | 0.00047 | 0.0000 *** |
| QR | 0.342495 | 0.032699 | 0.0000 *** |
| DPR | -0.0005371 | 0.018225 | 0.7704 |
| DA | 0.02103 | 0.008584 | 0.8082 |
| Prob(F-statistic) | | | 0.000000 *** |
| R ² | | | 0.79 |
| Adjusted R ² | | | 0.76 |

Source: EVIEW regression output

**** indicate statistical significance at 1% significance level respectively.*

The above regression result can be used to predict the value of the dependent variable based on a set of values for the independent variables. From the last row of table 4.6, it is suggested that the P-value of F-statistics is statistically significant at 1% significance level. Therefore, the null hypotheses that the coefficients of the five independent variables are jointly zero should be rejected. This means that the coefficient of five variables can jointly explain significant variations in the sampled commercial banks of foreign exchange risk. The adjusted R^2 is approximately 76%. This implies that at least 76% of the variation in commercial banks foreign exchange risk relative to net asset can be explained jointly by the five independent variables listed above.

The coefficients of return on equity and quick ratio are statistically significant at 1% significance level. Whereas, the coefficients of the remaining independent variables (i.e size, dividend payout ratio and debt to asset ratio) are not statistically significant even at 5% significance level.

The positive coefficients on the return on equity and quick ratio are not consistent with the developed null hypothesis i.e there is no statistically significant relationships between net foreign exchange risk relative to net asset and return on equity and quick ratio of commercial banks. While the relationship between net foreign exchange relative to net asset and the remaining independent variables (i.e size, dividend payout ratio and debt to asset ratio) are consistent with the developed null hypotheses.

In the next section the effect of each variable tested under this study is discussed and analyzed based on the theoretical predictions, prior empirical studies and hypothesis formulated for this study.

Size

The coefficient on the commercial banks size is negative but not statistically significant. This implies that banks size have no impact on foreign exchange risk relative to net asset of Ethiopian commercial banks. Based on this result, the first null hypothesis (there is no statistically significant relationships between foreign exchange risk relative to net asset and size) is fail to reject. In contrast , it opposes the empirical results of the previous studies by Tsecoegl (1997), Rhodes (1982) and Griffin et al (2006) who argued that, a bank with larger asset scale is more competitive in the foreign exchange market and size matters for banks competitiveness. In addition, large banks might have higher probability to have more customers. Especially, large and international clients favor large banks and also have higher currency exposure.

Moreover, another group of researcher (Shin and Soenen (1999) cited in El-Masry (2007), (Versehoor and Muller, 2007), Dominguez and Tesar (2006) , Hsin *et al.* (2007) found that smaller firms have a more significant lag exposure than larger firms because large firms tend to react to information more efficiently. Large firms that have large scale international activities are usually involved in hedging activities that contribute to less exposure because hedging outweighs the adverse impact. Therefore, firms with a small capital are expected to be highly exposed to the changes in the international trade environment.

As shown in the above table the result of this study is not consistent with the prior studies founded that the firm size affects foreign exchange risk. This study shows that in Ethiopian

commercial banks the firm size doesn't affect the banks foreign exchange risk. As shown in the table 4.5 above the standard deviation of the size of the commercial banks in Ethiopia varies, it indicates that there is a different in size among them. Even though the size of the commercial banks different, the diversity of the nature of transaction and service provided is similar. Whether it is large or small depend on their size the foreign exchange of the commercial banks doesn't affected by the size.

In Ethiopia, Forex bureaus established at commercial banks are allowed to engage in the buying and selling of major convertible currencies, operate in spot transactions with immediate delivery of currencies bought or sold, sell and/or buy cash notes and travelers cheques at displayed exchange rates before any subsequent change. It indicates that whether the size of the commercial banks large or small, it will not be exposed for foreign exchange risk by holding excess foreign currency.

Generally, the aim of this study is to identify the determinants of foreign exchange risk, among that, the size of the banks is used as one independent variable. Based on the result of this study, the size of commercial banks has no effect on the foreign exchange risk.

Return on Equity

From the above table, the results show that the coefficient of return on equity is a positive and statistically significant. It indicates that the second null hypothesis (i.e there is no statistically significant relationships between foreign exchange risk relative to net asset and Return on equity) is rejected at 1% significant level. This implies that there is a positive relationship between return on equity and foreign exchange risk relative to net asset of the commercial banks.

The result of this study indicates that, the more profitable commercial banks affected more by foreign exchange risk. Obviously, the aims of the commercial banks are to generate more profit. As the banks have more profit, there is the higher tendency to buy foreign currency. Intern, this indicates that the banks that profit more are more exposed to foreign exchange risk as long as foreign currency purchased exposed to foreign exchange risk. In other cases, if the banks have high profit, the banks will have capacity to set aside sufficient asset to inter into foreign exchange risk market. Since, the commercial banks participate in the foreign exchange market there the probability of banks affected by foreign exchange risk due to currency fluctuation.

The result of this study consistent with the findings of previous study by Solakoglu & Demir (2007). Higher returns on equity, can indicate higher risk-taking for higher profits and concluded that return on equity has a positive impact on the banking and insurance sub-sectors. Additionally, Dominguez and Tesar (2006) focused on non-U.S. firms, examining the relationship among firms in eight industrialized and developing countries such as Germany, Japan and the Netherlands. They found that five of the eight countries, with over 20% of firms and 40% of industries, were exposed to exchange rate movements. They concluded that there is a statistically significant relationship between profitability as measured by Return on Equity and foreign exchange risk.

However, this result is not consistent with some previous empirical studies, for instance Volkov(2011) argued that Foreign exchange risk can significantly reduce a firm's profit margin on a business transaction, Managers must limit a firm's exposure to changes in exchange rate because profitability and cash flow are two of the main ways investors judge a firm's value.

Debt to Asset Ratio

The relationship between debt to asset ratio and foreign exchange risk relative to net asset of the commercial banks regressed in the above table shows that there is a positive but not statistically significant. Based on this results the third null hypothesis (i.e. there is no statistical significant relationship between foreign exchange risk relative to net asset and debt to asset ratio) fail to reject at the desired significant level.

The debt to asset ratio of Ethiopian commercial banks has no impact on the banks foreign exchange risk. This happen because of in Ethiopia there is the foreign currency account in any authorized commercial banks in four major international currencies. This deposit of foreign currency is the liability for bank. The deposit of foreign currency in with a limited amount shall be deposited in current account. Since this deposit of foreign currency in commercial banks controlled by the National banks of Ethiopia, There is no effect of the commercial banks leverage over the foreign exchange risk.

From the previous empirical studies, this result consistent with Muller and Verschoor (2007) findings, who argued that there is no statistically significant relation for European firms.

However, the result doesn't support, the findings of He and Ng (1997) who argued that there is strongly significant negative relation between leverage and exchange exposure for their sample of Japanese firms. Similarly, it is inconsistent with Allayannis and Ofek (2001) who found that exchange rate exposure is positively and significantly related to the level of foreign debt that the firm has. At this time, foreign debt can be another way to hedge foreign currency exposure since it represents a cash outflow in a foreign currency.

Quick ratio

The result shown in the above table, the coefficient of the quick ratio is a positive and statistically significant at 1% significance level. Based on this result the fourth null hypothesis (i.e there is no statistically significant relationship between foreign exchange risk relative to net asset and quick ratio) is rejected. This implies that there is a positive relationship between foreign exchange risks relative to net asset.

Based on the result of the study, the higher quick ratio, the higher foreign exchange risk of sampled commercial banks. In other words, that the more quick ratio implies that the existence of more liquid assets in banks. While banks have more liquid asset it may be affected by the currency fluctuations.

The result of this study also support, Nance, Smith and Smithson (1993) suggest that firms can increase the likelihood of incurring financial distress by maintaining a strong liquidity position. This can be achieved by holding high levels of cash and marketable securities, so that the propensity foreign exchange risk is negatively related to the measures of firm's liquidity. Consistent with optimal hedging theory, He and Ng (1997) find a significant and positive relation between the quick ratio and exchange exposure.

But the result doesn't support a negative but insignificant coefficient on the quick ratio and negative relationship between quick ratio and foreign exchange risk (Muller and Verschoor (2007).

Dividend payout ratio

In this study the regression result shows that the coefficient on dividend payout ratio is a negative but not statistically significant at the desired significance level. It indicates that the fifth null hypothesis (i.e there is no statistically significant relationship between foreign exchange risk relative to net asset and dividend payout ratio) is fail to reject. The result of this stud supported by He and Ng (1997) who found that a negative but not significant coefficient on the dividends payout ratio.

However, this finding is not consistent with the result of prior empirical studies which support high dividend payout ratio in the firms implies a decrease in the firm's cash reserve and may also indicate that the firm can't use hedge techniques, it indicates that there is a positive relationships between the dividend payout ratio and foreign exchange risk (Zhang *et al* (2005)). Also it is not consistent with Muller and Verschoor (2006) who argued that, a negative and significant coefficient relationship of the dividends and exposure is stronger.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1. Conclusions

This study aims at conducting an empirical study to examine the determinants of foreign exchange risk in Ethiopian commercial banks. The study used a panel data of seven commercial banks, for the period ranging from the year 2006-2010.

There are several variables that might lead to the variation in foreign exchange risk of commercial banks. Factors that might influence the foreign exchange risk are may come from both internal and external environments. The external factors that might influence the foreign exchange risk of commercial banks are the macroeconomic conditions of the countries (i.e. GDP, Inflation rate, exchange rate volatility and others). But since the commercial banks in Ethiopia operated in the same country and due to a certain limitations this study has concentrated on internal (firm specific) determinants of foreign exchange risk in commercial banks including the size, debt to asset ratio ,quick ratio, return on equity and dividend payout ratio.

From the five explanatory variables (size, debt to asset ratio ,quick ratio, return on equity and dividend payout ratio) two of them(return on equity and quick ratio) have positive and statistically significant relation with foreign exchange risk of Ethiopian commercial banks. While, the remaining three variables (size, debt to asset ratio and dividend payout ratio) have no statistically significant impact on the foreign exchange risk of Ethiopian commercial banks. From this result one can conclude that:

- The profitability measured by return on equity of the commercial banks affect the foreign exchange risk positively, which doesn't supports the hypothesis formulated for this study. Thus, from the result it can be concluded that highly profitable commercial banks are more likely exposed to foreign exchange risk.
- The liquidity of commercial banks which is measured by the quick ratio affect the foreign exchange risk positively, which doesn't supports the hypothesis formulated for this study. Thus, from the result it can be concluded that the banks with high liquid asset are more exposed to foreign exchange risk.
- The remaining three independent variables (i.e size, debt to asset ratio and dividend payout ratio) have not statistically significant relation with foreign exchange risk.

Generally, this empirical study has been conducted to critically examine the determinants of foreign exchange risk of Ethiopian commercial by using the panel random effect estimation. The regression result of P-value of F-statistic is statistically significant at the desire significant level and the value of adjusted R^2 is high, from this result it is possible to conclude that, the variation of foreign exchange risk is jointly explained by the above mentioned five explanatory variables.

5.2. Recommendations

The main objective of the study is to identify the determinants of foreign exchange risk in Ethiopian commercial banks. Based on the result of the study findings of the researcher forwarded the following recommendation.

- In this result of the study, the banks with high liquid asset ratio are more exposed to foreign exchange risk. This means, quick ratio is the one factor that determines foreign exchange risk of Ethiopian commercial banks. When there is the excess of liquid asset, the purchase of foreign currency is possible to hedge it through investing in different portfolio. In other words, the commercial banks should not hold excess of foreign currency unless the currency is hedged against another financial asset. Similarly, the banks rather than holding liquid asset it is more advisable to invest it.
- In addition, based on this study, highly profitable commercial banks are more likely exposed to foreign exchange risk. The commercial banks should match the purchase of foreign currency with the sale of foreign currency to reduce the impact of foreign exchange risk on the earnings and capital of the bank due to currency fluctuation.
- In this study, the commercial banks in Ethiopia are selected. Although, this study mainly focuses on those aged commercial banks, it cannot represent the entire population i.e. there are banks (development banks and other newly emerged banks) not included. Therefore, for comprehensive investigation and to conclude about the population, future researcher will cover the entire population.

➤ Furthermore, this study focus on the determinants of foreign exchange risk in Ethiopian commercial banks with the period ranges from 2006-2010. Therefore, future researchers could extend this period of time and get better result.

References

- Ahmed A.El-Masry (2006) derivatives use and risk management practices by UK-non financial companies," *Jornal of managerial Finance*, Vol.32 iss:2,pp. 137-159.
- Allayannis, G. and Ofek, E. (2001). Exchange rate exposure, hedging, and the use of foreign currency derivatives. *Journal of International Money and Finance*, 20/2, 273-296..
- Allen, S. L. Hoboken, New Jersey: John Wiley and Sons. (2003). *Financial Risk Management: A Practitioner's Guide to Managing Market and Credit Risk*.
- Anna V. Vygodina (2006) Effects of size and international exposure of the US firms on the relationship between stock prices and exchange rate, *Global Finance Journal Volume 17, Issue 2, December 2006, Pages 214-223*
- Atindehou, R., & Gueyie, J. (2001). Canadian Chartered Banks' Stock returns and exchange rate risk. *Management Decisions*, 39 (4), 285-295.
- Bartram, S.M. and Karolyi, G.A. (2007). The impact of the introduction of the Euro on foreign exchange risk exposures. *Journal of Empirical Finance*, 13, 519-549.
- Befekadu Degefe (1995) 'The Development of Money, Monetary Institutions and Monetary Policy [in Ethiopia], 1941-75' in Shiferaw Bekele (1995). *An Economic History of Ethiopia: Volume 1: The Imperial Era 1941-74*. Dakar: CODESERIA.
- Belay Gedey (1990). *Money, Banking and Insurance in Ethiopia*. Addis Ababa: Berhanena Selam Printing Press. (In Amharic).

Bessis, J. (2010), *Risk Management in Banking*, Wiley, Third edition

Bodnar, G. and R. Marston (2000), "A Simple Model of Foreign Exchange Exposure", mimeo, October 30, 2000.

Carl Shapiro, Hal R. Varian (1999), *Information Rules: Strategic Guide to the Network Economy*.

Chamberlain S., J. Howe, and H. Popper, (1996) *The Exchange Rate of US and Japanese Banking Institutions*. *Journal of Banking and Finance*.

Chen, J., Naylor, M. and Lu, X. (2004). Some insights into the foreign exchange pricing puzzle: evidence from a small open economy. *Pacific Basin Finance Journal*, 12, 41-64.

Choi, J. J., Elyasiani, E., & Kopecky, K. J. (1992). The sensitivity of bank stock returns to market, interest & exchange rate risks. *Journal of Banking and Finance*, 16, 983-1004

Choi, Jay Jongmoo, and Anita M. Prasad. "Exchange risk sensitivity and its determinants: A firm and industry analysis of U.S. multinationals." *Financial Management* 25:77-88.

Chow, E.H., Lee, W.Y. and Chan, M.E. (1998). The economic exposure of US multinational firms. *Journal of Financial Research*, 20/2, 191-210.

Chris Brooks (2008). *Introductory Econometrics for Finance* second edition corporations.

Creswell, J.W. (2009), *Research design: Qualitative, Quantitative and Mixed Method approach*, third edition, U.S: SAGE publication,

Daugaard, D., & Valentine, T. (1993). Bank Share prices and profit stability. Working Paper Series (No.31). School of Finance & Economics, University of Technology, Sydney

David L. Senteney, Mohammed S. Bazaz and Ali Peyvandi, "Advances in International Accounting, 5th ed. Volume 16.

Derrese Degefa (2001). The parallel foreign exchange market and macroeconomic performance in Ethiopia, *AERC Research Paper 107 African Economic Research Consortium, Nairobi May 2001*

Dominguez K. and L. Tesar (2001) "A re-examination of exchange rate exposure"; *American Economic Review, Vol 91, issue 2, 2001, 396-399*

Dominguez, K.M.E. and Tesar, L.L. (2006). Exchange rate exposure. *Journal of International Economics, 68/1, 188-218.*

Fabozzi, F. and Modigliani F. (2003) *Capital Market: Institutions & Instruments*. 3rd ed. Prince-Hall. first edition. London, Southwestern, Cengage Learning, EMEA.

Fowler, F.J. (1986), *Survey research methods*, third edition, U.S.A, SAGE publication Inc.

Froot, K.A., Scharfstein, J.S. and Stein, J.C. (1993). Risk management: coordinating corporate investment and financing policies. *Journal of Finance, 48/5, 1629-1658.*

Gandhi, G. S. Novemner (2006). Selecting a Suitable Currency Options Hedging Strategy for Managing Foreign Exchange Risk. *"The Chartered Accountant". The Instt. of Chartered Accountants of India*

Greuning, H. V. & Bratanovic, S. B. (2003), *Analyzing Banking Risk: A Framework for Assessing Corporate Governance and Risk Management*, World Bank Publications

Griffin, J.M. and Stulz, R.M. (2001). International competition and exchange rate shocks: a crosscountry industry analysis of stock returns. *Review of Financial Studies*, 14/1, 215-241.

Güven sayilgan, Hakan karabacak, Güray küçükkocao (2006), 'The firm-specific determinants of corporate capital structure: Evidence from turkish panel data', *Investment management and financial innovations*, volume 3, issue 3

He. J. and Ng. L.K. (1997). The foreign exchange exposure of Japanese multinational. *The Journal of Finance* Volume 53, Issue 2, pages 733–753, April 1998

Hue Hawa Au Yong, Faff, R., & Chalmers, K. (2006). Derivative Activities and Asia Pacific banks' interest rate and exchange rate exposures. *Journal of International Financial Markets, Institutions and Money*, Volume 19, Issue 1, February 2009, Pages 16-32

Irio, A. D., & Faff, R. (2000). An Analysis of asymmetry in foreign currency exposure of the Australian equities market. *Journal of Multinational Financial Management*, 133-159.

John R. Becker-Blease (2006) *Journal of Corporate Finance* Volume 17, Issue 4, September 2006, Pages 947–958

Jorion, P. (1990). *The exchange rate exposure of US multinationals*. *Journal of Business*, 63/3,331-345.

Jorion, P., (1990), "The exchange rate exposure of U.S. multinationals, " *Journal of Business*, July, 1990, 63:33-45

Julapa Jagtiani and Anya Khanthavit(1996),Scale and scope economies at large banks: Including off-balance sheet products and regulatory effects (1984–1991), *Journal of* Volume 20, Issue 7, August 1996 *banking and finance* Pages 1271–1287.

Kalok chan, Vicentiu, Lilian Ng* What Determines the Domestic Bias and Foreign Bias? Evidence from Mutual Fund Equity Allocations Worldwide. *The Journal of Finance* Volume 60, Issue 3, pages 1495–1534, June 2005

Lam, J. Hoboken, New Jersey:John Wiley and Sons. (2003). *Enterprise Risk Management: From Incentives to Controls*.

Liu, S. (2007). Currency Derivatives and Exchange Rate Forecastability. *Financial Analysts Journal*, volume 63, Number 4, Page 72-78.

Muller, A. and Verschoor, W.F.C. (2006b). European foreign exchange risk exposure. *European Financial Management* 12/2, 195-220

Myers, S.C. (1977). Determinants of corporate borrowing. *Journal of Financial Economics*, 5,147-175.

Nance, D.R., Smith, C. and Smithson, C. (1993). On the determinants of corporate hedging. *Journal of Finance*, 48/1, 267-284.

NBE, 2008/09, *Annual report 2007/2008, Addis Ababa, Ethiopia*

NBE, 2009/10, *Annual report 2008/2009, Addis Ababa, Ethiopia*

Papaioannou, M. (2001). Volatility and Misalignments of EMS and Other Currencies during Panel Data', *International Review of Business Research Papers*, Vol. 3 No.41974-1998.

J. Jay Choi and Jeffrey M. Wrase (eds). *European Monetary Union and Capital Markets*, *International Finance Review*, 2, Amsterdam:Elsvier Science, pp. 51-96

Papaioannou, M. G. (2006). Exchange rate risk measurement and management: issues and approaches for firms. *South-Eastern Europe Journal of Economics* 2 (2006) 129-146.

Patrick J. Schena (2005), Measuring and Managing the Foreign Exchange Exposure of Chinese Companies, *Journal of Value Creation in Multinational Enterprise (International Finance Review, Volume 7*

Paulo J. Maçãs Nunes & Zélia M. Serrasqueiro (2007), 'Capital Structure of Portuguese.

Pedro M. G. Martins (2007) Do Capital Inflows Hinder Competitiveness? The Real Exchange Rate in Ethiopia , *CREDIT Research Paper No. 10/07*

Pornsit J., Young S., Kim, N. and Manohar Singh Corporate governance, shareholder rights and firm diversification: An empirical analysis, *Journal of Banking & Finance Volume 30, Issue 3, March 2006, Pages 947–96 Pp.265-282*

Rhodes, Stephen A. 1982. The Relative Size of Banks and Industrial Firms in the U.S. and other Countries. *Journal of Banking and Finance* 6, 579-585.

Maroof Hussain Sabri 2011. Foreign Exchange Risk Management in Commercial Banks of Pakistan.

Santomero, A. and J.Trester,(1997) "Structuring Deposit Insurance for a United Europe," *European Financial Management, 1997 forthcoming.*

Saunders and Cornett (2007). Financial Markets and Institutions; an Introduction to the Risk Management Approach. McGraw Hill Pub.2007. Service Industries: *A Panel Data Analysis* , *The Service Industries Journal*, 27:5, 549-562

Shah and Khan (2007), 'Determinants of Capital Structure: Evidence from Pakistani

Shamsuddin, A. F. (2009). Interest rate and foreign exchange exposure of Australian banks: A note. *International Journal of Banking and Finance* 2008/09, vol:6, Number 2:2009: 129-138. University of New Castle, Australia

Shapiro, A.C., (1991). Multinational Financial Management. India: Prentice Hall, Private Ltd. 4th Edition, pp. 33-45.

Soo-Wah Low, Noor Azlan Ghazali, (2009) "The price linkages between Malaysian unit trust funds and the stock market: Short run and long run interrelationships", *Managerial Finance*, Vol. 33 Iss: 2, pp.89 – 101

Steve P. Frase and Christos Pantzali (2004), Foreign exchange rate exposure of US multinational corporations: a firm-specific approach, *Journal of multinational financial mg.* Volume 14, Issue 3, July 2004, Pages 261–281.

Tschoegl E. (1996), *Country and Firm Sources of International Competitiveness: The Case of the Foreign Exchange Market* October 1996

Titman, S. and Wessels, R. (1988). The determinants of capital structure choice. *Journal of Finance*, 43/1, 1-19.

Viktor popov and Yann Stutzmann,(2003) *how is freign exchange risk managed? An empirical study appied to two swiss companies,*

Volkov , A.,M.(2011) Student perception of learning approach and teamwork benefits in accounting : *a qualitative study Accounting and Finance Association of Australia and New Zealand Conference.*

Walter, A. d., & Tewodros, G. G. (2004). The Exchange Rate Exposure of Major Commercial Banks in South Africa. *African Finance Journal*, Vol: 6, Page 21-35.

Zhang, B. Y., Zhou, H. and Zhu, H. (2005), *Explaining credit default swap spreads with the equity volatility and jump risks of individual firms*, *Finance and Economics Discussion Series 2005-63*, Board of Governors of the Federal Reserve System (U.S.).

Appendences

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

| Test Summary | Chi-Sq. Statistic | Chi-Sq. d.f. | Prob. |
|----------------------|-------------------|--------------|--------|
| Cross-section random | 3.417858 | 5 | 0.6359 |

Regression output

Dependent Variable: NFXTNA
 Method: Least Squares
 Date: 05/30/12 Time: 23:40
 Sample (adjusted): 2 35
 Included observations: 34 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|-----------------------|-------------|-----------|
| C | -0.099246 | 0.026810 | -3.701755 | 0.0009 |
| ROE | 0.003177 | 0.000590 | 5.381732 | 0.0000 |
| DPR | -0.005371 | 0.018225 | 0.294689 | 0.7704 |
| DA | 0.002103 | 0.008584 | -0.245046 | 0.8082 |
| SZ | -1.15E-05 | 5.99E-05 | 0.192063 | 0.8491 |
| QR | 0.354112 | 0.036413 | 9.724898 | 0.0000 |
| R-squared | 0.798804 | Mean dependent var | | 0.043900 |
| Adjusted R-squared | 0.762876 | S.D. dependent var | | 0.042379 |
| S.E. of regression | 0.020636 | Akaike info criterion | | -4.764731 |
| Sum squared resid | 0.011924 | Schwarz criterion | | -4.495373 |
| Log likelihood | 87.00043 | Hannan-Quinn criter. | | -4.672873 |
| F-statistic | 22.23355 | Durbin-Watson stat | | 1.980480 |
| Prob(F-statistic) | 0.000000 | | | |

| year | Banks | NFXTNA | ROE | DA | QR | DPR | Asset |
|------|-------|------------|------------|----------|----------|----------|----------|
| 6 | cbe | -0.0204108 | 54.6507666 | 3.042814 | 0.068034 | 0.88778 | 35849 |
| 7 | cbe | -0.0299905 | 30.1781348 | 3.369516 | 0.038315 | 0.74537 | 43456 |
| 8 | cbe | 0.25438596 | 31.0008338 | 2.170425 | 0.032617 | 0.59147 | 50416.11 |
| 9 | cbe | 0.63492063 | 40.0101155 | 2.080216 | 0.023529 | 0.4669 | 59411.45 |
| 10 | cbe | 0.99009901 | 37.1532862 | 2.275305 | 0.028482 | 0.2235 | 74186.91 |
| 6 | db | -0.4707254 | 42.2893482 | 1.166877 | 0.035778 | 0.436 | 4546 |
| 7 | db | -0.3428834 | 40.1934444 | 1.2189 | 0.038773 | 1.07754 | 6041 |
| 8 | db | -0.0123119 | 37.4956474 | 1.403925 | 0.057513 | 0.91841 | 7828.587 |
| 9 | db | -0.0077008 | 30.4862679 | 1.780098 | 0.083461 | 0.836 | 9732.578 |
| 10 | db | -0.1424755 | 31.8930573 | 2.009308 | 0.079281 | 0.7907 | 12353.38 |
| 6 | aib | -0.4082237 | 29.3233083 | 1.371261 | 0.052763 | 0.44871 | 2,954 |
| 7 | aib | -0.2732719 | 38.779661 | 1.238854 | 0.064402 | 0.54545 | 3,830 |
| 8 | aib | 0.73701843 | 27.7106949 | 1.434404 | 0.075435 | 0.3076 | 4,820 |
| 9 | aib | -0.1346154 | 21.2272902 | 1.828972 | 0.120839 | 0.923 | 6,423 |
| 10 | aib | -0.8636364 | 29.2930231 | 1.940877 | 0.070791 | 0.7647 | 7945 |
| 6 | boa | -0.0028159 | 25.9146341 | 1.109017 | 0.605963 | 0.7647 | 2834 |
| 7 | boa | -0.002603 | 16.6459627 | 1.10477 | 0.448831 | 1.2388 | 3396 |
| 8 | boa | 0 | 3.54329752 | 1.234499 | 0.298189 | 0.577 | 4269.942 |
| 9 | boa | -0.8857737 | 21.4002026 | 1.659009 | 0.147327 | 0.39279 | 5476.617 |
| 10 | boa | -1.6211604 | 25.4512472 | 1.629876 | 0.143578 | 0.7907 | 6279.536 |
| 6 | wb | -0.0053922 | 32.6 | 1.116133 | 0.164365 | 0.8 | 2259 |
| 7 | wb | -0.0030508 | 34.0 | 1.26374 | 0.14456 | 0.7324 | 3480 |
| 8 | wb | 0.0330033 | 27.5 | 1.26403 | 0.145924 | 0.84892 | 4124.888 |
| 9 | wb | 0.01555024 | 25.1 | 1.7655 | 0.173946 | 0.8287 | 5118.308 |
| 10 | wb | 1.08365019 | 23.7 | 1.585691 | 0.228751 | 0.51121 | 5741.93 |
| 6 | ub | -7.1989529 | 27.8 | 0.8446 | 0.13834 | 0.75 | 1599 |
| 7 | ub | -0.3419444 | 23.2 | 1.034122 | 0.120746 | 0.734375 | 2182.5 |
| 8 | ub | 0.0982906 | 22.0 | 1.1684 | 0.203365 | 0.8021 | 3249.957 |
| 9 | ub | 0.14038462 | 18.9 | 1.48468 | 0.174021 | 0.97872 | 4651.697 |
| 10 | ub | 0.48037677 | 30.1 | 1.620974 | 0.197935 | 0.65514 | 5896.229 |
| 6 | nib | 0.22880658 | 22.7897839 | 1.023977 | 0.11512 | 0.689655 | 2027 |
| 7 | nib | 0.37909836 | 21.4084507 | 1.070655 | 0.14433 | 0.71056 | 2607 |
| 8 | nib | 0.40301003 | 22.0971363 | 1.214447 | 0.206409 | 0.707964 | 3650.107 |
| 9 | nib | 2.54084507 | 23.1598843 | 1.556328 | 0.401466 | 0.714429 | 4806.505 |
| 10 | nib | 0.34298989 | 24.4190824 | 1.686749 | 0.260876 | 0.711443 | 5970.507 |