Journal of Finance and Accounting

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ISSN: 2616-4965

Stratford Peer Reviewed Journals and Book Publishing
Journal of Finance and Accounting
Volume 3||Issue 3||Page 188- 212||September|2019|
Email: info@stratfordjournals.org ISSN: 2616-4965

An Evaluation of Foreign Exchange Risk Management Effects on the Firm Performance of Commercial Banks in the Democratic Republic of Congo

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***How to cite this article*: Chiruhula, D. A., Mburu, H. K. & Omurwa, J., K. (2019). An Evaluation of Foreign Exchange Risk Management Effects on the Firm Performance of Commercial Banks in the Democratic Republic of Congo, *Journal of Finance and Accounting,* Vol. 3(3), 188-212.**

Abstract

This study sought to undertake an evaluation of foreign exchange risk management effects on the firm performance of commercial banks in the Democratic Republic of Congo. The study was guided by three specific objectives namely to examine the effect of translation exposure, transaction exposure and economic exposure on the firm performance of commercial Banks in the Democratic Republic of Congo. The study used firm size, growth options, interst rates and previous performance as control varaiables. Relevant theoretical and empirical literature was reviewed to concretize the study. The study employed a longitudinal research design and used a population of 25 commercial banks registered and operating in the Democratic Republic of Congo as at 31st December 2017. A simple random of 8 banks was selected to represent the cross-section of banks and the period 2006 to 2017 to represent the time series sample. Secondary data was collected on the variables under study and the data was analyzed by using both descriptive and inferential statistics. The correlation analysis results showed that of the three measures of foreign exchange risk management, only transaction exposure was significantly and positively correlated with the firm performance. The measure was positively correlated to firm performance at 1% level. The multiple regression results showed that the composite measure of the three exposures had significant association with the firm performance. However, when the measures were entered separately in the model, translation exposure was

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Journal of Finance and Accounting
Volume 3||Issue 3||Page 188- 212||September|2019|
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0.810, p-value>0.10 was not significant; transaction exposure was 0.136, p-value>0.10 was not significant and economic exposure was 0.585, p-value>0.10 was also not significant.

These results suggested that only, the composite measure, a set of the foreign exchange risk management measures was significant at 5%, while the other exposures separately were not significant to the firm performance. Among all the four control variables, only firm size, average interest rate and prior year return on assets were significant at 1%, 5% and 1% respectively to the firm performance. The study concluded that on average foreign exchange risk management does not contribute significantly to firm performance. From the findings the study concludes that there was a significant relationship between the composite measure and firm performance. The study recommended that, despite foreign exchange risk being a critical issue in every firm's operations, managing it does not add any significant value to the firm performance. The study recommends that those tasked with managing the risks should thus first understand the risks they are exposed to by developing a risk profile. This requires an examination of both the immediate risks from competition and product market changes as well as the more indirect effects of macro - economic forces. The study further recommends that this study be carried out further and the whole banking industry to be studied under categories of listed and not listed and a proper study on all the Tiers. Policy makers should undertake to understand why Forex trading among commercial banks is not as robust in Democratic Republic of Congo as compared to other developed countries and what should be done to improve capital investments to maximize returns.

Keywords: *Foreign Exchange Risk Management, Firm Performance, Commercial Banks, Democratic Republic of Congo*

1.1 Introduction

McShane and Rustambekov (2011), states that exchange risk management is a process of identifying and implementing all the risks that occurs to the firm and protecting those risks by hedging financial or operational. As a result, the management of currency risks is acute. It consists of identifying all sources of foreign exchange risk that may threaten the strategic objectives of the company or conversely, represent opportunities that can provide a competitive advantage. In other words, it is about knowing the nature of the risk, the environment in which the company is evolved and proposing exchange risk management policies and strategies that can even increase the performance of the company. Werner and Brouthers (2006), state that foreign exchange risk is the popular risk that corporations encounter in international arena and managing that risk has become a challenge in the overall financial management. In most developing countries, the lack of investment capital affects the economic situation of those countries. Exchange rates are important to reduce the difference between the desired domestic saving and gross domestic investment.

Aggarwal and Harper (2010) state that modern finance and economics are concerned about the effects of exchange rate movements on returns and cash flows of corporations. After the collapse of the Bretton Woods System in the mid-1970s, most companies in the world viewed exchange rates as an important risk factor (Papaioannou, 2001). This is the case in those industries that

have been subject to globalization (Bartram, Brown & Fehle, 2004). The exchange rates movements have an impact on domestic and international companies seen as the company's exposure to foreign exchange rate fluctuations. Jorion (1990) says that the exposure in fluctuations to foreign exchange rate usually have an impact on the value of net monetary assets with fixed nominal payoffs and the value of real assets held by the firm. The corporate treasuries are the ones to deal with the issue of currency risk practices for financial and non-financial firm which is independent from their core business. Most multinational firms have also risk committees to oversee the treasury's strategy in managing the exchange rate risk (Lam, 2003).

Rahman and Hoque (2015) states that Foreign exchange risk becomes more and more important in light of the globalisation and internationalisation of world markets, and is one of the most difficult and persistent problems with which the financial executives must cope. Specific foreign exchange risk practices differ among banks depending on factors like the institution's size, and the nature and complexity of its activities. However, an understanding foreign exchange risk programme should deal with, at a minimum, good management information systems, contingency planning and other managerial and analytical techniques. There are companies that have not been able to manage the forex risks that they are faced with. Their assumption is that the exchange rates will stay constant at the current levels and will only move in a direction that is favorable to the firm.

Exchange rate is the value of one country's currency in relation to that of another country. Exchange rates are also regarded as foreign currency per unit of domestic currency or domestic currency per unit of foreign currency. Exchange rates can allow the price of a good and service to be expressed in a common currency (Krugman & Obstfeld, 2006). The exchange rates are defined by the rate or ratio on which one currency can be exchanged for another currency at a given time (Verdelhan, 2010). The major elements of monetary system of a country is the exchange rate, where the value of national currency exchange rate of one country expressed in monetary units of another country (Opoku-Afari, Morissey & Lloyd, 2004). Engel (2005) asserts that foreign exchange rate is the expected contribution to economic growth not only by providing foreign capital but also by maximizing in more domestic investment. Additional jobs was created and the economic activity will stimulate further when promoting a linkage of both forward and backward with the domestic economy (AL Samara, 2009).

According to the list of scientific International Organization for Standardization (2014), approximately 250 currencies are being traded in the world for goods and services and for financial transactions. Such currencies are like the United States Dollar, the Euro, which is the transnational currency for the European Union, the Canadian Dollar, the Swiss Franc, the Mexican Peso, the Japanese Yen, and the Chinese Yuan. The prices of goods and services are quoted in each country's currency, such as the dollar in the USA, the euro in France, the pound sterling in the UK, the yen in Japan, and the Congolese franc in Democratic Republic of Congo (Ca'Zorzi & Schnatz, 2010). Therefore, foreign exchange rates play a major role in international trade because they facilitate a comparison of prices of goods and services that are produced in different countries. Observing the daily evolution of currency rates might lead one to think that irrationality is the only determinant of exchange rates. The reality is more complex and nuanced,

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interest rates and their volatility, inflation rates, the main balances of the balance of payments; the differentials between the values of these variables in the different countries are the main determinants of the rates (Celasun, Ostry & Debrun, 2006).

Exchange rates are an integral part of everyday landscape of economic agents and are the main core of international economic relations. The rise of international commercial and financial relations and the resulting growing independence are a first factor explaining the strategic importance of this variable (exchange rate). In addition to its economic and financial dimension, the exchange rate plays a fundamental role as an instrument or objective of economic policy, or even as a symbol of political power. In the totally globalized world and without formal rules, economists seek to understand the evolutions and determinants of exchange rates, which are more and more volatile and beyond all control. The specialized media daily comment on the evolution of the main international currencies that are the dollar and the euro and analyze the turbulence that has been going on for several years in the international monetary system "IMS" (Cherif, 2004).

There is a continuing increase in the world trade and capital fluctuations have made the exchange rates as one of the main determinants of business profitability and equity prices (Bradley & Moles, 2002). Foreign currency risk arises everywhere or whenever an individual or a company is involved in transactions in a different currency than that of the currency of home country. The exposure of a company's financial strength to the potential effect of movements in forex rates is the foreign exchange risk. The risk of adverse volatility in forex rates may result in a decline in measuring of financial power. Most of the companies that deal in various currencies are faced with a risk on account of unanticipated changes in forex rates, computed in terms of exposures. This research is interested in three types of foreign exchange risks. One, the transaction risk exposure which is the inherent risk that a company's gains or losses will critically change favorably or unfavorably upon the settlement of a foreign denominated obligation at a future date. Two, translation exposure which comes from the need to translate a foreign currency assets or liabilities into the home currency for the purpose of finalizing the accounts for any given period (Francis, 2010). Three, economic risk exposure which is the present value of future cash flow operations of a firm's foreign subsidiaries and parent company.

1.2 Statement of the Problem

Commercial Banks are particularly vulnerable to foreign exchange rate risk. This is because some of them operate in developing countries where the risk of currency depreciation is usually high. There are companies that have not been able to manage the forex risks that they are faced with. Their assumption is that the exchange rates will stay constant at the current levels and will only move in a direction that is favorable to the firm. The World Bank Group (2017) reported that the level of exchange rate fluctuations in DR Congo has gone high forcing the Central Bank of Congo to intervene to ensure stability. Since year 2016, the exchange rate against the United States Dollar (USD) has depreciated from Congolese Franc (CFR) 920 to a low of CFR 1400 making it difficult for the banks to predict the future rate with precision. This has affected the

performance of commercial banks as they seek to provide adequate currency to promote international business (Rose, 2011).

However, as stated by Antonopoulos (2011), fluctuations in currencies must occur which in turn affects the firms' expected future cash flows. This situation leads to the question of whether the firm hedging activity affects the performance of the firm. When a company is faced with transactional risk in foreign exchange the business operations are temporarily affected. Choi, Elyasiani and Kopecky (2006) state that, the fluctuations in exchange rate affect the operating cash flows and in turn the value of the firm through economic, transaction and translation exposures.

Studies on the effect of foreign exchange risk management on the firm value; for instance, Civcir (2003), Choi *et al.* (2006) and Antonopoulos, and Hall, (2014) have been done in foreign countries outside Congo; they find a firm's performance is negatively related to debt and positively related to dividends and conclude that information effects on profitability obscure any tax effects. Literature has not yet reached a consensus as to whether hedging has an impact on firm performance and evidence is mixed. Some empirical studies support the hypothesis, but some do not, yet others argue that for hedging to add value, it depends on the types of risk to which a firm is exposed. When a company with transactional foreign exchange exposure suffers a business interruption loss during an extended period and when relevant exchange rates fluctuate, it is important to appreciate the impact that exchange rates can have on lost sales, cost of sales and gross profit.

The potential for over- or under stating a profit or loss is not limited to the percentage movement in the exchange rates movements. Exchange rate fluctuations affect operating cash flows and firm value through translation, transaction, and economic effects of exchange rate risk (Choi et al., 2006). So, similar type of a study should be carried out to evaluate the effects of foreign exchange risk on firm performance in DRC which is a country faced by social conflicts which may have also an influence on foreign exchange.

1.3 Research Objectives

(i) To examine the effect of translation exposure to the firm performance of commercial banks in Democratic Republic of Congo.
(ii) To examine the effect of transaction exposure to the firm performance of commercial banks in Democratic Republic of Congo.
(iii)To examine the effect of economic exposure affect the firm performance of commercial banks in Democratic Republic of Congo.

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1.4 Conceptual Framework

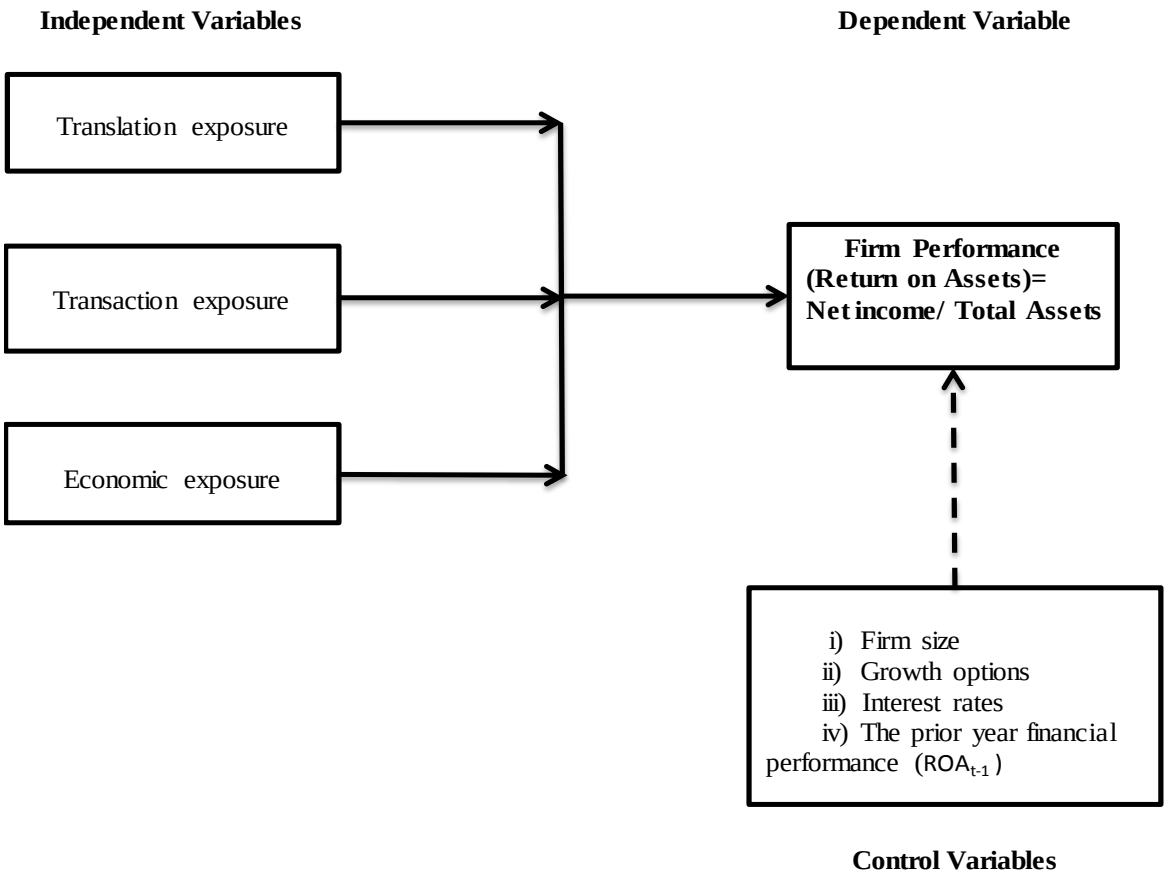

Figure 1: Conceptual framework

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2.1 Theoretical Review

2.1.1 International Fisher Effect Theory

Irving Fisher in his book of The Theory of Interest developed this theory of International Fisher Effect (IFE) which uses market interest rates rather than inflation rates to explain why exchange rates change over time (Shiller & Mcculloch, 1990). The International Fisher Effect states that exchange rate changes are balance out by interest rate changes. The Fisher theory simply argues that real interest rates across countries were equal due to the possibility of arbitrage opportunities between financial markets which occurs in the form of capital flows. The equality of real interest rates implies that the country with a higher interest rate should also have a higher inflation rate which, in turn, will experience depreciation in the real value of the currency of the country decreases over time. The theory stems from the concept that real interest rates are independent of other monetary variables, such as changes in a nation's monetary policy, and provide a better indication of the health of a particular currency within a global market.

The IFE provides for the assumption that countries with lower interest rates will likely also experience lower levels of inflation, which can result in the increase in the real value of the associated currency when compared to other nations. The IFE expands on the theory, suggesting that currency changes are proportionate to the difference between the two nation's nominal interest rates. The relationship between relative interest rates and foreign exchange rates is explained within the interest rate theory of exchange rate expectations. Nominal interest rate differentials between two countries tend to reflect exchange rate fluctuations. Giddy (1997), called this the international Fisher effect, a close relationship to the Fisher effect, which claims that the combination of the anticipated rate of inflation and the real rate of return are represented in the nominal interest rates. A phenomenon observed by Fisher (1930), says that if the international Fisher effect holds, interest rates in appreciating currencies tend to be low enough, and in depreciating currencies high enough, to offset expected currency gains and losses.

The International Fisher Effect (IFE) theory suggests that foreign currencies with relatively high interest rates will tend to depreciate because the high nominal interest rates reflect the expected rate of inflation. This questions us to know if the interest rate differential does actually help predict future currency movement. Some of the evidence is mixed as in the case of Purchasing Power Parity theory. In the long-run, Hill (2004) states that a relationship between interest rate differentials and subsequent changes in spot exchange rate seems to exist but with considerable deviations in the short run. Cumby and Obstfeld, (1981) argues that the international Fisher effect is not a good predictor of short-run changes in spot exchange rates. According to Feiger (1982) the International Fisher Effect (IFE) states that the interest rate differential exists only if the exchange rate is expected to change in a way that the advantage of the higher interest rate is offset by the loss on the foreign exchange transactions.

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2.1.2 Purchasing Power Parity theory

This model was first developed by the Swedish economist Gustav Cassel in 1920s to examine the relationship between the exchange rates of different countries. The PPP holds if and when exchange rates move to offset the inflation rate differentials between two countries. The PPP is also defined as the basis of the "law of one price" which asserts that the exchange rate between two currencies should be equal to the ratio of the price level of identical goods and services in the two countries**.** The Purchasing Power Parity (PPP) theorem explains the relationship between relative prices of goods and exchange rates. The PPP theorem propounds that under a floating exchange regime, a relative change in purchasing power parity for any pair of currency calculated as a price ratio of traded goods would tend to be approximated by a change in the equilibrium rate of exchange between these two currencies (Shapiro & Rutenberg, 1996).

According to the PPP, increase in the price level of a country will cause depreciation of its exchange rate relative to other countries, thereby keeping the relative price of identical goods the same across countries. Following the Law of one Price, this theory suggests that exchange rate changes were offset by relative price indices/inflation. Under the law of one price, which states that in competitive markets, identical goods should sell for identical prices when valued in the same currency. In its "absolute" version, the purchasing power of different currencies is equalized for a given basket of goods. In the "relative" version, the difference in the rate of change in prices at home and abroad (the difference in the inflation rates) is equal to the percentage depreciation or appreciation of the exchange rate.

PPP exchange rate fluctuations are mostly due to different rates of inflation between the two economies. The relative PPP is based on the law of one price. It predicts that exchange rate changes to compensate for differences in inflation between two countries. Thus, if one country has higher inflation that its trading partners, the exchange rate of the former should be low to compensate for this relativity (Eiteman, Stonehill & Moffett, 2007). Like other asset prices, exchange rates are determined by expectations about the future. Since currencies are treated as assets this approach is called the asset approach. PPP exchange rate fluctuations are mostly due to different rates of inflation between the two economies (Rogoff, 1996).

Shapiro (2002) documents that in the reality; the Purchasing Power Parity does not exist for a number of reasons. This is because; First exchange rates are affected by other factors in addition to inflation differential such as interest rates, income levels and government intervention. Second, the idea behind purchasing power parity theory is that as soon the prices become relatively higher in one country, the other country will stop importing and shift to the domestic purchases instead of importing. This shift influences the exchange rate and it may not be so if substitute goods are not available domestically and they may continue to buy the highly priced goods and thus the highly inflated country's currency will not depreciate.

Engel (1996) in analyzing the behavior of the exchange rate in three EMU countries in the period 1960-1999 found that there was non-stationarity of the real exchange rate, which is a symptom of the long-run persistence of disequilibria in the foreign exchange market. He also found that some real exchange rate series were trend stationary and this led him to believe that there is a mean reversion phenomenon around a trend. In a situation in which PPP does not hold, agents believe,

on account of some "natural reason", that as time goes by, the dominant currency in the EMS (the German Mark) will appreciate. However, in his conclusion, he found that to the contrary that the weaker currencies especially the Portuguese Escudo were the ones that with passing of time appreciated in real terms.

It is sometimes important to compare the cost of baskets of goods and services using a price index. This is a difficult task because purchasing patterns and even the goods that are available to purchase differ across countries. Thus, it is necessary to adjust for differences in the quality of those goods and services (Kim, 1990). Additional statistical difficulties arise with multilateral comparisons when (as is usually the case) more than two countries are to be compared. When comparing the PPP over some interval of time, proper account needs to be made of inflationary effects (Engel, 1996).

2.1.3 Interest Rate Parity Theory

The interest rate parity condition was developed by Keynes (1923), as what is named nowadays as interest rate parity, to link the exchange rate, interest rate and inflation. The theory has two forms of interest rate parity: covered interest rate parity (CIRP) and uncovered interest rate parity (UCIRP). CIRP describes the relationship of the spot market and forward market exchange rates with interest rates on bonds in two economies. UCIRP describes the relationship of the spot and expected exchange rate with nominal interest rates on bonds in two economies.

Concept that any disparity in the interest rates of two countries is equalized by the movement in the currency exchange rates (Huang, 2009). This theory states that different interest rate between two countries is equal to the differential between the forward exchange rate and the spot exchange rate. According to Roll and Yan (2000), Interest rate parity plays an important role in foreign exchange markets, connecting interest rates, spot exchange rates and foreign exchange rates. Most importantly to our research, Bilson and Hsieh (1983), Huang (2009), have demonstrated that the economic theory relating interest-rate differences among countries to subsequent exchange rate changes (uncovered interest-rate parity) seems to have broken down during the recent float. Consequently, exchange-rate changes are no longer governed by international interest differentials. Hacche and Townsend (1981) and Meese and Rogoff (1983) have shown that other possible economic theories, such as purchasing power parity and the monetary model, also add value to random walk forecasts of exchange rates. The report of all these studies all demonstrated a strong rejection of uncovered interest-rate parity. Subsequent studies have confirmed these results. There is also a theoretical literature, which attempts to determine whether the failure of uncovered interest parity is due to market segmentation or risk aversion rather than market inefficiency. In contrast, Roll and Yan (2000) suggest that forward exchange rates are unbiased predictors of subsequent spot rates and there is really no forward premium puzzle.

In the period of the gold standard era, monetary policymakers found that exchange rates were influenced by changes in monetary policy. The rise of an interest rate of a local country will be following the appreciation of the home currency, and a fall in the home interest rate is followed by a depreciation of the home currency. This indicates that the price of assets plays a critical role in exchange rate variations.

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2.2 Foreign Exchange Risk Management

Exchange rate risk is defined as the magnitude and likelihood of unanticipated changes in exchange rate Brucaite & Yann (2000). The increased volatility of international markets generates increased financial risk to the companies. Exchange rate change is one of the financial risks where the increased volatility is reflected to the greatest extent. Jacques (1981) also defines foreign exchange risk as the risk that an entity will require to pay more (or less) or receive less (or more) than expected as a result of fluctuations in the exchange rate between its currency and the foreign currency in which payment should be made.

Anifowoshe (1997) states that the practice of managing foreign exchange resources has evolved broadly in line with the globalization and liberalization of economies and financial market. This has spanned over such areas as risk management and active portfolio management. Carter, Pantzalis and Simkins (2003) observe that the practice of corporate risk management has changed dramatically over time to time. According to Carter et al, (2003), the goal of firm wide risk management is to reduce risk while placing the firm in a position to benefit from opportunities that arise from exchange rate changes. Today risk management of currency exposure has evolved into a firm wide exercise, by the combined use of both financial and operational hedges as part of an integrated risk management strategy aiming at reducing exposure to foreign-exchange risk, which addresses both short-term and long-term exposures and encompasses financial as well as operational hedges.

Li (2003) defines financial risk management as the practice of defining the risk level a firm desires, identifying the risk level that a firm has, and using derivatives or other financial instruments to adjust the actual level of risk to the desired level of risk. Giddy and Dufey (1995) note that in the management of corporate foreign exchange risk is to first accept that such risk does exist and then managing it is in the overall interest of the firm and its shareholders. Secondly, however, which is somehow difficult is to identify the nature and magnitude of foreign exchange exposure. In other words, identifying what is at risk, and in what way. Some firms will think that hedging the firm's foreign exchange risk cannot increased the value of the shareholders as some shareholders can individually hedge themselves against the risks using instruments like forwards contracts that are available in the market or diversification by manipulating their portfolio.

Redja (2013) also defines risk management as a systematic process for the identification and evaluation of pure loss exposure faced by an organization and for the selection and implementation of the most appropriate strategies for treating such exposure. The process involves: the identification, measurement, and management of the risk. Bank of Jamaica (1996) asserts that the establishment of aggregate foreign exchange limits that reflect both foreign currency dealing or trading activities (transactional positions) and overall asset and liability infrastructure, both on- and off-balance sheet (structural) positions helps to ensure that the size and composition of both positions are appropriately and prudently managed and controlled and do not overextend an institution's overall foreign exchange exposure. There is need for an effective accounting and management information system in place that accurately and frequently records and measures its foreign exchange exposure and the impact of potential exchange rate changes on the institution are mandatory. Firm should be monitoring and reporting techniques that measure

the net spot and forward positions in each currency or pairings of currencies in which the institution is authorized to have exposure; the aggregate net spot and forward positions in all currencies and transactional and translational gains and losses relating to trading and structural foreign exchange activities and exposures should also be in place. Anifowoshe (1997) observed that some of the objectives which management of foreign reserve seeks to achieve include security, liquidity, profitability and adequacy of the reserves.

Al Janabi (2006) states that the major role in foreign exchange risk management is to shelter corporate profits from the negative impact of exchange rate fluctuations. The Integrated Risk Management Paradigm identifies the objectives of risk management under Post-loss objectives as Survival, Continuity of operations, Earnings stability, continued growth and social responsibility and the Pre-loss objectives as Economic efficiency, Reduction in anxiety, Meeting externally imposed obligations and Social responsibility. Fatemi and Glaum (2000) found out that among the goals and objectives of risk management "ensuring the survival of the firm" turns out to be the most important goal of the firm. "Increasing the market value of the firm" is placed as the second most important goal. Other important goals, in their order of importance, are influencing the behavior of subsidiaries and managerial employees, reducing cash flow volatility, increasing profitability, and reducing earnings volatility.

Many researchers have made their research upon foreign exchange risk management; most of them show their key findings and their main objective on this selected area. A general concern in the FX risk management in the organization is whether management should be centralized or decentralized. Prindl (1976) recommends a centralized risk management system. Because in the risk point of view it incurs lower cost but it has some disadvantage too like the lack of autonomy in some units. Most studies tend to show that FX risk is considered as an important risk to manage. Marshal (1999) also finds that FX is the most important financial activities in large firms and banks of British, America and Asia.

2.3 Firm Performance

The firm's success is basically explained by its performance over a certain period. Researchers have extended efforts to determine measures for the concept of performance as a crucial notion. Finding a measurement for the performance of the firm enables the comparison of performances over different time periods. Nevertheless, no specific measurement with the ability to measure every performance aspect has been proposed to date. The return on assets (ROA), also called return on investment, is an important profitability ratio because it measures the efficiency with which the company is managing its investment in assets and using them to generate profit. ROA measures the amount of profit earned relative to the firm's level of investment in total assets. The return on assets ratio is related to the asset management category of financial ratios. (Brealey, Myers & Allen, 2008).

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2.3.1 Determinants of firm performance

(a) Firm size

There is no clear definition of firm size that was found, it can be measured by the size of corporate book value or the amount of sales. It is believed there is a high correlation between firm size and cash flow which is the way for calculating market capitalization. The size of a company has a positive effect on the financial performance of the firm because big firms use that advantage to get some financial benefits in business relations. Large organizations can obtain cheap funding hence a lower rate of capital. This is generated from a higher market capitalization rate. Liebenberg and Hoyt (2003) found that Enterprise Risk Management (ERM) usage is a positive relation to firm size. The larger the organization, the more complex its operations will be and the more its exposure to threatening events. According to Nofsinger, Adair and Cornett, (2009) Firm size is the value of the business measured in terms of net assets. It is the total realizable value of a business.

(b) Interest rate

According to Saunders and Cornett (2008), interest rate has a big impact upon the economy. When it is raised, the general effect is to reduce the amount of money in circulation, which will keep inflation low. It makes borrowing money more expensive, which affects the consumer's behavior and businesses on spending their money; increases expenses for companies, lowering earnings somewhat for those with debt to pay; and, also, tends to make the stock market a slightly less attractive place to investment.

High interest rates are likely to retain business investments and innovation. Also, by rising interest rates, this could increase loan defaults in the banking system and bank vulnerability, drive the cost push inflation due to medium term increase in prices associated with higher costs of business financing (Central Bank of Congo (CBC), 2011).

Thygerson (1995) found that calculating the inherent value of a company by the cash flow discounting model yields a two-fold impact. There is a reduction in the cash flows due to lower profitability, and a higher discounting rate due to higher interest rate regime. This leads to a lower intrinsic value of the company. Interest rates affect firm's incentive to raise capital and invest (Berk, DeMarzo & Harford, 2009).

Conversely, if a business and household spending declines to the extent that the Central Bank finds it necessary to stimulate the economy, it allows interest rates to fall (an expansionary monetary policy). The drop in the rates promotes borrowing and spending (Saunders & Cornett, 2008). Lower interest rates give companies an opportunity to borrow money at lower rates, which allows them to expand their operations and also their cash flows. When interest rates are declining, the economy will expand in the long run, so the risk associated with investing in a long-term corporate bond will also be generally lower (Saunders & Cornett, 2008).

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(c) Growth options

In some economics literature, the growth options as a performance of a firm is part of the literature on investment. Authors like Hayashi (1982) argue that reversible investment decisions with quadratic adjustment costs lead to the Q-model of investment. Irreversible investment permits future growth opportunities to be valued as options (Pindyck, 1988). Smith and Watts (1992) argue that future investment is affected by the firm value. Also, a firm with higher growth options will have higher value as it's favorable to investors who have higher prospects of recovering their investment. If a firm has lower growth options its likely to be removed by competitors leading to eventual downfall hence a lower value.

Moreover, the stockholders of the firm can also put the firm's assets if their value drops below the value of debt empirically analyzed by authors such as Venezia & Brenner (1977); McDonald & Siegel (1985); Abel et al, (1994). Berger, Ofek, & Swary (1996) also confirm that the value of the firm increases in its exit value. Thus, more generalizable assets would prefer to produce a higher put option value, and this has a measurable and positive impact on the value of the firm.

2.4 Empirical Studies

2.4.0 International Studies

Rahman and Hoque in their research of a journal article published in 2015 and entitled as Foreign Exchange Risk Management In Banks as comparative study of some selected Banks in Bangladesh, the paper investigates how Islamic and conventional banks in Bangladesh manage their foreign exchange risk and compares the results to theoretical findings and to previous empirical research. The results and information incorporated in this research was collected both from the primary and secondary sources. The study finds that significant differences in the foreign exchange risk management policies, guidelines of Bangladesh Bank, Management oversight notably in the choice of several types of exposure to cover and in the hedging instruments used. Consistent with previous research, forwards and netting are the most used instruments and transaction exposure is the most managed foreign exchange risk. Besides, translation and economic exposures are not well identified and managed mainly because firms believe it was not important or too compels. Finally, companies hedge their exposure but not fully hedging due to its high cost. The researchers believe this report inspires to increase the performance and management of those respected Banks in Bangladesh. In this research it was concluded that on the various types of foreign exchange risks faced by the selected banks, majors' risk to the banks were: exchange rate risk, interest rate risk, settlement risk, and sovereign exchange risks. Regarding use of foreign exchange risk management techniques, it is found that internal rating system and risk adjusted rate of return on capital are important.

Choi, Elyasiani, and Kopecky, (1992) conducted a study on 48 largest US commercial banks for the period going between 1975-1987 and showed that effects of exchange rate depend on the Net position of the bank in foreign currencies. Regarding their research, when banks had positive net position, depreciation of foreign currencies affected negatively the stock prices of banks before the year of 1979 and after that year banks stock returns responded positively with the depreciation of foreign currencies as banks had moved from positive to negative net open positions. Similar

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study conducted on Canadian banks (Atindehou & Gueyie, 2001), they found out for the Canadian Banks that stock prices responded positively with depreciation of foreign currencies.

Shamsuddin (2009), in his research of small Banks in Australia, 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 exempted to changes in interest and exchange rate. Choosing to suit with the hedging strategy is often a difficult task due to the difficulties raised in measuring precisely current risk exposure and deciding on the perfect degree of risk exposure that ought to be protected. The need for foreign exchange risk management had started during 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 managed with by their corporate treasuries. In most of the firms there are independent committees who function to oversee the treasury's strategy in managing the foreign exchange risk (Lam, 2003). Allen (2003) asserts that firm clearly shows the importance of the fact that they give a significant attention to risk management issues and techniques. In contrast, investors internationally usually use their underlying assets and liabilities to manage foreign exchange risk. Since the currency exposure of the international investor is major relating 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, and requiring a currency overlay mandate.

Wong (2000) investigated the foreign exchange exposure of manufacturing firms in the U.S. to test for an association between foreign exchange exposure and derivatives. He documented weak associations between derivative disclosures and foreign exchange exposure, and he suggested that this can be due to the firm inability in controlling firms' inherent exposures and shortcomings of the accounting disclosures. Nevertheless, he concluded that taking together the results of the previous studies suggest that the use of currency derivatives may help to reduce firms' foreign exchange exposure.

Empirical literature review has revealed that companies are aware and have known the issue of exchange rate exposure as an effect on the financial performance of the firm; some studies like for example Jamal and Khalil (2011) revealed that Jordanian companies deliberately do not hedge accounting exposure. Hagelin and Plamborg (2004) found that liquidity is negatively related to transaction exposure hedging supporting that firms do hedge in response to expected financial danger costs. Dominguez and Tesar (2001) also found that firms adjust their behavior dynamically in regard to exchange rate risk and that exposure is correlated with firm size, multinational status, foreign sales, international assets and competitiveness at the industry level.

2.4.1 Evidence from Studies in Africa

In the African region, foreign exchange risk is found out to be a major source of risks. We support this statement by looking at the research made by Walter and Tewodros (2004), investigated the foreign currency exchange rate exposure of the main commercial banks in South Africa with the help of augmented market model. According them, all the main four banks in South Africa show that the foreign exchange risk and the Net Asset position in foreign currencies is not a good

predictor or view as a weak predictor of foreign exchange risk. William (2013) when researching on the effect of translation exposure finds that exchange rate fluctuations which cause exchange rate exposure are caused by Trade Movements, Capital Movements, Stock Exchange Operations, Speculative Transactions, Banking Operations, Monetary Policy and Political Conditions. He shows that one common approach to exchange rate exposure is the asset approach to exchange rate exposure views exchange rate fluctuations because of trade in assets rather than trade in foreign currency. Asymmetric exchange rate exposure on the other hand occurs due to the investors and market asymmetric behaviors. In particular these behaviors are asymmetric hedging, hysteresis and price to market behavior.

Salifu (2007) in his research on the foreign exchange risk exposure of listed companies in Ghana, he examines the foreign exchange exposure of listed companies on the Ghana Stock Exchange from year 1999 to 2004. The research uses different exchange rate measures named the cedi to US dollar, the cedi to UK pound sterling, the cedi to the euro and a trade-weighted exchange rate index to determine the degree of exposure. The design and methodology approach used in the research was – The Jorion (1990) two-factor model which regress the return on a firm against changes in the exchange rate and return on the market is used to estimate the exchange rate exposure using the sample of twenty firms. The findings show that about 55 per cent of firms in the sample have astatistically significant exposure to the US dollar whilst 35 per cent are statistically exposed to the UK pound sterling. Sector specific exposure results show that the manufacturing and retail sectors are significantly exposed to the US dollar exchange rate risk. The financial sector did not show any risk exposure to any of the international currencies. It was shown that the most dominant source of exchange rate risk exposure was the US dollar. Most firms are also negatively exposed to the cedi to US dollar exchange rate changes, implying that the cedi depreciation vis-à-vis the US dollar adversely affects firm returns. The study also reveals the extent of foreign exchange exposure of firms in Ghana and also adds to the limited body of empirical literature on exchange rate exposure of firms in Africa. The results on that study serve as a useful guide to corporate managers and investors on the degree of foreign exchange exposure and the need to effectively manage firm exposure.

Adetayo (2013) also examined foreign exchange risks management on commercial bank, of selected commercial banks of Nigeria. The study determines how the risk in foreign exchange can be effectively managed. The study had to pursue these objectives: to determine the various exchange risks which the treasurer of the selected bank is exposed to in its foreign exchange transaction; to investigate how these risks can be effectively managed and to identify risk and exposure management techniques required for treasury management. The selected firm used was a Commercial Bank of International Standard, located in Lagos, the business center of Nigeria. The study used both the primary and secondary sources of information. The primary source comprised of a structured questionnaire, to elicit pertinent responses from the respondents. A non-parametric measure based on chi-square statistics was employed to test the hypothesis and determine if there is any association between foreign exchange trading and risk management issues. Spot transaction technique was founded to be effective in minimizing foreign exchange risk.

2.5 Research gap

Hagelin (2004) studied Swedish companies and he found that evidence that hedging activities increase firm value. He found that companies that use currency derivative are negotiated with premium when compared to those companies who do not use them. In addition, he showed that if management has another option plan for company's stock, many times, they use hedging tools to protect their remuneration and not for the shareholder. In this case, hedging shows a negative relation with firm value. By also using a sample of Swedish companies, Pramborg (2004) conducting this study found that a positive impact of hedging on firm value in case the firms use it to hedge its transaction exposure and there is an insignificant impact in case they use it to hedge its translation exposure.

Irio and Faff, (2000) also studied foreign exchange risk management in industries in Australia in the banking sector. According to their view, banking industry as a whole do effective foreign exchange risk management and, therefore, this type of risk is insignificant in pricing stocks in banking companies. William (2013) only looked at translation exposure and found that exchange rate fluctuations are caused by the trade movements and other banking operations. He did not look at others exposures. Mugera (2013) also researched on the Forex exposure but leaving a gap on whether hedging add value to the firm. Serenis and Tsounis (2012) states that exchange rate volatility is a measure that is not directly observable thus; there is no clear, right or wrong, measure of volatility. Most empirical studies have utilized the standard deviation of the moving average of the exchange rate.

Many researchers have made their research upon foreign exchange risk management; most of them show their key findings and their main objective on this selected area. A general concern in the FX risk management in the organization is whether management should be centralized or decentralized. Some of them demonstrated that hedging activities reduces the risk but not all of them focused more on whether forex can affect the firm performance. They only showed how to manage the FX risk and the strategies to use. Empirical review concludes that there is no study that exists on the foreign exchange risk management on firm performance of commercial banks in DRC, hence the researcher will be focused on this study. This is the gap this study seeks to bridge.

3.0 Research Methodology

A longitudinal survey research design was chosen for this study. The population of the study comprised all the 25 commercials banks registered and operating in Democratic Republic of Congo as at 31st December 2017. A sample size of between 10 to 30% is a good representation of the target population, hence, a simple random sampling of 25 commercial banks was used to select eight commercial banks (30% of the population) to ensure that the desired representation in the population is achieved. The cross-sectional sampling of eight banks was chosen from all the 25 commercial banks of DRC covering the period 2006 to 2017. Data was collected from secondary sources, these were the financial reports of sample companies. Data analysys involved both descriptive and inferential analsysis. The descriptive statistics included outputs on the mean, median, standard deviation, and maximum and minimum values. Regression model was

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estimated with each of the three measures of foreign exchange risk management and also with a composite measure.The model for data analysis was;

$Y = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 \text{Firm size}_{it} + \beta_5 \text{Growth option}_{it} + \beta_6 \text{Interest rates}_{it} + \beta_7 \text{Prior firm performance}_{it} + \text{Year dummy} + \varepsilon_{it}$

Where:

Y_{it} was the firm performance of a commercial bank i for year t

$\beta 1,2, \beta 3, \beta 4, \beta 5, \beta 6, \beta 7$ = Regression coefficients of the variables

The variables of interest, the independent variable was;

X_{1it} was the translation exposure related to incomes of a commercial bank i for the year t

X_{2it} was the transaction exposure related to accounts receivable of a commercial bank i for the year t

X_{3it} was the economic exposure related to the exchange rate volatility of a commercial bank i for year t

Control variables included in the model were measured as explained in the section above.

Year dummy was included to control for year to year effects on the dependent variable.

ε_{it} was the error term which is assumed to be normally distributed.

4.0 Result Findings and Presentation

4.1 Descriptive Statistics

Descriptive statistics was used in describing the basic features of data by providing simple summaries about the sample and the measures used. In this study, descriptive statistics were employed to provide: means, median, maximum, minimum and standard deviation of data collected in relation to foreign exchange risk management and firm performance of commercial banks in the Democratic Republic of Congo.

Table 1: Descriptive Statistics

	N	Minimum	Mean	Median	Maximum	Std deviation
ROA	95	-17.79	0.04	1.18	3.79	3.79
Translation Exposure	95	-18.53	8.84	15.14	18.82	13.07
Transaction Exposure	95	-18.29	9.77	15.48	19.34	12.83
Economic Exposure	95	0.28	2.68	2.30	4.81	1.47
Firm Size	95	15.69	18.90	19.12	21.50	1.26
Growth options	95	-1.95	0.41	0.33	5.36	0.67
Interest Rate	95	0.05	0.09	0.08	0.12	0.02
Priorperformance	95	-10.35	0.09	-0.01	16.53	2.56
Composite measure	95	-2.43	0.00	0.22	1.23	1.00

N represents the number of oberservation; ROA is return on assest measured as firm performance, dependent variable; translation exposure, transaction exposure and economic exposure are measure of foreign exchange risk management and measured as independent variable; Firm size is measured as control variable, Growth, interest rate and prior year are measured as control variables; Composite measure is a measure of the three exposures of foreign exchange risk management and measured as one measure.

As shown in Table 1, the findings indicate that listed commercial banks in DR Congo had an average Return on Assets (ROA) of 0.04 and a median of 1.18, with the highest bank having a maximum ROA of 3.79 while the lowest bank had a minimum ROA of -17.79. The study also revealed that the banks had an average of translation exposure of 8.84 and a median of 15.14 with the highest bank having translation exposure of 18.82 while the lowest bank had translation exposure of -18.53. The findings further indicated that listed commercial banks in DR Congo had an average transaction exposure of 9.77 and a median of 15.48 in the study period with the highest bank having transaction exposure of 19.34 while the lowest bank had transaction exposure of -18.29 within the study period. Equally, the findings showed that economic exposure among the listed commercial banks averaged at 2.68 with a median of 2.30 the highest bank having economic exposure of 4.81 while the lowest bank had economic exposure of 0.28.

However, this study also found that commercial banks had an average of firm size of 18.90 and the firm size median of 19.12 with the bank having a highest firm size of 21.50 and the lowest bank had firm size of 15.69. Further, the research also indicated that commercial banks had an average growth opportunity of 0.41 and the median growth opportunities of 0.33, and the bank with a maximum growth of 5.36 while showing the lowest bank had a lower growth of -1.95 within the study period. However, the research revealed that interest rate among the listed commercial banks averaged at 0.09 and the bank with a median of 0.08 while having a highest bank interest rate of 0.12 and the lowest bank had interest rate of 0.05, the prior performance showed a mean of 0.09 and a median of -0.01 among commercial banks; the maximum was 16.53 and the minimum banks was 2.56. The study finally revealed a composite measure exposure of all the listed commercial banks was averaged at 0.00, with a median of 0.22, while showing the highest bank with a maximum of 1.23 and the lower bank with a maximum of -2.43 and a standard deviation of 1.00.

4.2 Correlational Analysis

The researcher conducted a correlation analysis in order to determine the correlation between foreign exchange risk management and firm performance of commercial banks in the Democratic Republic of Congo. Table 2 shows the results from correlation analysis between the all the study variables.

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Table 2: Pearson's Correlation Coefficients

		ROA	Translation Exposure	Transaction Exposure	Economic Exposure	Firm Size	Growth Options	Interest Rate	Prior year performance	Composite measure
ROA	Pearson Correlation	1	.185	.272**	-.160	.445**	-.336**	.174	-.371**	.275**
	p-value		.073	.008	.121	.000	.001	.091	.000	.007
Translation Exposure	Pearson Correlation		1	.472**	-.298**	.279**	-.108	.221*	.116	.802**
	p-value			.000	.003	.006	.296	.031	.264	.000
Transaction Exposure	Pearson Correlation			1	-.291**	.199	-.145	.228*	-.105	.798**
	p-value				.004	.052	.162	.026	.312	.000
Economic Exposure	Pearson Correlation				1	-.179	.155	-.298**	.073	-.659**
	p-value					.082	.134	.003	.481	.000
Firm Size	Pearson Correlation					1	-.211**	.687**	.038	.292**
	p-value						.040	.000	.713	.004
Growth Options	Pearson Correlation						1	-.229*	.409**	-.178
	p-value							.026	.000	.085
Interest Rate	Pearson Correlation							1	.070	.324**
	p-value								.503	.001
Prior performance	Pearson Correlation								1	-0.23
	p-value									.826
Composite measure	Pearson Correlation									1
	p-value									

***, **, * represents significance at the 10%, 1%, and 5% level respectively; ROA is return on assest measured as firm performance, dependent variable; translation exposure, transaction exposure and economic exposure are measure of foreign exchange risk management and measured as independent variable; Firm size is measured as control variable, Growth, interest rate and prior year are measured as control variables; Composite measure is a measure of the three exposures of foreign exchange risk management and measured as one measure.

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Table 2 shows the Pearson's correlation coefficients between the variables and firm performance among commercial banks in the Democratic Republic of Congo. According to the findings, transaction exposure and firm performance had a significant and positive correlation (r = 0.272, p-value = 0.008) at the 1% level. Further variables like firm size in relation to the firm performance had also a positive significant correlation (r = 0.445, p-value = 0.000) at 1% level or 0.01 significant level. Results also show that growth options in relation with firm performance had a significant and negative correlation at 1% level (r = -0.336, p-value = 0.001). Further, the prior year performance also had a negative significant correlation at 1% level (r = -0.371, p-value = 0.00). The results finally revealed that the composite measure of the three exposures in relation to the firm performance had the correlation significant and positive (r = 0.275, p-value = 0.007) at the 1% level.

4.3 Regression Analysis

The study adopted multiple regressions to examine the relationship between the variables in order to meet the objectives of the study. The dependent variable, financial performance was measured by return on Assets (ROA). The independent variable-foreign exchange risk management was measured using translation exposure, transaction exposure and economic exposure. The control variables included the firm size, the growth, interest rate, prior return on assets and the year dummies. The study estimated the regression model in two ways, table 3 shows the multiple regression analysis of financial performance with foreign exchange risk management measures and the control variables.

Table 3: Regression results for separate foreign exchange risk management measures

Dependent variable = ROA				
Variable	Coefficient (β)	t-value	p-value	VIF
Constant	-28.841	-4.629	0.000	
Translation Exposure	0.024	0.241	0.810	1.461
Transaction Exposure	0.146	1.506	0.136	1.388
Economic Exposure	-0.050	-0.549	0.585	1.220
Firm Size	0.582**	4.687	0.000	2.271
Growth Options	-0.121	-1.266	0.209	1.346
Average Interest Rate	-0.285*	-2.319	0.023	2.231
ROA_{t+1}	-0.307**	-3.245	0.002	1.323
Year fixed effects	Yes			
N	95			
Adjusted r-squared	0.362			
F-statistic (p-value)	7.672 (0.000)			

***, **, * represents significance at the 10%, 1%, and 5% level respectively; ROA is return on assest measured as dependent variable; translation exposure, transaction exposure and economic exposure are measures of foreign exchange risk management and measured as independent variable; firm size, growth options, average interest rate and prior return on asset are measured as control variables and year dummy is measured to control year effects.

According to the findings shown in Table 3, the value of Adjusted R-squared was 0.362 and this is an indication that variation of 36.2% on financial performance of Commercial banks in DR

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Congo is explained by the model used in the study. The model had an F-statistic of 7.67 which was significant at the 1% level. This means that the model reliably explains variations in firm performance.

In addition, the results shown in Table 3 shown that only none of the foreign exchange risk management measures were significant at levels. For the control variables, the firm size and prior year firm performance were significant at all levels, also average interest rate were negatively significant at 5% level. The other control variable, growth option, was not significant although it had the expected signs.

4.4 Regression results for composite foreign exchange risk management measure

The study repeated the multiple regression to examine the relationship between the variables taking transaction exposure, translation exposure and economic exposure as one measure of foreign exchange risk management. The dependent variable (financial performance) was measured as in the first regression using the financial ratio of return on assets (ROA), the independent variable-foreign exchange risk management was taken as a composite measure and the control variables as in the first regression. The findings are shown in Table 4.

Table 4: Regression Results for foreign exchange risk management composite measure

Dependent variable = ROA				
Variable	Coefficient (β)	t-value	p-value	VIF
Constant	-28.392	-4.617	0.000	
Composite measure	0.170*	**1.941**	**0.055**	1.143
Firm Size	0.575**	4.731	0.000	2.211
Growth Options	-0.117	-1.235	0.220	1.342
Average Interest Rate	-0.281*	-2.342	0.021	2.141
Prior year Return on Asset	-0.322**	-3.522	0.001	1.249
Year fixed effects	Yes			
N	95			
Adjusted r-squared	0.372			
F-statistic (p-value)	10.296 (0.000)			

***, **, * represents significance at the 10%, 1%, and 5% level respectively; ROA is return on assest measured as dependent variable; composite measure a measure of the three exposure of foreign exchange risk management and measured as independent variable; firm size, growth options, average interest rate and prior return on asset are measured as control variables and year dummy is measured to control year effects.

According to the findings shown in Table 4, the composite measure was significant at 5% level. Hence taking all the three types of exposure as a set add significance to the model. The results also revealed that the control variables showed the significance with the firm performance. In addition, the results in Table 4 showed that the composite measure was significant although taken as a set. For the control variables, the firm size was positive and significant at 1% level and the average interest rate and prior year were negatively significant at 5% and 1% respectively.

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5.0 CONCLUSION

The study found that on average foreign exchange risk management does not contribute significantly to firm performance. This may be due to our sample without strong exchange rate risk exposure The results, however, add further evidence to the current literature that not all foreign risk exposure commercial banks will reduce firm performance. To achieve this goal other factors have to be considered such as the types of risk or other exchange rate exposure of the firms.

The findings showed that valuation effect associated with foreign exchange risk management is not significant and foreign exchange risk management appears to be a small component of nonfinancial firms overall risk profiles. The study also suggest that despite concerns that Forex trading among banks entail new market risks that need regulatory intervention, the profitability ratio on the performance of the banks has not changed so much. However, the findings of the study concludes that there was a significant relationship between composite measure and firm performance.

6.0 RECOMMENDATIONS

However, foreign exchange risk management does vary considerably across the banks. Therefore, a better way of assessing the risks associated with Forex trading and how these risks affect the banking sector in general must be undertaken. Foreign exchange risk is critical issue in every firms operations, however, managing it does not add any significant value to the firm performance. Those tasked with managing the risks should thus first understand the risks they are exposed to by developing a risk profile. This requires an examination of both the immediate risks from competition and product market changes as well as the more indirect effects of macro - economic forces.

The evidence suggests that foreign exchange risk does improve the performance of the banks in terms of their gross income. We recommend that this study be carried out further and the whole banking industry to be studied under categories of listed and not listed and a proper study on all the Tiers. This should also extend to other firms and not just the banking industry. From a broader perspective, we note that there was a great improvement in most ratios like the return on assets among other variables that were considered in the study. Most items on the balance sheets showed an increasing trend during the study period. Policy makers should undertake to understand why Forex trading among commercial banks is not as robust in DRC as compared to other developed countries and what should be done to improve capital investments to maximize returns.

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