IMPACT OF FOREIGN EXCHANGE RATE FLUCTUATIONS ON CORPORATE PROFITABILITY: A Case Study of Nigerian Companies

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BEING A PROJECT SUBMITTED TO THE DEPARTMENT OF ACCOUNTING, FACULTY OF MANAGEMENT SCIENCES, UNIVERSITY OF BENIN, BENIN CITY IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF BACHELOR OF SCIENCE (B.Sc.) DEGREE IN ACCOUNTING.

MAY, 2024.

DECLARATION

I, hereby declare that:

1. This project is based on the study undertaken by me in the Department of Accounting. University of Benin, under the supervision of Dr. Samuel Umanah.
2. This work has not been previously submitted for the award of a degree elsewhere.
3. All ideas and views are product of my personal research and where the views of others have been expressed, they have been dully referenced and acknowledged.
4. All liabilities for the study are entirely mine and not those of my supervisor.

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ONUAGBA SAMUEL CHUKWUKA **Date**

CERTIFICATION

This is to certify that this project titled **"IMPACT OF FOREIGN EXCHANGE RATE FLUCTUATIONS ON CORPORATE PROFITABILITY: A Case Study of Nigerian Companies** was carried out by **ONUAGBA SAMUEL CHUKWUKA** with matriculation number **MGS1907761.** It has been read and recommended for acceptance in partial fulfilment of the requirement for the award of Bachelor of Science (B.Sc.) Degree in Accounting.

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DEDICATION

This work is dedicated to the almighty God who made me all I am and granted me the strength, wisdom and knowledge needed to carry out this work. I also specially dedicate this work to my amazing parents, Mr and Mrs. Onuagba and my siblings for always believing in me and pushing me to be my best in my academic pursuit.

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ABSTRACT

This study examined the relationship between foreign exchange rate fluctuations and corporate profitability using panel data of thirteen commercial banks listed on the Nigeria Exchange Group for the period 2018 – 2022. The variables considered were corporate profitability proxied by return on capital employed and return on assets, exchange rate, inflation rate and interest rate.

The study carried out a histogram normality test, Breusch-Pagan-Godfrey test of heteroskedasticity, Ramsey RESET model specification test, Serial correlation test, correlation analysis and regression analysis. The F-statistics indicated that all the explanatory variables taken together are statistically significant.

The regression result revealed that exchange rate has a positive and statistically insignificant relationship with return on capital employed and return on assets. The study recommended that government should formulate policies that will be very consistent in controlling exchange rate fluctuations and interest rate should be controlled by the government to encourage firms to source external capital for their expansion.

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CHAPTER ONE

INTRODUCTION

1.1 Background to Study

One of the main challenges faced by most businesses has been the unpredictability of exchange rates. In the contemporary business landscape, the influence of exchange rate fluctuations on the accomplishments or shortcomings of a company cannot be overstated. The heightened emphasis on exchange rate considerations stems from the prevailing dynamics of the global business environment, where companies, irrespective of their scale or industry, can no longer operate in isolation due to the pervasive forces of globalization. Essentially, the management of exchange rates has emerged as a critical strategic tool that businesses must leverage to ensure their survival and profitability.

Copeland (2005) attributes the heightened significance of exchange rates to several factors. Firstly, the growing internationalization of modern business operations has contributed to this trend. Additionally, the ongoing expansion of global trade relative to national economies has further underscored the importance of exchange rate considerations. Moreover, the move towards economic integration among nations and the rapid advancements in money transfer technologies have played a role. However, a major contributing factor is the inherent variability and high volatility of exchange rates themselves, which necessitates close monitoring and management.

As the world has become more globally connected, the potential for international trade has grown. Because of this, changes in foreign exchange rates have become more important for a country's economic performance. After the Bretton Woods system became less influential, many developed and developing countries, including Nigeria, adopted a system where their currency's exchange rate freely fluctuates based on market forces. In this system, countries experience their national currencies gaining or losing value against other currencies. These ups and downs in a currency's worth are reflected in changing foreign exchange rates. Even companies that don't do business internationally are impacted by exchange rate movements because global trade has expanded. The rise or fall in exchange rates affects not just a country's economic activities but also the overall profits companies can make (Emre & Derekoy, 2020).

Exchange rates play an increasingly crucial role in the performance of companies in Nigeria, as they directly impact domestic selling prices, profitability, resource allocation, and investment decisions within these companies (Twarowska & Kakol, 2014). This is evident in the exchange rate reaching as high as N390 per US dollar, making it challenging for companies to operate at the desired minimum cost and price levels. The fluctuation or volatility in the exchange rate has drawn public attention, particularly from importers who argue that a strengthening naira erodes their competitiveness (Ndung'u, 1997). Investigating the impact of this exchange rate volatility on the performance of companies in Nigeria is crucial for

the economy. For a country that heavily relies on imports, the stability of its exchange rate is essential for credit allocation (Adebiyi, 2006).

1.2 Statement of the Research Problem

The Nigerian Naira has experienced significant fluctuations, including periods of rapid devaluation, which has had an adverse impact on the nation's economy. While studies have been conducted on exchange rate regimes and their implications for macroeconomic management, as well as on managing foreign exchange risk on economic growth, limited research has been done on the exposure of Nigerian companies to exchange rate risk (Okika et al., 2018).

Despite the Nigerian government's various efforts to maintain a stable exchange rate, the Naira experienced a progressive devaluation, increasing from N8.0378 to N85.98 per US dollar between 1990 and 1999. This depreciation continued, with the Naira falling from N151.51 in 2010 to N162.30 in 2011, and then to N156.15 in 2012, against the US dollar. The Naira's devaluation persisted, reaching N158.05 in 2013, N175.85 in 2014, N232.40 in 2015, N300.757 in 2016, N305.277 in 2017, N306.421 in 2018, N306.450 in 2019, N379.500 in 2020, N411.133 in 2021, N445.971 in 2022, and N896.61 per US dollar as at 31st December, 2023 (Forbes.com, 2024). Notably, as of 25th April, 2024, the time of writing this paper, the exchange rate for the Naira stood at N1280.02 per US dollar, reflecting the continuous depreciation of the Nigerian currency despite the government's efforts to stabilize it.

Despite the obvious attention that exchange rate fluctuations have garnered in Nigeria, there is still a lack of sufficient studies examining the extent to which these fluctuations affect the financial performance of Nigerian companies and how these effects can be minimized or mitigated. Also while other studies focused on commercial banks (Amenawo et al., 2016; Osundina et al., 2016) and small scale enterprises (Boakye Frimpong et al., 2012), this study will extend the research to listed companies on the consumer goods sector in Nigeria.

It is against this backdrop that this research is motivated to answer the following questions;

1. What is the effect of exchange rate fluctuations on return on capital employed (ROCE) of Nigerian companies?
2. What is the effect of exchange rate fluctuations on return on asset (ROA) of Nigerian companies?

1.3 Objectives of the Study

The main objective of this study is to examine the impact of exchange rate fluctuations on the corporate profitability of Nigerian companies. The specific objectives are:

5. To examine the effect of exchange rate fluctuations on return on capital employed (ROCE) of Nigerian companies; and
6. To ascertain the effect of exchange rate fluctuations on return on asset (ROA) of Nigerian companies.

1.4 Research Hypotheses

The research hypotheses are stated in the null form. These hypotheses are formulated in line with the specific objectives as follows:

1. There is no significant relationship between exchange rate fluctuations and return on capital employed (ROCE) of Nigerian companies.
2. There is no significant relationship between exchange rate fluctuations and return on asset (ROA) of Nigerian companies.

1.5 Scope of the Study

This study covers a period of five years from 2018 to 2022. The population for this study comprises twenty one (21) consumer goods companies listed on the Nigerian Exchange Group (NGX) as of December 31, 2022 (NGX, 2022). Data on exchange rate fluctuations, return on capital employed, and return on asset were extracted under the year of study.

1.6 Significance of the Study

The study of how foreign exchange rate movements affect corporate profits is significant for several stakeholders:

Companies: Understanding currency risks is crucial for companies with international operations or those dealing in foreign currencies. This study can help them anticipate and mitigate the adverse effects of unfavorable exchange rate

movements on their profitability through effective hedging strategies, pricing policies, and operational adjustments.

Investors: Investors need to evaluate the currency exposure of companies they invest in, as exchange rate fluctuations can directly impact the companies' earnings, cash flows, and overall financial performance. This study can provide insights to help investors make more informed investment decisions.

Policymakers: Government agencies and central banks need to understand how exchange rate policies and economic conditions influence the profitability of domestic companies, particularly those with significant foreign operations or exports. This study can inform policymakers on the potential impact of their decisions on corporate profitability and the broader economy.

Analysts: Financial analysts and researchers can use the findings of this study to develop more accurate models for forecasting corporate earnings and valuing companies with international exposure, taking into account the effects of currency fluctuations.

Academia: This study can contribute to the existing body of knowledge in international finance, providing empirical evidence and insights into the relationship between exchange rates and corporate profitability, potentially leading to further research and theoretical developments.

By examining the impact of foreign exchange rate fluctuations on corporate profitability, this study aims to provide valuable information to these stakeholders,

enabling them to make more informed decisions, develop effective strategies, and better understand the dynamics of international business and finance.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter embarks on an exploration of the existing body of literature concerning the profound implications of foreign exchange rate fluctuations on the profitability of corporate entities, with a particular focus on Nigerian companies. The fluctuation of foreign exchange rates is a critical factor that significantly influences the financial performance and strategic decision-making of businesses operating in a globalized economy. Through a comprehensive synthesis of conceptual frameworks, theoretical insights, and empirical findings, this study endeavours to illuminate the intricate relationship between foreign exchange rate dynamics and corporate profitability within the context of Nigerian companies. By delving into scholarly works across various disciplines, this review seeks to offer a subtle understanding of how fluctuations in exchange rates impact not only the bottom line of corporations but also their overall financial stability, market competitiveness, and long-term sustainability. Furthermore, this chapter aims to contribute valuable insights into the multifaceted effects of foreign exchange rate fluctuations on corporate profitability.

2.1 Conceptual review

2.1.1 Foreign Exchange Rates

The "exchange rate" of a currency refers to the rate at which it can be acquired using another currency, typically a foreign one. When evaluating the worth of a nation's currency relative to another, we refer to this as the foreign exchange rate (Augustine & Ayobami, 2022). The exchange rate represents the rate at which one currency can be traded for another. It signifies the proportion at which the currency of one nation is valued in terms of another currency (Egolum et al., 2020). Typically, this rate is established within the foreign exchange market, which serves as a platform for the buying and selling of currencies from various nations. Within this market, the relative worth of both domestic and foreign currencies is set. The foreign exchange market, which operates globally, is considered the largest market worldwide, with the currencies of all nations serving as its primary assets (Hashmi & Munir, 2021). The exchange rate refers to the price of one unit of foreign currency expressed in terms of the domestic currency (Krugman et al., 2022). It reflects the value of a single unit of foreign currency relative to the local currency, acting as a crucial link between domestic and international markets for various goods, services, and financial instruments (Copeland, 2021). Egolum et al. (2020) define the exchange rate as the rate at which a unit of foreign currency is traded for the Nigerian Naira.

The shift from fixed to flexible exchange rate systems has become increasingly prevalent among many developing nations in recent years. Exchange rate regimes play a crucial role in shaping an economy's ability to adequately respond and adapt to external shocks (Obstfeld & Rogoff, 2021). This transition mirrors the one observed in developed countries during the 1970s, following the collapse of the Bretton Woods System, established after World War II (Bordo & Helene, 2020). One of the primary goals of the Bretton Woods System was to maintain fixed exchange rates, deemed vital for managing the international payments system, which was pivotal for global trade and commerce (Steil, 2022). With the United States holding significant dominance and being the largest gold trader, most currencies were pegged to the US dollar. However, as Europe's competitiveness grew in the late 1960s, concerns about the overvaluation of the dollar arose. Additionally, rising global inflation led to increased gold outflows from the United States, as gold was perceived as relatively inexpensive at its fixed price. To curb this substantial outflow, the Bretton Woods System collapsed, marking the beginning of the floating exchange rate era.

Despite the collapse of the Bretton Woods System, many developing nations continued to peg their exchange rates to a major currency, notably the United States dollar or the French Franc, or to a basket of currencies like the International Monetary Fund (IMF) special drawing rights (Bénassy-Quéré et al., 2022). It was not until around the 1980s that developing countries began to explicitly transition to flexible exchange rate regimes (Reinhart & Rogoff, 2004).

Due to variations in factor endowments, every country is economically interdependent, highlighting the significance of the exchange rate in global economic interactions (Krugman et al., 2022). Shift in the currency rate trigger reactions in various economic indicators such as interest rates, inflation rates, import and export volumes, and output levels. These factors underscore the vital role of the exchange rate in the economic advancement of any nation engaged in international trade of goods and services (Augustine & Ayobami, 2022). The importance of the exchange rate lies in its role in equalizing the conditions for businesses involved in cross-border trade, bridging the gap between domestic pricing systems and international markets. This implies that domestic prices are influenced by global trends (Augustine & Ayobami, 2022). Given its significant impact on the volume of imports and exports, the exchange rate also heavily influences the balance of payments.

Since the introduction of the Structural Adjustment Programme (SAP) in 1986, the stability of the Naira currency rate has been relatively consistent. However, its continuous depreciation has posed a challenge to economic development. Countries like Nigeria, reliant on oil production, face significant risks to their macroeconomic stability and overall economic advancement due to the dual impact of escalating oil prices and unpredictable currency fluctuations. According to Usman (2009), budget deficits in Nigeria often coincide with declines in oil revenues, while increases in oil revenues tend to correspond with higher government spending. Despite Nigeria's substantial revenue from oil sales, the

country heavily relies on imports of refined petroleum and other industrial commodities.

In essence, an exchange rate represents the value of one currency relative to another (Mordi, 2006). It signifies how much the currency of one country is valued compared to that of others. Monitoring the real exchange rate fluctuations can provide insights into the competitiveness of domestic industries against foreign counterparts (Razazadehkarsalari et al., 2011). Significant deviations of the exchange rate from its equilibrium point are indicative of volatility (Azeez et al., 2012). When currency rates are unsynchronized, it suggests the existence of alternative markets alongside the official one.

2.1.2 Foreign Exchange Market

The foreign exchange markets, commonly known as forex markets, are virtual platforms that operate continuously, 24 hours a day. Their purpose is to facilitate the exchange or trading of currencies from one country or geographic region for those of another country or region (Boakye et al., 2012). Renowned for its vast scale, the foreign exchange market ranks as the largest financial market globally, surpassing virtually all other benchmarks. The average daily turnover in traditional foreign exchange markets reached an estimated $1,880 billion in 2004 (Bank for International Settlements, 2005). By 2006, the global turnover in traditional foreign exchange transactions surged to approximately $2.7 trillion per day (International Financial Service London, 2006). Notably, foreign exchange

trading witnessed a remarkable 37% increase from 2005 to 2006 and more than doubled since 2001 (International Financial Service London, 2006). The increasing significance of foreign exchange largely accounts for this trend. These markets function as secondary markets because the currencies traded within them—representing various countries—are not produced by the markets themselves; rather, they are predominantly issued by governments or central banks (Boakye et al., 2012). The primary participants in the forex markets are banks, which engage in the buying of currency from customers and subsequently selling it to customers in need of foreign currencies for international business dealings. These customers can include governments, other banks, and various entities involved in international trade.

2.1.3 Exchange Rate Fluctuations

Fluctuation of foreign exchange rates refers to the propensity of these rates to shift swiftly and unpredictably within the foreign exchange market. Augustine and Ayobami (2022) suggest that currency exchange rates in the FOREX market fluctuate based on shifts in supply and demand. When demand surpasses supply, the currency's exchange rate appreciates. Conversely, when goods and services experience a surplus, the currency's value depreciates. Long-term fluctuations in the demand and supply of any currency are highly responsive to changes in the values of imports, exports, and long-term capital movements such as Foreign Direct Investment (FDI). Various factors, including inflation and interest rates,

have played roles in driving these shifts in exchange rates over time (Akpan & Atan, 2020). There's a possibility that the inherent volatility of a freely floating exchange rate system could escalate under specific circumstances. This situation arises because international capital markets tend to overreact to shocks, resulting in rapid fluctuations in exchange rates, whereas goods and services markets typically respond more gradually (Engel, 2014).

Theoretically, there's a widely accepted notion that exchange rate fluctuations represent a significant source of macroeconomic uncertainty. Economic theory posits that alterations in the exchange rate can trigger fluctuations in stock prices, directly impacting multinational corporations, exporting and importing businesses, as well as firms that rely on imported inputs. Indirectly, these fluctuations can also affect other companies (Farah, 2014). Exchange rate fluctuations influence not only the prices of imported goods but also the costs associated with imported materials, indirectly affecting companies competing with firms that rely on such imported inputs (Amiti et al., 2023). Consequently, exchange rate movements are expected to exert a substantial influence on firm value, irrespective of whether the firm operates primarily domestically or internationally. This is attributed to the increasing trend of globalization, which has prompted many corporations to expand their operations across borders to capitalize on competitive advantages and economies of scale (Farah, 2014). Expanding into new markets has led to increased profitability for firms, but it has also introduced greater variability in net income due to various financial risks. Consequently, managers of

multinational corporations are placing emphasis on the significance of risk management strategies to mitigate the fluctuations in cash flows from foreign operations caused by changes in foreign exchange rates (Afza and Alam, 2014).

Unforeseen fluctuations in exchange rates lead to adjustments in the foreign currency-denominated receivables, debts, incomes, and expenditures for companies engaged in foreign trade and monetary transactions, impacting their financial performance when translated into the domestic currency. Consequently, these fluctuations result in alterations in the market value and net profitability of firms. Such unexpected changes in foreign exchange rates affect not only entities operating in foreign markets but also those operating domestically (Kurt & Derekoy, 2020). The fluctuations in foreign currency prices are intertwined with firms' production costs and sales prices, contributing to overall price fluctuations within the country. Moreover, exchange rate movements influence domestic firms by affecting the relative affordability of domestic goods compared to competing products (Auer et al., 2021).

Changes in exchange rates can influence the financial performance and value of firms as they impact the cash flows of companies operating internationally (Madura, 2012). Firms employ various instruments and strategies to safeguard themselves against the effects of exchange rate fluctuations, which can be categorized into internal and external methods (Doğanay, 2016). Internal protection methods involve minimizing exchange rate risk by leveraging the

firm's resources. This includes tactics like invoicing in specific currencies and aligning foreign currency inputs and outputs in the same currency (Doğanay, 2016). External hedging methods involve using instruments such as forward and futures contracts, options, and swaps to protect the firm's asset-liability structures from exchange rate impacts (Eiteman et al., 2021).

2.1.4 Determinants of Exchange rates

As stated in work of Langat (2017), Otuori, stipulates the determinants of exchange rate fluctuations on corporate profitability as; rates of interest, balance of payment or otherwise referred to as the current account, external debt and rates of inflation.

2.1.4.1 Rates of Interest

A shift in the interest rate will influence the currency's value relative to the USD. There is a correlation between interest rates, inflation rates, and foreign exchange rates. A rise in the interest rate leads to the appreciation of the local currency against the USD. This appreciation is driven by higher interest rates attracting more foreign capital, thereby increasing the foreign exchange rate. Elevated interest rates within an economy offer lenders greater returns compared to other economies (Otuori, 2013).

Interest rates, inflation, and exchange rates are interconnected. Central banks influence both inflation and exchange rates by adjusting interest rates. Changes in interest rates affect inflation and currency values. Elevated interest rates provide

lenders within an economy with higher returns compared to other countries, attracting foreign capital and causing the exchange rate to increase. However, if inflation in the country surpasses that of others or other factors drive the currency down, the impact of higher interest rates may be moderated. Conversely, decreasing interest rates typically lead to lower exchange rates.

2.1.4.2 Current Account Balance

The current account of an economy is pivotal in determining the foreign exchange rate. An increase in the foreign exchange rate signifies an improvement in the current account balance, known as the appreciation of the currency. Conversely, when domestic prices rise, the currency is said to depreciate (Otuori, 2013). Trade openness, quantified by the aggregate of Nigerian's exports and imports, reflects actual income. Implementing strategies and policies to tackle external imbalances is crucial for maintaining long-term stability in foreign exchange rates, a goal essential for achieving desired outcomes. If the price of exports increases at a rate lower than that of imports, the currency's value depreciates relative to that of the trading partner (Otuori, 2013).

The current account represents the balance of trade between a nation and its trading partners, encompassing all transactions such as payments for goods, services, interest, and dividends between countries. When there's a deficit in the current account, it indicates that the country is spending more on foreign trade than it's earning. This deficit necessitates borrowing capital from foreign sources

to offset the shortfall. Essentially, the country requires more foreign currency than it earns through exports, while simultaneously supplying more of its own currency than foreigners demand for its products. This surplus demand for foreign currency leads to a depreciation of the country's exchange rate until domestic goods and services become inexpensive enough for foreign buyers, while foreign assets become too costly for domestic interests to purchase.

2.1.4.3 External Debt

Firms and corporates often confront financial constraints that constrain their investment decisions, compelling them to seek external funding through debt. Choosing between local currency debt and foreign currency debt involves balancing risk and return. In many emerging economies, foreign exchange rates are typically decentralized. Opting for local currency debt helps mitigate overall volatility but usually entails higher interest rate premiums because lenders of foreign public debt are cautious about risks associated with emerging markets (Bergen, 2010).

Investors and borrowers determine the currency mix of their liabilities by assessing the anticipated impact of foreign exchange rate fluctuations against potential savings from interest rate differentials between the domestic currency and USD. High volatility in foreign exchange rates can lead to substantial repayments for foreign currency debt, including both principal and interest payments, which can reduce overall demand and subsequently contribute to

currency depreciation. This depreciation, in turn, can worsen the current account balance and increase borrowing restrictions throughout the economy.

2.1.4.4 Rates of Inflation

A shift in market inflation rates prompts alterations in a country's currency exchange rates. If one economy experiences lower inflation compared to another, its domestic currency tends to strengthen. This phenomenon extends to the slower escalation of commodity and service prices in regions with lower inflation rates. Countries demonstrating sustained low inflation levels typically witness an appreciation of their currency's value. Conversely, nations grappling with inflation tend to witness depreciation in their currency values, often accompanied by elevated interest rates (Bergen, 2010).

Typically, a nation characterized by consistently lower inflation rates witnesses a gradual appreciation of its currency, as its purchasing power strengthens compared to other currencies. Throughout the latter half of the 20th century, countries such as Japan, Germany, and Switzerland maintained low inflation rates, while the United States and Canada achieved similar levels of inflation only later. Conversely, countries experiencing higher inflation rates tend to observe depreciation in their currency relative to those of their trading partners. Such depreciation is often accompanied by elevated interest rates.

2.1.5 Corporate Profitability

Corporate profitability refers to a company's ability to generate earnings relative to its expenses and other relevant metrics over a given period. It is a crucial indicator of a firm's financial health, operational efficiency, and competitive position within its industry (Penman, 2022). Several factors influence corporate profitability, including revenue growth, cost management, asset utilization, and overall business strategy. One widely used measure of profitability is net profit margin, calculated as net income divided by total revenue (Palepu et al., 2020). This ratio reflects how much of each dollar in sales is translated into profit after accounting for expenses. This ratio reflects how much of each dollar in sales is translated into profit after accounting for expenses. Other common profitability ratios include return on assets (ROA), return on equity (ROE), and return on invested capital (ROIC) (Palepu et al., 2020). These various profitability metrics and ratios provide different perspectives on a company's ability to generate profits relative to its revenue, assets, equity, and invested capital. They are widely used by investors, analysts, and management to evaluate a firm's financial performance, operational efficiency, and overall profitability.

Numerous empirical studies have examined the determinants of profitability across various contexts. Gschwandtner (2021) found that productivity, growth, and competitive strategy positively impacted profitability in U.S. firms. Abdallah and Abdul-Baki (2021) reported that intellectual capital influenced profitability in Australian companies. Matar and Eneizan (2018) observed a positive association between financial leverage and profitability among UAE firms. In emerging

markets, Akben-Selcuk (2016) revealed that sales growth, asset utilization, and financial leverage influenced Turkish manufacturing firms' profitability. Habib et al. (2016) noted that liquidity, leverage, and firm size were significant predictors of profitability for Pakistani non-financial firms. Overall, corporate profitability is a multidimensional concept influenced by various internal and external factors. It serves as a key performance indicator for companies, investors, and stakeholders, reflecting the firm's ability to generate earnings, utilize resources efficiently, and create value over time.

Changes in foreign exchange rates impact a company's operating cash flows and overall value due to transaction, translation, and economic risk exposure resulting from the volatility of these rates. Since the dissolution of the Bretton Woods fixed exchange rate system in 1971, replaced by a freely floating rates system dictated by the interplay of money demand and supply, foreign exchange rate volatility has remained a significant concern for shareholders, managers, investors, and financial analysts.

The value of the firm refers to the economic measure that reflects the market value of the business, which includes the value allocated to both the debt holders and the shareholders of the company. The most widely accepted method of computing the value of a firm is the net present value (NPV), where the present and future cash flows of the firm are discounted to a present value (Ross et al.,

2022). Volatility of foreign exchange rates could affect a firm in various business models of operation (Madura & Fox, 2021).

A company may engage in various production methods, such as utilizing both local and imported components. Additionally, it might manufacture identical or different products in foreign facilities. A multinational corporation exemplifies this scenario, operating in both domestic and international markets while using a mix of domestic and foreign production inputs. Hence, the firm's model should be inclusive enough to encompass all these diverse approaches.

2.1.6 Profitability measures

Profit, which constitutes the first step toward the set of economic targets, is a type of attempt to the necessity of rational business decisions. Profit is the most crucial motive that stimulates company owners, managers, and other employees. Because, as long as the company makes more profit; the company owner would increase its capital, and the employees would increase their incomes (Akkuş, 2010). Profit, which represents the most important success criterion for the company, is defined as the difference between sales revenue and cost (Müftüoğlu, 2010). Firms can boost their profitability by improving their efficiency or increasing their sales. However, the increase in profitability to be achieved with productivity increase is more effective than increasing sales. The ratios that are used to evaluate the profit can be separated into two such as profitability ratios according to sales and profitability ratios according to investment. The firm efficiency occurs upon

evaluated along with these rates (Bolat, 2009). Among the different profitability measures of profitability, this study adopted return on capital employed (ROCE) and return on Asset (ROA) as it measures of corporate profitability.

2.1.6.1 Return on Capital Employed (ROCE)

The primary gauge of profitability is the return on capital employed (ROCE), a fundamental ratio that dissects factors like profit and capital employed or total assets. These elements can be further dissected into more intricate ratios, shedding light on the impact of sales, asset types, and various cost types on the overall company performance as indicated by ROCE (Lucey, 2003). Essentially, ROCE illustrates the net profit generated per unit of assets employed.

Mathematically, it is calculated as:

ROCE = Net Profit (PBIT) X 100

Capital Employed

ROCE is sometimes calculated using PBIT instead of net profit.

2.1.6.2 Return on Asset (ROA)

Return on assets (ROA) stands as a prominent metric in the realm of corporate governance analysis, as highlighted by Rouf and Abdul (2015). Traditionally, a company's profitability is gauged by the return generated on its overall assets. This metric serves as evidence of effective resource utilization by the company's board and management. By showcasing the return on investment (ROI) derived

from capital expenditures, a company can demonstrate to its shareholders the benefits reaped from their investments. The ROA is considered a robust indicator of a company's efficiency in utilizing its assets. Investors rely on this ratio to assess how effectively management is leveraging the company's resources. Moreover, in banking, the profitability of institutions is often evaluated, in part, based on the return on their invested capital, as noted by Alkassim (2005).

According to Khrawish (2011), Return on Assets (ROA) holds significant importance in elucidating a company's profitability. Essentially, ROA represents the ratio of income to total assets, serving as a yardstick for evaluating the management's efficiency in generating income from the company's assets. It offers stakeholders insights into how effectively a company utilizes its assets to generate revenue. A higher ROA typically signifies superior firm performance. However, while a rising ROA might initially seem favorable, its significance can diminish when compared with other companies within the same industry or against the industry average. Therefore, if a company's ROA falls below the industry average, it suggests underutilization of its full capacity. Booth et al. (1999) suggest that they utilized this measure in their research due to its calculability across various countries, highlighting the challenges in comparing profitability across nations. Other scholars, including Zeitun and Tian (2007), Zeitun (2009), Tze-Sam and Heng (2011), Onaolapo and Kajola (2010), and Khan (2012), have also adopted this metric in their empirical investigations. Comparatively, the ROA ratio may offer more utility when juxtaposed with the

risk-free rate of return to account for the additional risk. Should a firm's ROA align with or fall below the risk-free rate, investors may find themselves indifferent, potentially preferring to invest in bonds offering a guaranteed yield.

Mathematically, it is calculated as:

ROA = Profit before interest and Tax (PBIT) X 100

Total Assets

2.1.7 Foreign Exchange Rate Fluctuations and Corporate Profitability

Fluctuations in exchange rates impact a nation's pricing structure by influencing the costs of imported consumer and intermediate goods (Watkins, 2014). These fluctuations directly affect import prices, producer prices, and the Consumer Price Index (CPI). Exchange rate movements affect domestic prices through three main channels: firstly, by influencing the prices of imported consumer goods; secondly, by impacting the production costs of domestically manufactured goods through fluctuations in the prices of imported intermediate goods; and thirdly, by affecting the prices of domestically produced goods priced in foreign currency (Gatobu, 2013). The impact of these changes on the Consumer Price Index (CPI) varies depending on the proportion of imports in the consumption basket. When depreciation leads to increased prices for imported goods, there's typically a surge in demand for domestic alternatives competing with imports. This heightened demand then contributes to upward pressure on both domestic prices and nominal

wages. Consequently, escalating wages further drive up domestic prices (Bailliu and Bouakez, 2004).

The fluctuations in currency exchange rates can lead to significant profits or losses, impacting the financial statements of a business entity. Companies heavily engaged in international trade face increased accounting exposure, exposing them to financial gains or losses from foreign transaction and translation activities if they fail to hedge this risk. Additionally, projects funded by foreign donors present another dimension of exchange rate exposure. Gatobu (2013) notes that unrealized foreign exchange gains or losses affect the Net Income of multinational corporations, reflecting in either the income statement or owner's equity reserves.

Fluctuations in foreign exchange impact companies' imports, accounts payables, export sales, and accounts receivables, ultimately affecting the Net Income of multinational firms either through the income statement or owners' equity reserves. According to the open economy macroeconomics theory, a small open economy is considered an international price taker. Hence, governments prioritize efforts to encourage exports by deliberately adjusting the exchange rate downward. Goldberg and Knetter (1997) found that approximately 60% of exchange rate fluctuations are reflected in import prices in the US. This is attributed to the practice of many importing and exporting companies, which opt to maintain their prices and adjust the markup instead when exchange rates

fluctuate. This approach, known as "pricing-to-market," allows firms to preserve market share, even if it means enduring temporary revenue losses.

Foreign exchange rate volatility can lead to significant repayments of foreign currency debt, including both principal and interest, which can reduce aggregate demand and contribute to currency depreciation. This depreciation, in turn, negatively impacts the current account and tightens borrowing constraints across the economy. Economic theory suggests that exchange rate volatility affects securities and stock prices, directly impacting importing and exporting firms, multinational corporations, and those reliant on imported inputs. This volatility also influences competitors of these firms by affecting the costs of imported production factors and the prices of finished imported products. Foreign currency risk exposure occurs when a firm's revenues, expenses, assets, or liabilities are denominated in a currency other than the standard currency of its financial statements. Even companies without direct foreign currency transactions can face such exposures. According to Grambovas and McLeay (2006), in conditions of extreme exchange rate volatility, the cash flows of a firm can be significantly destabilized, leading to increased risk. These risks stem from the destabilization of cash flows, which can ultimately impact corporate profitability.

2.2 Theoretical Reviews

This part explores the theoretical literature applicable to this study, specifically considering those theories that serve as backbone in explaining the study.

2.2.1 The Purchasing Power Parity (PPP) Theory

Guster Cassel proposed the Purchasing Power of Parity (PPP) theory in in the early 20th century, specifically in the 1920s which states that in an ideal efficient market, identical goods should have one price. In essence, the Purchasing-Power Parity (PPP) Theory suggests that a basket of goods should cost the same in one country as it does in another, once exchange rates are factored in. Equilibrium in the foreign exchange market is achieved when the expected rate of return on deposits for all currencies is equal (Nyairo, 2015). The Purchasing Power Parity (PPP) theory suggests that the value of a standardized commodity is consistent across different nations based on their respective currencies. The theory operates under assumptions that transaction costs are absent, traded commodities are identical, and there are no trade barriers. In cases where a country's currency is misvalued, its purchasing power may not accurately reflect the country's level of commodity availability (Ross et al., 2008).

The Purchasing Power Parity (PPP) theory, was advanced by Menon and Viswanathan (2005), posits that the value of identical goods remains consistent across different countries, reflecting the currency of each respective nation. According to Menon and Viswanathan (2005), when purchasing power aligns across nations, exchange rates between their currencies reach equilibrium. Reid and Joshua (2004) further suggest that the ratio of commodity price levels should correspond to the country's currency value. However, as noted by Ross (2008), a

country's currency may be inaccurately valued, resulting in its inability to purchase commodities at the expected level. This theory operates under the assumptions of negligible transaction costs, absence of trade barriers, and the exchange of homogeneous commodities. Consequently, if a common currency is exchanged at the spot exchange rate, the price of identical goods should be consistent across borders.

The theory advocates for the use of price indexes to ascertain the precise price of homogeneous commodities across countries. However, the primary challenge lies in constructing Purchasing Power Parity from these price indexes, given that different countries employ different goods to determine their price levels (Reid, 2005). Menon and Viswanathan (2005) delineated two classifications of PPP: absolute and relative. Absolute PPP posits that identical commodities should cost the same regardless of currency, leading to the emergence of the Law of One Price. Recognizing the limitations of absolute PPP, another form known as relative PPP has emerged. Relative PPP acknowledges market imperfections and focuses on changes in exchange rates rather than absolute exchange rates over time (Ross, 2008).

PPP serves as both a theoretical framework for understanding exchange rates and a practical tool for facilitating more precise comparisons of data across countries. Its significance perhaps lies more in its role as a tool for cross-border comparisons than in its role in determining exchange rates. When used as a tool for comparing

incomes and wages across borders, PPP becomes particularly valuable as the data it provides is applicable in the real world. For instance, organizations like the World Bank utilize PPP to present international data in a meaningful and standardized manner (Nyairo, 2015). Conversely, PPP theory tends to be less effective as a determinant of exchange rates due to its reliance on several assumptions that are often unrealistic in practice. For instance, the theory assumes the absence of trade barriers and transaction costs, conditions that are rarely met in the real world, as each economy operates under its own unique set of trading conditions.

2.2.2 Balance of Payment Theory of Exchange Rates

The balance of payments theory, also referred to as "The Demand and Supply Theory of Exchange Rate," posits that the value of foreign currency relative to domestic currency is determined by the unfettered interaction of demand and supply forces in the foreign exchange market (Nyairo, 2015). According to this theory, a deficit in the balance of payments results in a decline or devaluation of the exchange rate, whereas a surplus in the balance of payments strengthens foreign exchange reserves, leading to an appreciation of the domestic currency's value in terms of foreign currency (Nyairo, 2015). The balance of payments theory asserts that exchange rates are dictated by the balance of payments, which reflects the demand for and supply of foreign exchange within the respective country.

If a country experiences an unfavourable balance of payments, the foreign exchange rate typically decreases. Conversely, when the balance of payments is favourable, the exchange rate tends to rise, allowing the domestic currency to buy more foreign currencies. When a country's exchange rate falls below the equilibrium level, indicating an adverse balance of payments, it prompts an increase in exports. This increase in exports gradually eliminates the adverse balance of payments, ultimately restoring the equilibrium exchange rate. When a country's balance of payments is favourable, the exchange rate surpasses the equilibrium level, causing exports to decrease (Kanamori & Zhao, 2006).

The theory offers several advantages. Firstly, it aligns with the general theory of value and illustrates how the equilibrium exchange rate is determined within the framework of general equilibrium theory. Additionally, the theory emphasizes that factors beyond just goods in the balance of payments influence the supply and demand for foreign exchange, consequently shaping the exchange rate. Therefore, the theory is considered more pragmatic as it views the domestic price of foreign currency as a result of numerous significant factors, rather than solely relying on purchasing power reflecting general price levels. However, the theory faces several limitations. For instance, it assumes perfect competition and government non-intervention in the foreign exchange market, which is not reflective of modern exchange controls. Additionally, it does not elucidate the factors determining the internal value of a currency, necessitating recourse to the purchasing power parity theory. Furthermore, the theory unrealistically assumes

the balance of payments to be fixed, lacks a causal connection between the exchange rate and internal price levels, and can be indeterminate at times.

2.2.3 International fisher effect theory

The International Fisher Effect theory suggests that disparities in interest rates between two countries are offset by changes in inflation rates. According to the theory, policies involving borrowing from one country to invest in another should not yield positive returns, as exchange rates adjust to counter differences in interest rates (Ubindi, 2006). For companies engaged in international trade with assets and liabilities denominated in foreign currencies, fluctuations in exchange rates hold significant importance. South Africa is among the countries where exchange rate fluctuations are frequent.

Supporters of the International Fisher Effect, as elucidated by Shapiro (2007), assert that disparities in returns correspond to differences in inflation rates between countries. The theory posits that nominal risk-free interest rates incorporate both expected inflation and actual return rates. According to Ubindi (2006), variations in interest rates among nations stem from diverging expectations of inflation, as investors seek significant returns. Staikouras and Wood (2004) illustrate that foreign currencies typically depreciate when they offer comparatively higher interest rates. Fundamentally, the theory suggests that borrowing from one country and investing in another should not yield profits, as exchange rates adjust to neutralize differences in interest rates (Ubindi, 2006).

Fluctuations in exchange rates impact a company's performance, particularly profitability, through three primary channels, as outlined by Bailliu and Bouakez (2004). Firstly, the depreciation of the RAN (Rand) directly elevates the domestic prices of imported consumer goods and the production costs of domestically manufactured goods. However, the direct influence of RAN depreciation on the consumer price index hinges on the proportion of imported goods in the consumption basket. Secondly, exchange rate depreciation augments the demand for domestically produced goods relative to imports, leading to higher prices for domestically manufactured products. This, in turn, may trigger increased demands for wage hikes by labour unions, potentially further inflating the prices of goods and services if production fails to meet the increased demand level (Bailliu and Bouakez, 2004).

2.2.4 Expectations Theory of Forward Exchange Rates

The Expectations theory posits that the anticipated spot foreign exchange rates at a future point in time are identical to the current forward exchange rate for the corresponding maturity period. In essence, this theory suggests that forward rates provided in the foreign exchange market serve as reliable indicators for predicting future exchange rates. Specifically, the Expectations theory asserts that forward rates precisely match the spot exchange rate projected for the specified delivery date outlined in the forward contract, whether it be 30, 60, 90, or 180 days ahead. Hence, according to the Expectations theory, the forward exchange rates

presented in the foreign exchange market serve as impartial predictions of the anticipated future exchange rates (Muth, 1961).

Though articulating the precise economic conditions under which the Expectations theory applies is intricate, empirical observations indicate that it generally provides a reasonably accurate depiction of the relationship between forward exchange rates and anticipated future exchange rates. However, a significant drawback of the theory lies in the rarity of achieving perfect alignment between today's projected rates across various maturities and future realized spot rates. Moreover, any inaccuracies in today's estimations of the future may result in erroneous conclusions about forthcoming outcomes, potentially leading to financial losses.

2.2.5 Theory of Interest Parity Rate

This theorem, formulated by Keynes in 1930, encompasses the law of one price, which extends to both commodities and services within the Purchasing Power Parity (PPP) framework, as well as to the securities market within the Interest Rate Parity (IRP) framework. According to this theory, identical securities across different countries should possess comparable prices when denominated in the same common currency, regardless of the prevailing interest rates in those countries. The exchange rates are adjusted by the forward markets under IRP, ensuring that any potential arbitrage gains from investing in countries with higher interest rates are neutralized by the depreciation of the domestic currency.

This theory encompasses two variants: covered interest rate parity (CIRP) and uncovered interest rate parity (UCIRP). Under CIRP, a risk-free arbitrage relationship arises when a foreign market investment instrument is fully hedged against exchange rate risks, yielding an identical return to the local currency money market investment instrument. Frenkel & Levich (1975) pointed out that deviations from CIRP can occur due to various factors such as transportation costs, liquidity preferences, politically-driven tax advantages, and other political risks.

On the other hand, UCIRP posits that the expected return on an unhedged foreign currency investment instrument should equal the comparable return on the local currency investment instrument. However, investors face uncertainty regarding future security prices. If new information is taken into account, forward exchange rates will be significantly influenced by market expectations about the future. Similarly, unhedged interest rate parity conditions will prevail in situations where information is uncertain.

2.2.6 Transaction Cost Theory

The Transaction Cost Theory endeavours to elucidate the existence of companies and their decisions to either expand or outsource activities to external entities. According to this theory, companies aim to minimize the expenses associated with exchanging resources with the external environment, as well as the bureaucratic overheads linked to internal exchanges within the company. Thus, companies assess the costs of resource exchanges with the environment against

the bureaucratic expenses of conducting activities internally (Cargill, 1991). A company's engagements with the market may sometimes be beyond its control, such as statutory obligations like taxes or regulatory rates. However, within the firm, market transactions are replaced by internal resource allocations, overseen by the entrepreneur who directs production (Barro, 1990). The Transaction Cost Theory focuses on evaluating the relative efficiency of various exchange processes. From the perspective of a firm-as-a-production-function, internalizing one or more stages of production could lead to technological economies, resulting in savings on the costs of physical inputs. Conversely, from the viewpoint of a firm-as-organization, such internalization could also yield transactional economies, involving savings on the costs of exchanging inputs, by reducing the resources needed to acquire intermediate inputs. An intermediary approach between pure market exchange and vertical integration involves the utilization of short-term and long-term contracts (Caroll, 1979).

2.2.7 Arbitrage Pricing Theory

The Arbitrage Pricing Theory (APT) model, introduced by Ross (1976), is built on the foundational assumptions that markets operate competitively and that individuals uniformly hold the belief that the returns of all assets in the economy are influenced by a linear structure of k risk factors. The APT model emerged as a response to criticisms levelled against the widely accepted Capital Asset Pricing Model (CAPM). Unlike CAPM, which establishes a linear relationship between

the excess return of assets and a single risk factor - the excess return on the market portfolio, APT offers a more nuanced framework for understanding asset pricing. The CAPM assumes that an individual investor can hold all assets. While it can be seen as a specific instance of the Arbitrage Pricing Theory (APT), the theoretical foundation of CAPM necessitates normality of returns or a quadratic utility function, which may not always be easily justified. Additionally, it can be demonstrated that any mean-variance portfolio precisely satisfies the CAPM equation. Thus, testing CAPM is essentially equivalent to evaluating the mean-variance efficiency of the market portfolio. In contrast, the true array of all investment opportunities would encompass assets of all values. In the APT framework, risk factors stem from fluctuations in fundamental economic and financial variables such as interest rates, inflation, real business activity, and exchange rates, among others. Rashid and Karachi (2007) posit that according to the Arbitrage theory, an increase in the real interest rate is expected to diminish the present value of a firm's future cash flows, consequently causing a decline in prices. Simultaneously, a higher interest rate is likely to incentivize capital inflow, eventually resulting in a decrease in the exchange rate. Therefore, the disturbance in real interest rates can potentially contribute to a positive relationship between the average level of stock prices and exchange rates.\

2.2.8 Stock Oriented Model

The model was formulated by Branson and Frankel in 1983. It depicts exchange rates as being influenced by the supply and demand dynamics of financial assets like stocks and bonds. According to this framework, a rise in stock prices prompts investors to seek more domestic assets, thereby triggering an appreciation in the domestic currency. This implies that stock prices precede exchange rates and are inversely correlated. Moreover, the appreciation of the domestic currency attracts increased foreign capital and investments into the domestic market, consequently driving further currency appreciation.

Pilbeam (1992) highlights a significant limitation of flow-oriented models, noting that they do not address international capital movements, despite the substantial scale and importance of such movements. A comprehensive examination of the literature concerning the correlation between real exchange rate volatility and trade reveals various theoretical models proposing both positive and negative impacts of exchange rate volatility on trade. Earlier empirical studies, employing diverse measures of exchange rate volatility, often struggle to identify a statistically significant relationship between exchange rate variability and trade volume. In cases where a relationship is detected, the coefficient of exchange rate volatility tends to be either negative or positive, depending on dominant factors in the foreign currency market. Stock-oriented models emphasize the significance of the financial (previously capital) account in determining exchange rates, suggesting that currency fluctuations may impact stock price movements.

2.3 Empirical Reviews

Kurt & Derekoy (2020) investigated the relationship between the change in exchange rates and the profitability of firms in Turkey. The study examined the impact of the independent variables such as change in exchange rates, asset size and foreign sales on the dependent variables such as return on assets and return on equity. A sample of 37 companies that were listed in Borsa Istanbul (BIST) 100 index, operating in the manufacturing sector. The data of the 37 companies were obtained from the official websites of Borsa Istanbul, Public Disclosure Platform, and Finnet for the period between 1999-2019. Panel data analysis, panel unit root tests, panel regression analysis, causality analysis, and moderating effect analysis were carried out. The results revealed that changes in foreign exchange rates, foreign sales and asset size of the companies do not have any significant impacts on the return on assets and return on equity during the period between 1999-2019 in Turkey. It has also been found that asset size, foreign sales, and change in exchange rates are the reasons for the return on assets and similarly, asset size, foreign sales, and change in exchange rate are the reasons for the return on equity. Lastly, changes in the foreign exchange rate and export sales have a short-term causal relationship with both return on assets and return on equity, and changes in the foreign exchange rate and total assets have a moderating effect on return on assets.

Farah (2014) examined the effect of foreign exchange rate volatility on financial performance of local oil marketing companies in Kenya. The study employed a descriptive research design. The dependent variable was financial performance measured by return on assets (ROA) while the independent variable was foreign exchange rates where the weighted average of US Dollar, Sterling Pound, Euro and Japanese Yen exchange rate to Kenya shilling, average annual interest rate and average annual inflation were used as proxies. A Population/sample 55 oil marketing companies in Kenya was adopted in the study. The study employed both primary and secondary data. Primary data was collected from the oil marketing companies using a questionnaire and self-administered drop and pick questionnaires were distributed to Chief Executive Officers (CEOs) or their Equivalent where working for oil marketing companies in Kenya. While the secondary data was collected from annual reports submitted to Petroleum institute of east Africa (PIEA) website. Annual reports of the oil marketing companies were analysed for the period between 2009 and 2013, which was the study period. Regression analysis was used to analyse the data that was collected. The data was analyzed with the use of Microsoft Excel as well as SPSS in order to generate the descriptive statistics for instance frequencies and percentages. The results indicated that there exists no significant relationship between inflation and financial performance with a p value of .392. In the same regard, the study revealed that there was no significant relationship between performance and interest rates with a p-value of (.497). Further the study showed no significant

relationship between foreign exchange volatility and performance with a p-value of (.306). It was recommendation that oil marketing companies should consider adopting Domestic or Multi-domestic strategies which are suitable for local economic environment other than applying global strategies that may be affected by forex volatility. The study further observes and recommends blending of foreign exchange rate risk management strategies that are best suited for the oil marketing companies.

Nyairo (2015) evaluated the effects of foreign exchange rate volatility on profitability of insurance industry in Kenya. The study used a descriptive research design. Further, the study investigated whether GDP growth rate, interest rate, annual growth rate of productive workforce (age 15 to 64 years) and inflation as control variables affect the profitability of insurance industry in Kenya. A sample of 49 insurance companies in Kenya was adopted and the study covered a period of ten years from 2005-2014. Secondary data was collected from Central Bank of Kenya (CBK), National Bureau of Statistics (KNBS) and the annual reports of each insurance company under study. Data was then analysed using a regression model, SPSS and Microsoft Excel statistical soft wares. The findings showed that Foreign exchange rate volatility negatively impacts on the ROA of the insurance industry. GDP growth rate and inflation also negatively affects ROA. Finally, interest rate has a positive effect on the ROA of the insurance firms. At 5% level of significance, all the independent variables are not statistically significant. The study concluded that exchange rate volatility, GDP growth rate, annual growth

rate of productive workforce (age 15 to 64 years), inflation and interest rates have insignificant effect on the profitability of insurance industry in Kenya. This implied that macroeconomic environment is responsible but only to a small extent in determining the profitability of the insurance companies in Kenya. The study then recommended that the regulatory authorities of macroeconomic environment should regulate them in such a way that they lead to favour of companies increased profitability and eventually economic growth.

Okika et al., (2018) assessed the effect of exchange rate fluctuation on the firm profitability of selected quoted conglomerates in Nigeria. Specifically, the investigated the extent to which exchange rate fluctuation affect return on capital employed (ROCE) and return on asset (ROA). sample size of the study consists 5 firms quoted conglomerates in Nigeria stock Exchange as at 2017. The study used a secondary data and data were obtained from the firms' annual report and CBN annual statistical bulletin from 2008 to 2017. The data collected were analysed using multiple regression analytical estimation technique with the aid of SPSSv21. The study tested two hypothesis which were exchange rate fluctuation does not significantly affect return on capital employed (ROCE) of selected conglomerates in Nigeria and there is no significant relationship between exchange rate fluctuation and return on asset (ROA) of selected conglomerates in Nigeria. The findings confirmed that the two hypothesis tested were insignificant. Therefore, the researcher recommended that Government should uphold the restriction policy on the importation of similar products manufactured in Nigeria.

If this is religiously pursued, it will create and open more markets for the locally manufactured goods to thrive. Also Government should make policy that aims at naira appreciation against foreign exchange which will greatly help reduce the cost of production in the manufacturing sector.

Ayodele (2014) evaluated empirically the impact of exchange rate on the Nigerian economy. The study investigated how economic induces such as exchange rate and inflation rate affects changes in Gross Domestic Product (GDP) in Nigeria. The study used Secondary data collected from Annual Reports of Central Bank of Nigeria (CBN), Nigerian Stock Exchange (NSE), and Nigeria Securities and Exchange Commission (SEC) which were analysed through the multiple regression analysis using the Ordinary Least Squares (OLS) method. The result showed that the two factors –exchange rate and inflation rate- impact significantly on the Gross Domestic Product and economic growth of Nigeria. Exchange rate has a negative impact on the GDP because as it increases, the economic growth is negatively affected, while inflation rate exerts a positive impact on GDP, indicating that firms are more willing to produce when inflation rate is high and vice versa. The outcome of the research was that the government should make Nigerian economic climate investment friendly by restoring security of lives and property, infrastructural development and improvement of local production in order to reduce the pressure on the dollar and that this would go a long way to boost the exchange rate in favour of the naira and hence improve the Gross Domestic Product.

Egolum et al., (2020) examined the effect of exchange rate fluctuation on the financial performance of quoted conglomerates in Nigeria. The study specific objectives was to ascertained the effect of exchange rate fluctuation on Return on Capital Employed (ROCE), determined the effect of exchange rate fluctuation on Return on Asset (ROA) and examined the effect of exchange rate fluctuation on Return on Equity (ROE). The study employed an ex-post facto research design. A sample of 8 quoted conglomerates firms in Nigeria was adopted. Secondary data were obtained from annual reports of the 8 quoted conglomerates in Nigeria and CBN annual statistical bulletin. The study covered a period of 12years ranging from 2007-2018. Data were analysed using multiple regression analytical estimation technique with aid of SPSSv21. The research findings revealed that exchange rate fluctuations have significant negative effect on ROCE and ROE while a positive but insignificant effect on ROA. The conclusion drawn from this study was that foreign exchange fluctuations have significant negative effect on financial performance of quoted conglomerates. The researchers recommended that Government should uphold the restriction policy on the importation of similar products manufactured in Nigeria. If this is religiously pursued, it will create and open more markets for the locally manufactured goods to thrive. Also Government should make policy that aims at Naira appreciation against foreign exchange rates which will greatly help reduce the cost of production in the manufacturing sector.

Osho et al., (2019) assessed the effect of exchange rate fluctuation on performance evaluations of multinational companies in Nigeria. The study adopted a descriptive and Ex-post facto research design. The relationship between exchange rate fluctuation indicators; Exchange rate (EXCHr), Inflation rate (INFr) and Interest rate (INTr) and Firms' Performance indicator; Return on Assets (ROA) were examined. The data for this study was obtained from secondary sources and information from Central Bank of Nigeria, Statistical Bulletin and annual reports of Dangote Group Plc concerning return on assets, exchange rate, inflation rate and interest rate covering the period of years 2001- 2018 (18years) was used. Data were tested using the Ordinary Least Square Linear Regression model. The Findings show that exchange rate fluctuation has significant effect on performance of multinational companies in Nigeria. As a result, the study concluded that exchange rate instability affects the operations of companies in Nigeria vis-à-vis international trade with other countries of the world. It was recommended that, Multinational Companies should develop a robust foreign exchange risk management framework which will clearly show its currency risk assessment procedures and implementation of foreign exchange risk management strategy. These strategies should be monitored and adjusted regularly.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter outlines the research methodology used to achieve the objectives of the study. Research methodology involves the systematic procedures a researcher follows to gather, evaluate, and determine the appropriate estimation methods after data collection. It includes the research design, population, sample and

sampling techniques, data collection methods, data analysis methods, model formulation and the operationalization of variables.

3.2 Research Design

The framework for utilizing empirical data to investigate our research question is known as the research design. As noted by Sumbl and Deeba (2019), a research design consists of a series of steps undertaken by a researcher to formulate and implement valid research inquiries. This study will employ the ex-post facto method. This method is chosen because secondary data is used, with no attempt made to control or manipulate the relevant independent variables.

3.3 Population

According to Agbonifoh and Yomere (1999), the population in a study includes all subjects or elements being examined, forming the foundation for drawing inferences or generalizations from our findings. This group is the source from which our conclusions are drawn. The population for this study comprises twenty one (21) consumer goods companies listed on the Nigerian Exchange Group (NGX) as of December 31, 2022 (NGX, 2022). However, due to practical challenges in obtaining data for the entire population, the study adopts a sampling method.

3.4 Sample and Sampling Technique

The sampling procedure focuses on selecting firms from the consumer goods sector. A random sampling method will be employed to ensure that every entity in the population has an equal chance of being chosen. This method provides an equitable opportunity for inclusion for all members of the population, a key advantage highlighted in previous research (Wimmer & Dominick, 2006). To determine the sample size, Taro Yamane's formula (Yamane, 1973) will be used with a 90% confidence level.

The formula for Taro Yamane's calculation is as follows:

$$n = \frac{N}{1 + N(e)^2}$$

Where;

n = the sample size

N = the finite population

e = the level of significance or limit of tolerable error

1 = unit or a constant

Using Taro Yamane's formula to determine the sample size,

$$n = \frac{21}{1 + 21\,(0.1)^2}$$

$$n = \frac{21}{1.21}$$

$$n = 17.35$$

Thus, a sample of 17 consumer goods companies selected randomly will be subjected to analysis.

3.5 Sources of Data

The research will primarily rely on secondary data sourced from the corporate annual reports of the selected companies, covering the financial period from 2018 to 2022, as well as the CBN annual statistical bulletin. Corporate annual reports were chosen due to their ease of access, widespread availability, and ability to ensure consistency in findings. Moreover, these reports are published annually and are publicly accessible, making them well-suited to the study's objectives. Information on return on assets (ROA) and return on capital employed (ROCE) will be extracted from the annual reports while information's on exchange rate, inflation rate and interest rate will be extracted from CBN annual statistical bulletin.

3.6 Model Specification

The following regression models were adapted from the works of Kurt and Derekoy (2020) and Okika et al. (2018). These models illustrate the relationship between foreign exchange rate fluctuations and corporate profitability among consumer goods companies listed on the Nigerian Stock Exchange. Within the scope of this research study, the two models tested are:

Model 1;

$$ROCE_{it} = \beta_0 + \beta_1 EXR_{it} + \beta_2 IFR_{it} + \beta_3 ITR_{it} + \varepsilon_{it}$$

Model 2;

$$ROA_{it} = \beta_0 + \beta_1 EXR_{it} + \beta_2 IFR_{it} + \beta_3 ITR_{it} + \varepsilon_{it}$$

Where;

ROCE = Return on Capital Empleyed

ROA = Return on Asset

EXR = Exchange Rate

IFR = Inflation Rate

ITR = Interest Rate

β_0 = Intercept/Constant

$\beta_1 \ldots. \beta_3$ = Coefficients

ε = Error term

3.7 Operationalisation of Variables

Exchange rate, inflation rate, and interest rate will be used as proxy for Exchange rate fluctuation.

Table 3.1 presents the variables under consideration and the measures used.

Variable	Symbol	Measurement (Operational definition)	Source of information

Dependent Variable: Return on Capital Employed	ROCE	Return on Capital Employed (ROCE) will be measured by dividing Net Profit by Capital Employed and then multiplying the result by 100.	Kurt and Derekoy (2020).
Dependent Variable: Return on Asset	ROA	Return on Assets (ROA) will be measured by dividing Profit before interest and Tax (PBIT) by Total Assets and then multiplying the result by 100.	Kurt and Derekoy (2020). Okika et al. (2018).
Independent Variable: Exchange Rate	EXR	Exchange Rate will be measure according to CBN annual statistical bulletin.	Okika et al. (2018).
Independent Variable: Inflation Rate	IFR	Inflation Rate will be measure according to CBN annual statistical bulletin.	Okika et al. (2018).
Independent Variable: Interest Rate	ITR	Interest Rate will be measure according to CBN annual statistical bulletin.	Okika et al. (2018).

3.8 Data Analysis Method

The data analysis in this study will utilize various statistical techniques to describe the collected data and derive conclusions and potential inferences about the observed phenomena. Both descriptive and inferential statistical methods will be employed. Descriptive statistical techniques will include calculating the mean, standard deviation, range, and constructing frequency distributions. These methods are essential for summarizing the data, making it more comprehensible without compromising the integrity of the information. Means and frequency distributions will be the primary descriptive statistics used in this investigation. Multiple linear regression and ANOVA will be the main techniques for modeling and assessing the causal relationships between the variables. Additionally, correlation analysis will be used to evaluate how well the regression line explains the variation in the dependent variable. All analyses will be conducted using the Statistical Package for the Social Sciences (SPSS) version 22.

CHAPTER FOUR

DATA PRESENTATION ANALYSIS AND INTERPRETATION

4.1 Introduction

In this section, the various variables employed in this study are tested, presented and interpreted in order to give meaningful results that can be used for decision purposes and policies. The section starts with descriptive statistics, followed by unit root test, co-integration test and error correction model is obtained. The summary of the results and the policy implications brings the chapter to a close.

4.2 Empirical Analyses

In this section, the descriptive statistics was first carried out showing co-efficient that summarizes the variables. Then the variables are rigorously tested for their stationarity using the Augmented – Dickey Fuller test. They were further tested to check the existence of long run relationship using the Johansen Co-Integration Test. Finally, the error correction model was developed and the speed of adjustment between the long and short run period was determined. The various analyses alongside their results are stated below:

4.2.1 Descriptive Statistics

Descriptive statistics basically gives a descriptive coefficient that summarizes a given set of variables. It includes measures of central tendency and measures of variability (spread). Measures of central tendency include the mean, median and mode While measures of variability include standard deviation,

variance, minimum and maximum variables, kurtosis and skewness. The table below shows the summary statistics for the variable of the study:

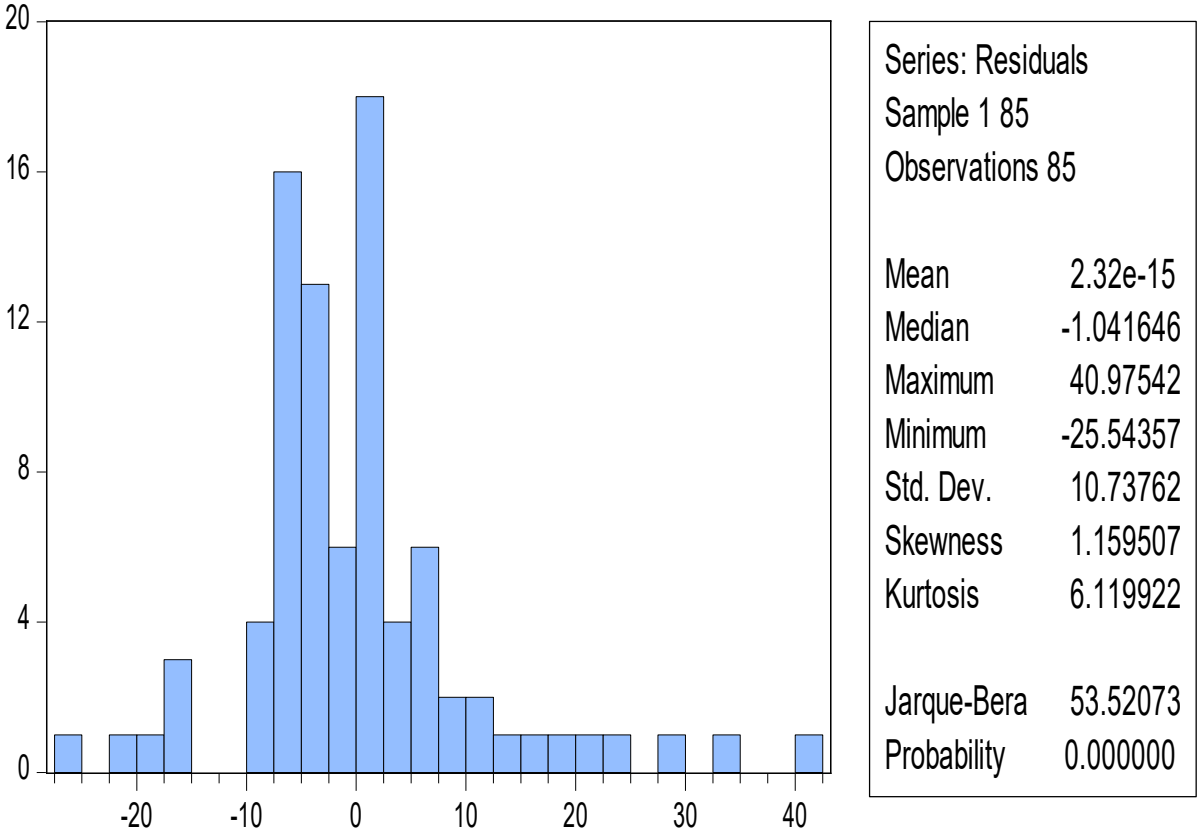
Table 1: Summary of Descriptive Statistic

	ROCE	ROA	ITR	IFR	EXR
Mean	6.0103	32.476	3.5151	10.024	138.06
Median	4.5700	6.0700	4.5000	10.200	119.50
Maximum	45.440	633.19	6.1000	12.000	563.24
Minimum	-18.430	0.6100	0.9000	7.8000	109.90
Std. Dev.	10.772	99.636	2.1556	1.1724	78.743
Skewness	1.1203	5.0368	-0.1413	-0.9688	4.3477
Kurtosis	5.8396	28.981	1.2315	2.8955	20.575
Jarque-Bera	46.341	2750.1	11.359	13.337	1361.8
Probability	0.0000	0.0000	0.0034	0.0012	0.0000
Sum	510.88	2760.5	298.79	852.10	11735
Sum Sq. Dev.	9747.3	83389	390.32	115.47	52084
Observations	85	85	85	85	85

Table 1 above shows that the mean values of ROCE, ROA, ITR, IFR and EXR are 6.0103, 32.476, 3.5151, 10.024 and 138.06 respectively. The median values which are the middle values of each variable are 4.5700, 6.0700, 4.50, 10.20 and 119.50 for ROCE, ROA, ITR, IFR and EXR respectively. The maximum and minimum values show the highest and the lowest values for each of the variables in the table below. The standard deviation from the sample mean of each variable is given above as 10.772, 99.636, 2.1556, 1.1724 and 78.743 for ROCE, ROA, ITR, IFR and EXR respectively. ROCE, ROA and EXR are all positively skewed, while ITR and IFR are negatively skewed. The mean skewness, kurtosis and

Jarque-Bera statistics are reported in the result of the histogram normality test in Fig 1 below.

Fig 1: Result of the Histogram Normality Test



Source: Researcher's Compilation (2024)

The result of the histogram normality test reported a positive mean skewness of 1.1595, which means a rightward-tailed distribution. The mean kurtosis is 6.119922 which is in excess of the benchmark of three (3) and indicates a leptokurtic distribution. The mean standard deviation of 10.73762 shows a deviation from the mean. The mean Jarque-Bera statistic of 53.52073 and

the probability value of 0.000000 are relatively large and indicate that the data do follow the Gaussian normal distribution.

4.3 Correlation Analysis

Table 2: Result of the Correlation Analysis

Covariance Analysis: Ordinary
Date: 05/28/24 Time: 11:31
Sample: 2018 2022
Included observations: 85

Correlation t-Statistic Probability	ROCE	ROA	ITR	IFR	EXR
ROCE	1.0000 ----- -----				
ROA	-0.0248 -0.2268 0.8211	1.0000 ----- -----			
ITR	-0.0579 -0.5287 0.5984	0.2022 1.8810 0.0635	1.0000 ----- -----		
IFR	0.0764 0.6982 0.4870	-0.2718 -2.5732 0.0119	-0.5648 -6.2362 0.0000	1.0000 ----- -----	
EXR	0.0044 0.0404 0.9679	-0.0769 -0.7032 0.4839	-0.2206 -2.0610 0.0424	0.2294 2.1472 0.0347	1.0000 ----- -----

Source: Researcher's Compilation (2024)

Table 2 shows the results of the correlation analysis. The correlation coefficient is mixed, with some reporting negative correlation coefficients while other variables show a positive correlation. The result shows a weak negative

relationship between return on assets and return on capital employed. The interest rate has a weak negative relationship with return on capital employed and a weak positive relationship with return on asset. Inflation rate has a weak positive relationship with return on capital employed, but maintained a weak negative relationship with return on asset and interest rate. Exchange rate has a weak positive relationship with return on capital employed and inflation rate, but maintained a weak negative relationship with return on assets and interest rate. The highest correlation coefficient is 0.2294 between exchange rate and inflation rate. This is not indicative of the problem of multicollinearity in the regression variables because it is less than the benchmark of 0.7.

MODEL ONE

4.4a Regression Diagnostics

Test of Heteroskedasticity

Table 3: Results of the Breusch-Pagan-Godfrey Test of Heteroskedasticity

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.420723	Prob. F(3,81)	0.7386
Obs*R-squared	1.304176	Prob. Chi-Square(3)	0.7281
Scaled explained SS	3.031809	Prob. Chi-Square(3)	0.3867

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 05/28/24 Time: 11:34
Sample: 1 85
Included observations: 85

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	415.1903	333.2641	1.245830	0.2164
ITR	-8.748329	16.17941	-0.540707	0.5902
IFR	-23.39520	29.80744	-0.784878	0.4348
EXR	-0.260523	0.375501	-0.693800	0.4898

R-squared	0.015343	Mean dependent var	113.9401
Adjusted R-squared	-0.021126	S.D. dependent var	259.3451
S.E. of regression	262.0702	Akaike info criterion	14.02102
Sum squared resid	5563142.	Schwarz criterion	14.13597
Log likelihood	-591.8932	Hannan-Quinn criter.	14.06725
F-statistic	0.420723	Durbin-Watson stat	0.761723
Prob(F-statistic)	0.738625		

Source: Researcher's Compilation (2024)

Table 3 presents the result of the Breusch-Pagan-Godfrey test of heteroskedasticity. The result revealed a probability value of 0.7386 > 0.05. This indicates the absence of the problem of multicollinearity. The alternative

hypothesis of homoskedasticity residual is accepted for the null hypothesis, which signifies that the variance of the residual of the regression model is constant.

Test of Serial Correlation

Table 4: Results of the Breusch-Godfrey Test of Serial Correlation

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	33.67465	Prob. F(2,79)	0.0000
Obs*R-squared	39.11663	Prob. Chi-Square(2)	0.0000

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 05/28/24 Time: 11:33
Sample: 1 85
Included observations: 85
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ITR	-0.289832	0.503735	-0.575366	0.5667
IFR	-0.554975	0.927747	-0.598197	0.5514
EXR	0.010207	0.011863	0.860443	0.3921
C	5.219346	10.37100	0.503264	0.6162
RESID(-1)	0.664021	0.112027	5.927356	0.0000
RESID(-2)	0.031720	0.113336	0.279881	0.7803

R-squared	0.460196	Mean dependent var	2.32E-15
Adjusted R-squared	0.426031	S.D. dependent var	10.73762
S.E. of regression	8.134903	Akaike info criterion	7.098178
Sum squared resid	5227.955	Schwarz criterion	7.270600
Log likelihood	-295.6726	Hannan-Quinn criter.	7.167531
F-statistic	13.46986	Durbin-Watson stat	1.935004
Prob(F-statistic)	0.000000		

Source: Researcher's Compilation (2024)

Table 4 presents the result of the Breusch-Godfrey test of serial correlation of the regression variables. The significant probability value of P= 0.0000 < 0.05 shows the presence of serial correlation in the regression variables. However, the results of the correlation analysis did not pose any serious problem of multicollinearity, which validates the outcome of the absence of the problem of serial correlation on the average.

Ramsey Reset Test

Table 5: Results of the Ramsey RESET of Model Specification

Ramsey RESET Test
Equation: UNTITLED
Specification: ROCE ITR IFR EXR C
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	0.429362	80	0.6688
F-statistic	0.184352	(1, 80)	0.6688
Likelihood ratio	0.195649	1	0.6583

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	22.26658	1	22.26658
Restricted SSR	9684.906	81	119.5667
Unrestricted SSR	9662.640	80	120.7830

LR test summary:

	Value
Restricted LogL	-321.8759
Unrestricted LogL	-321.7780

Source: Researcher's Compilation (2024)

The results of the Ramsey RESET model specification test reported a probability value of 0.6688 > 0.05 which could not sustain the null hypothesis of mis-

specified model of regression. Therefore, the alternate hypothesis of a well-specified- model is accepted for the study.

4.5a Analysis of the Regression Result

Table 6: Results of the Regression Analysis

Dependent Variable: ROCE
Method: Panel Least Squares
Date: 05/28/24 Time: 11:32
Sample: 2018 2022
Periods included: 5
Cross-sections included: 17
Total panel (balanced) observations: 85

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ITR	-0.834085	1.781235	-0.468262	0.6413
IFR	0.120889	2.029465	0.059567	0.9527
EXR	0.000705	0.020114	0.035063	0.9721
C	7.633058	23.23391	0.328531	0.7436

R-squared	0.774628	Mean dependent var	6.010353
Adjusted R-squared	0.689652	S.D. dependent var	10.77216
S.E. of regression	6.001049	Akaike info criterion	6.654674
Sum squared resid	2196.768	Schwarz criterion	7.344364
Log likelihood	-258.8236	Hannan-Quinn criter.	6.932087
F-statistic	9.115831	Durbin-Watson stat	2.121583
Prob(F-statistic)	0.000000		

Source: Researcher's Compilation (2024)

The result of the regression analysis is presented above. The preliminary analysis shows a coefficient of multiple determination of 0.774628 and an adjusted value of 0.689652, which simply explain that 77.4% of the variation

corporate profitability (return on capital employed) is explained by the independent variables considered in this study which include: interest rate, inflation rate and exchange rate. While the remaining 22.6% are captured by the error term. The F statistics value of 9.115831 which is greater than 2, indicates that all the explanatory variables taken together are statistically significant.

4.6a Test of Hypotheses

Hypothesis one: There is no significant relationship between exchange rate fluctuation and return on capital employed (ROCE) of Nigeria companies.

The regression results in Table 7 above showed a coefficient of (0.000705) for exchange rate which means a positive relationship between exchange rate fluctuation in Nigeria and firms' return on capital employed. This means a one percent increase in exchange rate will result in a 0.0705% increase in corporate profitability captured by return on capital employed. The result also revealed a t-value of 0.035063 which shows that exchange rate has a statistically insignificant relationship with corporate profitability (return on capital employed), because the t-value 0.035063 < 2 when using the rule of thumb. This was confirmed by the p-value of 09721 > 0.05. Therefore, the null hypothesis of no significant relationship between exchange rate fluctuation and return on capital employed in Nigeria companies is accepted at 5% level of significance.

Test of Control Variables

Interest rate has a coefficient of -0.834085 which reveals that interest rate has a negative relationship with return on capital employed. Therefore, increase in

interest rate will lead to a decrease in firm profitability. This relationship was seen to be statistically insignificant because the absolute value of the t-value 0.468262 < 2 considering the rule of thumb. Inflation rate also has a positive relationship with the return on capital employed and the relationship is not statistically significant as the t-value 0.059567 < 2

MODEL TWO

4.4a: Regression Diagnostics

Test of Heteroskedasticity

Table 7: Results of the Breusch-Pagan-Godfrey Test of Heteroskedasticity

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	7.298689	Prob. F(3,81)	0.0852
Obs*R-squared	18.08782	Prob. Chi-Square(3)	0.0454
Scaled explained SS	5.730774	Prob. Chi-Square(3)	0.1255

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 05/28/24 Time: 11:35
Sample: 1 85
Included observations: 85

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.403786	2.302895	-1.478046	0.1433
IFR	0.815297	0.231324	3.524485	0.0007
EXR	-0.012356	0.003325	-3.716461	0.0004
ROA	0.000373	0.002657	0.140481	0.8886

R-squared	0.212798	Mean dependent var	3.075593
Adjusted R-squared	0.183642	S.D. dependent var	2.584408
S.E. of regression	2.335077	Akaike info criterion	4.579883
Sum squared resid	441.6595	Schwarz criterion	4.694831
Log likelihood	-190.6450	Hannan-Quinn criter.	4.626118
F-statistic	7.298689	Durbin-Watson stat	3.319500
Prob(F-statistic)	0.000216		

Source: Researcher's Compilation (2024)

Table 7 presents the result of the Breusch-Pagan-Godfrey test of heteroskedasticity. The result revealed a probability value of 0.0852 > 0.05. This indicates the absence of the problem of multicollinearity. The alternative hypothesis of homoskedasticity residual is accepted for the null hypothesis, which signifies that the variance of the residual of the regression model is constant.

Test of Serial Correlation

Table 8: Results of the Breusch-Godfrey Test of Serial Correlation

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	175.2988	Prob. F(2,79)	0.0000
Obs*R-squared	69.36909	Prob. Chi-Square(2)	0.0000

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 05/28/24 Time: 11:35
Sample: 1 85
Included observations: 85
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
IFR	-1.155258	0.116133	-9.947692	0.0000
EXR	0.001886	0.001130	1.669111	0.0991
ROA	-0.001326	0.000892	-1.486569	0.1411
C	11.41333	1.144684	9.970723	0.0000
RESID(-1)	0.146967	0.055554	2.645488	0.0098
RESID(-2)	-1.205784	0.067242	-17.93196	0.0000

R-squared	0.816107	Mean dependent var	-1.49E-15
Adjusted R-squared	0.804468	S.D. dependent var	1.764145
S.E. of regression	0.780087	Akaike info criterion	2.409150
Sum squared resid	48.07430	Schwarz criterion	2.581572
Log likelihood	-96.38887	Hannan-Quinn criter.	2.478503
F-statistic	70.11952	Durbin-Watson stat	1.424071
Prob(F-statistic)	0.000000		

Source: Researcher's Compilation (2024)

Table 8 presents the result of the Breusch-Godfrey test of serial correlation of the regression variables. The significant probability value of P= 0.0000 < 0.05 shows the presence of serial correlation in the regression variables. However, the results of the correlation analysis did not pose any serious problem of multicollinearity, which validates the outcome of the absence of the problem of serial correlation on the average.

Ramsey Reset Test

Table 9: Results of the Ramsey RESET of Model Specification

Ramsey RESET Test
Equation: UNTITLED
Specification: ITR IFR EXR ROA C
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	2.714594	80	0.0581
F-statistic	7.369023	(1, 80)	0.0581
Likelihood ratio	7.489703	1	0.0062

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	22.04957	1	22.04957
Restricted SSR	261.4254	81	3.227474
Unrestricted SSR	239.3758	80	2.992197

LR test summary:

	Value
Restricted LogL	-168.3584
Unrestricted LogL	-164.6136

Source: Researcher's Compilation (2024)

The results of the Ramsey RESET model specification test reported a probability value of 0.0581 > 0.05 which could not sustain the null hypothesis of mis-specified model of regression. Therefore, the alternate hypothesis of a well-specified- model is accepted for the study.

4.5b Analysis of the Regression Result

Table 10: Results of the Regression Analysis

Dependent Variable: ROA
Method: Panel Least Squares
Date: 05/28/24 Time: 13:29
Sample: 2018 2022
Periods included: 5
Cross-sections included: 17
Total panel (balanced) observations: 85

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EXR	0.007860	0.275750	0.028506	0.9774
ITR	7.966164	24.41994	0.326216	0.7454
IFR	-11.23550	27.82306	-0.403819	0.6878
C	116.0213	318.5265	0.364244	0.7169

R-squared	0.504871	Mean dependent var	32.47647
Adjusted R-squared	0.318183	S.D. dependent var	99.63604
S.E. of regression	82.27170	Akaike info criterion	11.89086
Sum squared resid	412886.6	Schwarz criterion	12.58055
Log likelihood	-481.3616	Hannan-Quinn criter.	12.16827
F-statistic	2.704355	Durbin-Watson stat	2.973537
Prob(F-statistic)	0.001035		

Source: Researcher's Compilation (2024)

The result of the regression analysis is presented above. The preliminary analysis shows a coefficient of multiple determination of 0.504871 and an adjusted value of 0.318183, which simply explain that 50.4% of the variation in corporate profitability (return on asset) is explained by the independent variables considered in this study which include: interest rate, inflation rate and exchange rate. While the remaining 49.6% are captured by the error term. The F statistics value of 2.704355 which is greater than 2, indicates that all the explanatory variables taken together are statistically significant.

4.6b Test of Hypotheses

Hypothesis two: There is no significant relationship between exchange rate fluctuation and return on asset (ROA) of Nigeria companies.

The regression results in Table 10 above showed a coefficient of (0.007860) for exchange rate which means a positive relationship between exchange rate fluctuation in Nigeria and firms' return of assets. This means a one percent increase in exchange rate will result in a 0.786% increase in corporate profitability captured by return on assets. The result also revealed a t-value of 0.028506 which shows that exchange rate has a statistically insignificant relationship with corporate profitability (return on assets), because the t-value $0.028506 < 2$ when using the rule of thumb. This was confirmed by the p-value of $0.9774 > 0.05$. Therefore, the null hypothesis of no significant relationship between exchange rate fluctuation and return on assets in Nigeria companies is accepted at 5% level of significance.

Test of Control Variables

Interest rate has a coefficient of 7.966164 which reveals that interest rate has a positive relationship with return on assets. Therefore, an increase in interest rate will lead to an increase in firm profitability (return on assets). This relationship was seen to be statistically insignificant because the absolute value of the t-value 0.326216 < 2 considering the rule of thumb. The inflation rate has a coefficient of -11.2355 which implies a negative relationship between inflation rate and return on assets and the relationship is not statistically significant as the absolute value of the t-value 0.403819 < 2.

4.7 Discussion of Findings

This study examined the impact of exchange rate fluctuation on corporate profitability in Nigeria. The study discovered that exchange rate has a positive but statistically insignificant relationship with the return on capital employed. This finding is in line with the findings of Okika et al., (2018), whose study revealed that exchange rate fluctuation does not significantly affect return on capital employed. However, the study is not consistent with the finding of Egolum et al., (2020), whose study revealed that exchange rate fluctuation has a significant negative effect on return on capital employed.

This study also found that there exists a positive relationship between exchange rate and return on assets but this relationship is statistically insignificant at 5% level of significance. This finding is consistent with the findings of Kurt & Derekoy (2020), whose study revealed that exchange rate changes does not have a

significant impact on the return on asset of firms. However, the findings is not in line with the finding of Nyairo (2015), whose study revealed that exchange rate volatility has a negative relationship with return on assets.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

5.1 Summary of Findings

2 Exchange rate fluctuation has a positive and statistically insignificant relationship with the return on capital employed.

3 There exists a positive relationship between exchange rate fluctuation and return on assets. However, this relationship is statistically insignificant at 5% level of significance.

5.2 Conclusion

The study explored the impact of exchange rate fluctuation on corporate profitability. The data used was obtained from the annual report of the 17 firms considered and covered a time frame of 2018 to 2022 period on an annual basis. Statistical and econometric measures were carried out for the study. And the empirical results were quite revealing indicating a positive relationship between exchange rate and corporate profitability. Following a detailed analysis, the study conclusively revealed exchange rate fluctuation has a positive relationship with corporate profitability. Exchange rate volatility has a statistically insignificant positive relationship with return on assets and return on capital employed. Interest rate has a negative relationship with return on capital employed, while there exists a statistically insignificant positive relationship between inflation rate and return

on capital employed. There exists a positive relationship between interest rate and return on assets, while inflation rate has a statistically insignificant negative relationship with return on assets.

5.3 Recommendations

The following recommendations were made in line with the above findings:

3. Government should formulate policies that will be very consistent in controlling exchange rate fluctuations, as exchange rate fluctuation can distort labour rate and cost of other material inputs used by companies.
4. The government should ensure the restriction of the importation of goods manufactured in Nigeria. If this is done, it will create more markets for locally manufactured goods in Nigeria and improve the firm profitability.

REFERENCES

Adebiyi, M. A., & Abeng, M. O. (2019). The sensitivity of sector stock returns to exchange rate risks in Nigeria. *Economic and Financial Review*, *57*(2), 1.

Afza, M., & Alam, K. (2014). Managing foreign exchange risk among Ghanaian firms. *Journal of Risk Finance, 6*(4), 306-318.

Agbonifoh, B.A. & Yomere, G.O. (1999). *Research methodology in the social sciences and education*. Uniben Press, Benin.

Ahmad, N., Salman, A., & Shamsi, A. (2015). Impact of financial leverage on firms' profitability: An investigation from cement sector of Pakistan. *Research Journal of Finance and Accounting, 6*(7), 2222-1697.

Akpan, E. O., & Atan, J. A. (2020). Inflation and exchange rate dynamics in Nigeria: A non-linear approach. *Journal of African Business, 21*(4), 463-482.

Amenawo, I., Riman, H. B., & Akpan, E. S. (2016). Foreign exchange fluctuations and commercial banks profitability in Nigeria. *Foreign exchange*, *7*(18).

Amiti, M., Itskhoki, O., & Konings, J. (2023). International shocks and domestic prices: How large are strategic complementarities? *American Economic Review, 113*(1), 199-246.

Ani, W. U., Ugwunta, D. O., & Okanya, O. (2013). The effect of foreign exchange reforms on financial deepening: Evidence from Nigeria. *International Journal of Business and Commerce, 2*(3), 204-209.

Auer, R., Burstein, A., & Lein, S. M. (2021). Exchange rates and prices: Evidence from the 2015 Swiss franc appreciation. *American Economic Review, 111*(2), 652-686.

Augustine, E. O., & Ayobami, O. (2022). Exchange rates fluctuations, economic factors and financial performance evaluation of multinational companies in Nigeria. *Acta Universitatis Danubius. Œconomica, 18*(5).

Ayodele, J. C. (2014). Effects of monetary policy on the commercial banks lending in Nigeria. *Review of Public Administration and Management, 400*(3614), 1-13.

Bailliu, J., & Bouakez, H. (2004). Exchange rate pass-through in industrialized countries. *Bank of Canada Review, 2004*(Spring), 19-28.

Bénassy-Quéré, A., Bussière, M., & Mignon, V. (2022). On the link between exchange rate regimes and economic integration. *International Economics, 170*, 158-177.

Bhangu, P. K. (2020). Persistence of profitability in top firms: Does it vary across sectors? *Competitiveness Review: An International Business Journal, 30*(3), 269-287.

Boakye, F. K., Dwomoh, N., Pu-Engyii, R. S., Memuna, M., Oduro, D., & Nuamah, N. O. (2012). The effect of exchange rate fluctuation on the profitability of small scale enterprise in Ghana (Doctoral dissertation).

Boakye, F. K., Dwomoh, N., Pu-engyii, R., Salamat, M. M., Oduro, D., & Osei, N. N. (2012). *The Effect of Exchange Rate Fluctuation on the Profitability of Small Scale Enterprise in Ghana* (Doctoral dissertation).

Bordo, M. D., & Helene, R. (2020). The Bretton Woods international monetary system. In *The Cambridge Economic History of the Modern World* (pp. 307-344). Cambridge University Press.

Copeland, L. (2005). Exchange rates and international finance (4th ed.). London: Prentice Hall.

Copeland, L. S. (2021). *Exchange rates and international finance*. Pearson Education.

Doğanay, M. (2016). Döviz kuru riski yönetimine sektörel bir yaklaşım. *International Journal of Cultural and Social Studies, 2*(1), 149-164.

Dornbusch, P. (1976). Impulse response analysis in infinite order cointegrated vector autoregressive processes. *Journal of Econometrics, 81*(1), 127-157.

Egolum, P. U., Iliemena, R. O., & Goodluck, H. C. (2020). Exchange rate fluctuations and financial performance of Nigerian companies: Study of quoted conglomerates (2007-2018). *International Journal of Innovative Research and Advanced Studies, 7*(7), 354-364.

Eiteman, D. K., Stonehill, A. I., & Moffett, M. H. (2021). *Multinational business finance*. Pearson.

Emre, Kurt, & Derekoy, F. (2020). Analysis of the relationship between exchange rate changes and profitability in turkey: example of bist manufacturing sector. *Journal of Business Economics and Finance*, *9*(4), 304-319.

Engel, C. (2014). Exchange rates and interest parity. In G. Gopinath, E. Helpman, & K. Rogoff (Eds.), *Handbook of International Economics* (Vol. 4, pp. 453-522). Elsevier.

Farah, M. M. (2014). The effect of foreign exchange rate volatility on the financial performance of oil marketing companies in Kenya (Doctoral dissertation).

Grambovas, C. A., & McLeay, S. (2006). Corporate value, corporate earnings and exchange rates: An analysis of the Eurozone. *Accounting, Finance & Governance Review, 13*(3), 65-83.

Grambovas, M., & McLeay, K. (2002). Do firms hedge in response to tax incentives? *The Journal of Finance, 57*(2), 815-839.

Gschwandtner, A. (2021). Profit persistence in the U.S. food industry: Evidence from five sectors. *International Journal of the Economics of Business, 28*(1), 43-64.

Hashmi, A. R., & Munir, K. (2021). Foreign exchange markets and their importance. In *Introduction to Foreign Exchange & Money Markets* (pp. 1-26). Routledge.

International Poverty Centre. (2006). Country Study No. 6.

Jhingan, M. (2004). *Money, banking, international trade and public finance*. Vrinda Publications Ltd. Retrieved from: https://www.goodreads.com/book/show/6203237-money-banking-international-trade-and-public-finance

Kanamori, T., & Zhao, Z. (2006). The Renminbi exchange rate revaluation: Theory, practice, and lessons from Japan. ADBI policy papers; no. 9.

Karfakis, C., & Kim, S. J. (1995). Exchange rates, interest rates and current account news: Some evidence from Australia. *Journal of International Money and Finance, 14*(4), 575-595.

Karluk, R. (2009). *Uluslararası ekonomi: Teori-Politika* (9. Baskı). Beta.

Krugman, P. R., Obstfeld, M., & Melitz, M. J. (2022). Exchange rates and the foreign exchange market: An asset approach. In *International Economics: Theory and Policy* (pp. 347-379). Pearson.

Kurt, E., & Derekoy, F. (2020). Analysis of the relationship between exchange rate changes and profitability in Turkey: Example of BIST manufacturing sector. *Journal of Business Economics and Finance, 9*(4), 304-319.

Kurt, E., & Derekoy, F. (2020). Analysis of the relationship between exchange rate changes and profitability in turkey: example of bist manufacturing sector. *Journal of Business Economics and Finance*, *9*(4), 304-319.

Langat, F. C. (2017). The effects of exchange rate movements on corporate profitability of firms listed at the Nairobi Securities Exchange (Doctoral dissertation, University of Nairobi).

Lee, J. (2009). Does size matter in firm performance? Evidence from U.S. public firms. *International Journal of the Economics of Business, 16*(2), 189-203.

Macharia, C. (2013). Effects of foreign exchange rate determinants on the profitability of forex bureaus in Kenya (Doctoral dissertation, University of Nairobi).

Madura, J. (2012). *International financial management* (11th ed.). South Western: Cengage Learning.

Madura, J., & Fox, R. (2021). *International financial management* (14th ed.). Cengage Learning.

Mordi, A. M. (2006). The impact of monetary policies on the exchange rate: A GMM approach. *Iran Economics Review, 19*(2), 177-191.

Ndung'u, N. S. (1997). Price and exchange rate dynamics in Kenya: an empirical investigation (1970-1993). *Research paper/African Economic Research Consortium; 58*.

Nyairo, E. K. (2015). The effect of foreign exchange rate volatility on profitability of insurance industry in Kenya (Doctoral dissertation, University of Nairobi).

Obstfeld, M., & Rogoff, K. (2021). Exchange rate regimes: Choices and consequences. In *Foundations of International Macroeconomics* (pp. 627-674). MIT Press.

Okika, E., Udeh, D. F., & Okoye, G. O. (2018). Effect of exchange rate fluctuation on firm profitability: Evidence from selected quoted conglomerates in Nigeria. *SSRN*. Available at https://ssrn.com/abstract=3461137

Okika, E., Udeh, D. F., & Okoye, G. O. (2018). Effect of exchange rate fluctuation on firm profitability: Evidence from selected quoted conglomerates in Nigeria. *Available at SSRN 3461137*.

Okika, E., Udeh, D. F., & Okoye, G. O. (2018). Effect of exchange rate fluctuation on firm profitability: Evidence from selected quoted conglomerates in Nigeria. *Available at SSRN 3461137*.

Osho, A. E., & Efuntade, A. O. (2019). Effect of exchange rate fluctuation on the financial performance evaluation of multinational companies in Nigeria. *Research Journal of Finance and Accounting, 10*(16), 35-43.

Osundina, C. K., Ademola, O. J., Olamide, J. O., & Moses, O. I. (2016). Exchange rate volatility and banks performance: Evidence from Nigeria. *International journal of economics and business management*, *2*(4), 1-11.

Otuori, O. H. (2013). Influence of exchange rate determinants on the performance of commercial banks in Kenya. *European Journal of Management Sciences and Economics, 1*(2), 86-98.

Palepu, K. G., Healy, P. M., Wright, S., Bradbury, M., & Coulton, J. (2020). *Business analysis and valuation: Using financial statements*. Cengage AU.

Penman, S. H. (2013). *Financial statement analysis and security valuation*. McGraw-Hill.

Pilbeam, D. (1992). Operational hedges and the foreign exchange exposure of U.S. multinational corporations. *Journal of International Business Studies, 32*(4), 793-812.

Rashid, A., & Karachi, M. (2007). Exchange rate changes, inflation and the value of the multinational corporation. *Journal of Finance, 30*(2), 485-502.

Reid, W., & Joshua, D. (2004). *The theory and practice of international financial management*. Prentice Hall of India.

Reinhart, C. M., & Rogoff, K. S. (2004). The modern history of exchange rate arrangements: A reinterpretation. *The Quarterly Journal of Economics, 119*(1), 1-48.

Ross, S. A., Westerfield, R. W., Jaffe, J. F., & Jordan, B. D. (2022). *Corporate finance* (13th ed.). McGraw-Hill Education.

Ross, S. A., Westerfield, R. W., Jaffe, J. F., & Jordan, B. D. (2008). *Modern financial management* (8th ed.). McGraw-Hill Irwin.

Staikouras, C., & Wood, G. (2004). The determinants of European bank profitability. *International Business and Economics Research Journal, 3*(6), 57-68.

Steil, B. (2022). The battle of Bretton Woods: John Maynard Keynes, Harry Dexter White, and the making of a new world order. In *The Battle of Bretton Woods*. Princeton University Press.

Sumbl, A.K., & Deeba, K. (2019). The Research Design. *Journal of critical review, 6*(3), 367-368.

Twarowska, K., & Kakol, M. (2014, June). Analysis of factors affecting fluctuations in the exchange rate of polish zloty against euro. In Human Capital without Borders: Knowledge and Learning for Quality of Life; *Proceedings of the Management, Knowledge and Learning International Conference 2014* (pp. 889-896). ToKnowPress

Ubindi, B. S. (2006). A survey of foreign exchange risk management practices by forex bureaus in Kenya (Unpublished MBA project). University of Nairobi.

Yamane, T. (1973). Statistics: An introductory analysis.

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APPENDIX

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.420723	Prob. F(3,81)	0.7386
Obs*R-squared	1.304176	Prob. Chi-Square(3)	0.7281
Scaled explained SS	3.031809	Prob. Chi-Square(3)	0.3867

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 05/28/24 Time: 11:34
Sample: 1 85
Included observations: 85

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	415.1903	333.2641	1.245830	0.2164
ITR	-8.748329	16.17941	-0.540707	0.5902
IFR	-23.39520	29.80744	-0.784878	0.4348
EXR	-0.260523	0.375501	-0.693800	0.4898

R-squared	0.015343	Mean dependent var	113.9401
Adjusted R-squared	-0.021126	S.D. dependent var	259.3451
S.E. of regression	262.0702	Akaike info criterion	14.02102
Sum squared resid	5563142.	Schwarz criterion	14.13597
Log likelihood	-591.8932	Hannan-Quinn criter.	14.06725
F-statistic	0.420723	Durbin-Watson stat	0.761723
Prob(F-statistic)	0.738625		

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	7.298689	Prob. F(3,81)	0.0852
Obs*R-squared	18.08782	Prob. Chi-Square(3)	0.0454
Scaled explained SS	5.730774	Prob. Chi-Square(3)	0.1255

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 05/28/24 Time: 11:35
Sample: 1 85
Included observations: 85

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.403786	2.302895	-1.478046	0.1433
IFR	0.815297	0.231324	3.524485	0.0007
EXR	-0.012356	0.003325	-3.716461	0.0004
ROA	0.000373	0.002657	0.140481	0.8886

R-squared	0.212798	Mean dependent var	3.075593
Adjusted R-squared	0.183642	S.D. dependent var	2.584408
S.E. of regression	2.335077	Akaike info criterion	4.579883
Sum squared resid	441.6595	Schwarz criterion	4.694831
Log likelihood	-190.6450	Hannan-Quinn criter.	4.626118
F-statistic	7.298689	Durbin-Watson stat	3.319500
Prob(F-statistic)	0.000216		

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	175.2988	Prob. F(2,79)	0.0000
Obs*R-squared	69.36909	Prob. Chi-Square(2)	0.0000

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 05/28/24 Time: 11:35
Sample: 1 85
Included observations: 85
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
IFR	-1.155258	0.116133	-9.947692	0.0000
EXR	0.001886	0.001130	1.669111	0.0991
ROA	-0.001326	0.000892	-1.486569	0.1411
C	11.41333	1.144684	9.970723	0.0000
RESID(-1)	0.146967	0.055554	2.645488	0.0098
RESID(-2)	-1.205784	0.067242	-17.93196	0.0000

R-squared	0.816107	Mean dependent var	-1.49E-15
Adjusted R-squared	0.804468	S.D. dependent var	1.764145
S.E. of regression	0.780087	Akaike info criterion	2.409150
Sum squared resid	48.07430	Schwarz criterion	2.581572
Log likelihood	-96.38887	Hannan-Quinn criter.	2.478503
F-statistic	70.11952	Durbin-Watson stat	1.424071
Prob(F-statistic)	0.000000		

Ramsey RESET Test
Equation: UNTITLED
Specification: ITR IFR EXR ROA C
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	2.714594	80	0.0581
F-statistic	7.369023	(1, 80)	0.0581
Likelihood ratio	7.489703	1	0.0062

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	22.04957	1	22.04957
Restricted SSR	261.4254	81	3.227474
Unrestricted SSR	239.3758	80	2.992197

LR test summary:

	Value
Restricted LogL	-168.3584
Unrestricted LogL	-164.6136