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MARKET RISK EFFECTS AND FINANCIAL PERFORMANCE OF LISTED BREWERY FIRMS IN NIGERIA

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ABSTRACT:

In Nigeria today, many firms were noted to have closed down in recent time and the attendant effects on national economic growth as workers were massively disengaged due to failed business problem. The broad objective of the study is to determine the effect of market risk on financial performance of listed brewery firms in Nigeria. Specifically, the effects of inflation rate, exchange rate, interest rate, tax rate and liquidity risk on asset turnover of listed Brewery firms in Nigeria. The study used ex-post facto research design. The population of the study was made up of all the five (5) listed breweries companies on the Nigerian Exchange Group. The study used purposive sampling technique to sample the four (4) brewery firms. Secondary data were extracted from Central Bank of Nigeria (CBN) Statistical Bulletin (2021) and audited financial statements and annual reports of the individual brewery firms from 2012 to 2021. The regression estimates were estimated using Ordinary Least Square regression and Generalized Least Square regression, at 5% level of significance. The results showed that: inflation rate and tax rate have a positive but non-significant effect on asset turnover of quoted breweries firms in Nigeria; interest rate has a negative and non-significant effect on asset turnover of quoted breweries firms in Nigeria; exchange rate has a negative but significant effect on asset turnover of quoted breweries firms in Nigeria and liquidity risk has a positive and significant effect on asset turnover of quoted breweries firms in Nigeria. The study concluded that a sub-optimal balance between liquidity and profitability trade-offs will result in a negative influence on the financial performance of the firm. In order to help breweries firms boost their performance, the researcher recommends that the cost of credit facilities should be reviewed downwards to enable smooth repayment and increase in the demand for loans by breweries firms to enable them grow their businesses which will in effect have positive effect in the economy.

1. INTRODUCTION

Market risks arise on account of the uncertainties and the tendency of individual security to move together with changes in the market. This type of risk cannot be reduced through diversification; it is a covariance of the individual securities in the portfolio (Pandy, 2006). The obvious truth is that the presence of market risk in Nigerian is relatively constant; and the need for critical review and analysis on it is inevitable. Therefore, firms in this region should not focus on their benefits only, but also consider the incidence of market risk as a limiting factor for maximum efficiency (Hossein, Saeed & Meysam, 2012). The portfolio theory of Capital asset pricing model (CAPM) indicates that the greater the potential return being expected, the greater the risk that is assumed. Over time, business mortalities have been higher than that of birth, owing to market risks, thus, showing the worrisome rate at which firms liquidate or drop below targeted return. The problem that faces industrial firms all over the world is that future is uncertain and the value of possible systematic risks cannot be determined precisely. Alao and Adebwojo (2012) really goes to state that risk is a prevalent phenomenon in all aspect of business.

The base of some industries in Nigeria today resulted in the collapse of businesses, as their workers were sent unexpectedly out of the labour market occasioned by inadequate management of uncertainties. Indeed, given a foggy nature of some firms in any industry in Nigeria, it has become important for management to pay adequate attention to the volatility in global economic climate owing to market risk, since failure to do so might have daring consequences (Oladapo & Adefemi, 2015). The admissible threshold of market risk is the amount of potential unexpected loss which firms are willing to assume because of unexpected and unfavourable changes in market variables (Milanova, 2010). These market variables include interest rate, exchange rate, inflation rate, tax rate, liquidity rate, stock prices and political risk. It is widely held view that the movements of these market risks indices affect brewery firms' cash flows, mostly those that involves in international business affinity, by causing changes in the home currency value of foreign currency denominated revenue. Moreover, market risk entails losses in liquid portfolio arising from movement in market prices and consisting of interest rate, currency, equity and commodity risk (Kahihu, Wachira & Muathe, 2021). The policy for the market risk control and management are often subordinates to several main aims namely:- To protect the firms against unexpected losses and to contribute to income stability via independent identification, assessment and understanding of business market risks. To contribute in bringing the firm's organizational structure and management process in line with the best international practices and to set minimum standard for market risks control (Aykut, 2016). Furthermore, to create transparent objective and consistent information system of the market risk as a base for reasonable

decision making. All so, to establish a structure that will help firms to realize the connection between the business strategy and the operation on one hand, and between the purpose of risk control and monitoring on the other (Abdellahi, Mashkani & Hosseini, 2017).

Financial performance on the other hand refers to the act of performing financial activity (Nwangi, 2014). It involves the degree to which financial objectives of firms have been accomplished (Onyencha, 2011). Therefore, financial performance of brewery firms measures the result of the firm's policy and operation in monetary terms. Although, it is a subjective measure of how well a firm uses its asset to generate revenue. However, these activities of industries in Nigeria to generate revenue are exposed to varying degree of risks, especially market risk (Aykut, 2016). In Nigeria today, many firms closed down in recent time and the attendant effects on national economic growth as workers were massively disengaged due to failed business problem (Alao & Adebowajo, 2012). This research hinged on a discovery whether these business problems in Nigerian are caused by market risk. Market risk is a function of uncertainties on inflation rate, interest rate, political instability, tax rates, exchange rate and liquidity rate. Meanwhile management of the market risk is fast becoming a central point of interest for firms in Nigeria, taking into consideration the magnitude of its effects generated by the recent economic meltdown. Therefore, instability associated with market risk dynamic draws the attentions of the researchers to develop new way of counteracting its effect on breweries in Nigeria. Indeed, a lot of scholars like Milanova (2010), Aykut (2016) and Ebrahim, Kazem, Nader and Reza (2013) have conducted research on market risk and corporate financial performance of listed banks and other service oriented companies in Nigeria, but failed to carry out any research on brewery firms' despite their impact on the economy of Nigeria mostly in employment opportunities and GDP. Much of the findings show that market risks have a significant effect on financial performance of banks and other service oriented companies in the world. But market risk as it affects service oriented firms are quite different from brewery firms that have tangible products, inherent conversion cost, and thus, apparent cost of materials exposures as limiting factors for maximum efficiency. For this reason, we took a paradigm shift from their work to study the effects of market risk on financial performance of listed brewery firms in Nigeria. Also, studies like Aykut (2016), Jane, Willy and Ken (2016). Leyia (2015), and Lambe (2015) have been carried out on market risk and financial performance of quoted banks and other financial institution. Existing studies which examined the effect of market risks on firm financial performance concentrated on firms under industrial goods, conglomerates, construction firms, agricultural firms (Farah, 2013; Awoke, 2014; Nwangi, 2014) but paid no specific research interest on breweries industries. Secondly, most of the study conducted already used financial performance indicators such as earning per share, return on Assets, Return on Equity and Return on Capital Employed, neglecting the index of efficiency ratio such as asset turnover. The present study

contributed to the body of knowledge by addressing these two gaps in knowledge: variable gap and sector gap.

1.1 Objectives of the Study

The general objective of the study is to examine the effect of market risk on financial performance of listed brewery firms in Nigeria. The specific Objectives are;

1. to evaluate the effect of inflation rate, exchange rate and liquidity risk on asset turnover of listed breweries firms in Nigerian
2. to evaluate the effect of interest rate and tax rate on asset turnover of listed breweries in Nigeria.

1.2 Hypotheses

To achieve the objective of this study the following hypotheses were stated in their null form.

H_{o1}: Inflation rate, Exchange rate and Liquidity risk have no significant effect on asset turnover of quoted breweries firms in Nigeria.

H_{o2}: Interest rate and Tax rate have no significant effect on asset turnover of quoted breweries in Nigeria.

2. LITERATURE REVIEW

2.1 Conceptual review

2.1.1 Market Risk

This is the risk of losses in liquid portfolio arising from movements in market prices and consisting of interest rate, currency, equity and commodities risks (Aykut, 2016). Milanova, (2010) avers that market risk is the risk that the financial instruments value will fluctuate as a result from market price changes, regardless whether these changes are caused by factors typical for individual instruments or their issuer (counterparty) or by factors pertaining to all the instruments traded on the market. It is a dominant source of income fluctuation in industries all over the world, (Jane, Willy & Ken, 2016). It is the possibility for an investor to experience losses due to factors that affect the overall performance of the financial market in which he is involved. Market risk, also called systematic risk cannot be eliminated through diversification, though it can be hedged against. Sources of market risk include recession, political turmoil, changes in interest rates, natural disasters and terrorist attacks (Kahihu, Wachira & Muathe, 2021). Market risk as the loss which occurs on the balance sheet position which leads to unfavourable movement in market price.

Aruwa and Musa (2014) say that market risk com[rises of exchange rate, inflation and interest rate risk, which affects performance of any entity and are outside the control of the entity, as they are determined by factor that affect the overall economy. It relates to the volatility of the market price of assets and involves exposure to movements in the level of financial variables, such as stock prices, interest rate, exchange rates or commodity prices. Lou (2017) states that market risk is the fluctuation of returns caused by the macroeconomic factors that affect all risk assets. It comprises of the "unknown" that occur as a result of everyday life (opportunity cost of putting money at risk). This type of risk cannot be reduced by investing in a bundle or combination of individual assets or securities (diversification). Pandy (2006) equally stated that investors are exposed to market risk even when they hold well-diversified portfolios of securities. Resource mobilizing institutions are affected by market risk which affects their financial performance in the economy (Godana, 2012). It has an effect on the productivity of an entity (Nimalathasan & Pratheepkanth, 2012). Koch and MacDonald (2014) affirm that market risk can be generally said to consist of three lesser risk, stock price risk, interest rate risk and foreign exchange risk. The study of Fama and French (2012) show that there is a flat relationship between market risk and return.

2.1.2 Inflation Rate

This is the percentage rate of change of a price index over time. In line with this definition, the rate of inflation is stated as percentage increase in prices of any given data as compared to the same data of previous year (Oleka, Eyisi & Onyeze, 2014). Onwumere and Suleman (2010) suggest three main types of price indices which are often used to measure inflationary effects in an economy namely consumer price index (CPI) whole price index (WPI) and implicit price index (the GDP deflector). Inflation rate can worsen macroeconomic performance by disrupting the mechanism of exchange in a decentralized market economy (Quamrul, Boris & Peter, 2016). In support of this assertion, Heimann and Leijonhufud (2015) state that inflation rate might impede the market mechanism responsible for coordinating economic activities. Quamrul, Boris and Peter (2016) revealed that the trend of inflation rate has a powerful adverse effect on economic performance, that is low inflation rate can stagger instability in the economy. To express further, Oleka, Eyisi and Onyeze (2014) say that rate of inflation is a function of money supply and thus, one can conclude that inflation rate is a monetary phenomenon. If there is inflation, price can be increased to cover increasing cost, therefore, the impact on the project profitability would be the same if the assumed rate of inflation to be zero (Pandy, 2006). Rate of inflation is important to accountant in cushioning the effect of inflation while appraising investment project as well as preparation of financial statement (Thompson, Watson & Seizer, 2009). Edward and Ping (2010) note that rapid economic growth has taken place mainly in countries with

high rate of inflation; hence a widespread belief is that inflation and economic growth are positively and significantly related.

2.1.3 Interest Rate

Interest rate is described as the certain amount of cash compensation by person on the utilization of funds for a specific time period (Garner, 2011). It plays an important function of influencing purchasing power, thus, stimulates stability in the overall economy by managing foreign trade rates and by controlling the inflation (Waseem & Adul, 2014). It is used to summarize the whole business debts, including the receipt of debt, excellence of the debt, expectation of various participation proportions and fixed floating mixture of the debt (Wambua, 2010). Interest rate is a reward for the use of capital in production (Kiran, 2012). Macroeconomic factors are among the most influential sources for variation in interest rate volatility (Chirwa & Mlachila, 2004). Interest rate according to Garner (2011) affects demand for money in America.

Wambua (2010) infers that high interest volatility may depress capital spending through increment of the risks that are associated with investment decision. Interest rate is a function of inflation targets (Piere & Leslaw, 2011). It is regulated by the monetary policy changes that are applicable by the central bank of any government and perhaps affect capital investments and stability of prices in any given economy. Damodar, Dawn and Sangeetha (2013) in their opinion state that rate of interest is not influenced permanently by money growth and therefore is essentially unaffected by monitoring policy. Rami, Gery and Steve (2013) affirm that unexpected changes in interest rate negatively affects firm's performance by increasing the cost of debt and reducing required rate of return.

2.1.4 Exchange Rate

An exchange rate consists of the ratio at which one currency may be converted into another. It represents the price of one currency stated in terms of another currency. Thus, exchange rate takes into account all expected interest rate and purchasing power differential (Mbubi, 2013). Bradley and Mole (2012) note that exchange rate is a financial function, and thus affects the firm's financial position. Volatile exchange rates do reduces cash flows and profitability of any firm and this, brings about foreign exchange risk by limiting volatile forex exposure on the firm's financial performance (Bradley & Moles, 2012). In the opinion of Shapiro (2013), exchange rates fluctuations affect the value of a multinational company mainly via foreign sales and foreign (net) assets, which have to be denominated in the domestic currency of the parent company. Exchange rate is a product of transaction exposure, translation exposure and economic exposure (Ezejulo, 2001). According to him, there are two major types of exchange rate namely: flexible exchange rate and managed floating exchange rates.

In his assertion, exchange rates are the indispensable tool of international finance by means of which the wheels of international trade are lubricated.

Exchange rate plays role in connecting the price system in different countries, thus, enabling traders to compare price directly. Similarly, exchange rate have a powerful effect on imports and exports of the countries concerned through its effects on relative price of goods. Exchange rate facilitates money demand for productive purpose. Muriithi, (2011) posits that exchange rate had an influence on market performance for manufacturing firms. Onyencha (2011), in his study, submits that exchange rate risk can reduce project and asset qualities. Leyia (2015) in his work also asserts that exchange rate signifies the price of the currency of one country in terms of the currency of another. Jamal, Mohamed and Ali (2014) reveal that any forms in multinational businesses are faced with an exchange rate risk which can have severe financial consequences if not managed appropriately.

2.1.5 Tax Rate

Section 8 of the Companies Income Tax Act provides that tax shall, for each year of assessment be payable at the rate specified in section 29(1) of the Act upon the profit of any company (Aguolu, 2004). Asa, Christopher, Jens. Berts and Laura (2009) suggests that top marginal tax rates have a theoretically ambiguous impact on firm's performance, therefore, corporate tax are found to be most harmful for growth. In a study carried out by Richard and Lanis (2010) and Nor (2010), it was submitted that there is an interdependent relationship between effective tax rate and financial performance. Also an increase in tax rate has a negative effect on growth. Moreover, a high corporate tax rate negatively affects profitability of corporate organization in Nigeria, thus, creating both arithmetic and economic effect on the economy. So, raising tax rates have the opposite economic effect by penalizing participation in the taxed activities. Corporate income tax rate according to Asa, et al (2009) affect investment proposal of a firms as they increase the user cost of capital, thus limit the extent of foreign direct investment (FDI), the presence of foreign multinational enterprises, hinder technology transfer and knowledge spill-over to domestic firms in sub-Saharan African states.

Moreover, high tax rate affects incentives to invest in innovative activities of manufacturing firms, thus, influencing negatively their after tax return (Aguolu, 2004). In other words, tax rate is a key indicator of an industrialized framework of political stability and fairness. Also, it is suggested that the level of compliance with taxation rate requirement is affected by perception of the government's legitimacy and the fairness of the tax system, as well as tax payers expectation that their tax money will be sent on valued public service.

2.1.6 Liquidity Risk

Liquidity risk is one of the indices used to determine market risk, it is a risk of insufficient liquid assets to meet payout, forcing the sale of assets at lower prices, thus leading to losses despite a firm being solvent (Kamau & Njeru, 2015). Liquidity risk arises due to two reasons, one on the liability side and other on the assets side. Ouma (2015) opines that liquidity risk problem if unchecked may adversely affect profitability of an entity. Also, Maaka (2013) in his submission stated that the harmful effect of liquidity risk should be avoided by maintaining sufficient cash reserve. Liquidity risk is the risk stemming from the lack of marketability of an investment that cannot be bought or sold quickly enough to prevent or minimize a loss. It is the risk that a given security or asset cannot be traded quickly enough in the market to prevent a loss (Jamal, Mohamed & Ali, 2014). Therefore, lack of market pressure and competitiveness introduces the notion of liquidity risk. From financial engineering perspective, it is an additional risk due to the timing and size of a trade. According to micro structure literature, Modigliani and Miller (1963) opined that liquidity risk has been incorporated into arbitrage pricing theory as a convenient. Narware (2014) states that liquidity rate and profitability could yield positive or negative result depending on the liquidity variable deployed by the firm. Eljelly (2014) opines that the efficient management of the liquidity rate of a company is of extreme relevance for the firm's profitability and well-being and that improved working capital have a potential impact of market risk reduction and fulfillment of payment obligations in the short run.

2.1.7 Financial Performance Indicator

Asset turnover- Asset is the resources of an entity, which are used to activate revenue. Asset turnover therefore is an accounting ratio used to measures the efficiency of utilization of assets to generate returns and shows the number of times assets or capital are turned over (covered by sales) during the period (Ugwuanyi & Ugbor, 2011). It assesses the efficiency with which the asset components are managed: receivables as shown by the average collection period. inventories as depicted by the inventory turnover ratio, and fixed assets as portrayed by the output or the sales to net fixed asset ratio. It measures the capacity with which total assets are utilized to generate the firms turnover (Ugwuanyi & Ugbor, 2011).It is calculated by dividing sales by total assets , that is:

$$\frac{\text{Sales}}{\text{Total Asset}}$$

2.2 Theoretical Review

2.2.1 Capital Asset Pricing Model

Capital Asset Pricing Model this theory critically stated that market risk primarily arises from the sensitivity of an asset's returns to the market returns and this is reflected by the asset's beta (Mossin, 1966). The implication of CAPM is that investors will always combine a risk-free assets with a market portfolio of risky assets. They will invest in risky asset in proportion to their market value. According to (Pandy, 2006), investors can expect return from their investment based on the level of risk. This implies a linear relationship between the assets expected return and its beta. Moreover, the concepts of risk and return as developed under CAPM have intuitive appeal and they are quite simple to understand. Financial managers use these concepts in a number of financial decision-making such as valuation of securities, cost of capital measurement, investment risk analysis etc. In spite of its intuitive appeal and simplicity. CAPM suffers from a number of practical problems. It is based on unrealistic assumption, secondly, it is difficult to test the validity and finally, betas do not remain stable over time.

Therefore, CAPM is an ex-ante model: that is, we need data on expected prices to test CAPM. Once major problem in the use of CAPM is that many times the risk of an asset is not captured by beta alone. This paved way for the development of alternative approach called the arbitrage pricing theory (APT). Though, Monde, Giorgino and Modlin (2013) stated that CAPM shows that investors only get compensated for holding systematic risk (market risk) since the firm specific component of risk can be eliminated through diversification. Capital Assets Price Model (CAPM) put much stress on market risk parameters, thus, suggests that business entity is rewarded for assuming the risk. Moreover, the variables of the model like symmetric risk and return have explanatory value on the topic under review.

2.2.2 Arbitrage Pricing Theory

The Arbitrage Pricing Theory (APT) was propounded by Ross (1976). This theory was founded on the notion that investors are rewarded for assuming non-diversifiable (systematic) risk; diversifiable (unsystematic) risk is not compensated. In APT, there are a number of industries- specific and macro-economic factors that affect the returns. APT assumes that market risk can be caused by economic factors such as changes in gross domestic product, inflation, and the structure of interest rates and those factors could affect firms differently. Under APT, the sensitivity of the assets return to each factor is estimated (Poncet & Portait, 2022). In APT, the return of an asset is assumed to have two components: predictable (expected) and unpredictable (uncertain) return. The predictable or expected

return depends on the information that has a bearing on the returns. The unpredictable or uncertain return arises from the future information. According to the theory, factors that affect returns on a firm are changes in the real rate of return, inflation rate, changes in the structure of interest rate and industrial production.

Arbitrage Pricing Theory (APT) is an innovative concept of risk and return under CAPM that have intuitive appeal. In its assertion, investors are rewarded for assuming market risk, inform of returns (Poncet & Portait, 2022). The researcher after critical examination of market risk variables and its doctrine on financial performance, which virtually cut-across all macroeconomic variables, we therefore anchored this work on Arbitrage Pricing Theory (APT). This is because market risks are those macroeconomic variables which if not properly articulated affect financial performance of an entity, and it has the components of APT assumptions.

2.3 Empirical Review

Lars (2012) examined the impact of macroeconomic variables on corporate performance. Ex-post facto design was used as a research design. Macroeconomic variables were regressed on performance indicator. Findings show that macroeconomic variables have a significant effect on corporate performance. In the same vein, Hussein, Saeed and Meysan (2012) analyzed the impact of financial variables on the market risk of Tahran Stock Exchange companies. Ordinary least square was used to test the hypotheses formulated. The researcher adopted Ex-post Facto design as the research design. The result indicated that there is a relationship between ROI and market risk, sales volume and market risk.

Similarly, Nimalathasan and Pratheepkanth (2012) examined the impact of systematic risk management on profitability of selected financial institution in Sri Lanka from year (2004 - 2011). The study used secondary data. Operational hypotheses were formulated and tested with OLS. Results revealed that systematic risk management has a positive association with profitability. A study of Agu (2012), studied the effect of exchange rate on manufacturing firms in Nigeria, using Egarch model. It was revealed that indeed optimal exchange rate policy must be aimed at cooling Real Exchange Rate (RER) that maintains internal and external balance in an economy. The study argues that a depreciation of the exchange rate only offer protection to domestic industry when the domestic cost of production increase much less than the rate of depreciation, while prices of imported equivalent increase by the full amount of the depreciation.

Ayodele (2012), studied market risk and project appraisal in Nigeria. A study was used as research design. Chi-square was used to analyze the hypotheses. Finding shows that effective evaluation of market risk plays a major role in enhancing investment for optimal profit. Additionally, Alao and Adabawojo (2012) studied market risk and uncertainty in investment decision. Descriptive study was adopted as research design. MOTAD model was used to analyze the data. The study reveals that major challenge of investor in recognizing and managing risk is due to unstable investment climate (market risk).

Farayibi (2013), studied the impact of market risk on investment decision in Nigeria. The researcher adopted descriptive study as a design. Chi-square as a tool was used to analyze the hypotheses formulated. Findings show that market risk has a significant impact on investment decision in organization operating in Nigeria.

Nwoye, Obiorah and Ekesiobi (2015) studied the effect of Nigeria macroeconomic environment on the performance of the national economy with emphasis on the nation's level of economic growth been influenced by her exchange rates movements, inflation rates, and monetary policy rates. Multiple regression statistical tool was used to analyse the1999-2013 data collated. The study reveals that there exist a significant relationship between Nigeria's exchange rate policies, rate of Inflation, CBN's monetary policy rates, and the manner and speed with which the economy of the country is growing.

Ebrahim, Kazem, Nabe and Reza (2013) studied the effect of market risk parameters (credit, operational, liquid and market risk) on banking system efficiency. Inferential study was carried out and ordinary least square was used to analyze the hypotheses. Finding shows that market risk significantly affect efficiency. Farah (2013) ascertained the effect of foreign exchange rate volatility on the financial performance of oil marketing companies in Kenya. The collection of the primary data was done using structured questionnaire that were pilot tested in order to ensure that there was reliability as well as validity. The findings show that there exist no significant relationship between inflation and financial performance. Also, the study showed no significant relationship between foreign exchange volatility and performance.

Furthermore, Maaka (2013), studied the effect of liquidity rate on financial performances of banks in Nairobi. Ex-post facto design was used as research design. Data was tested using Ordinary least square method (OLS). The finding shows that liquidity rate significantly affect performance. Irina (2013) assessed Bank liquidity, interest rate and exchange rate in European perspective. Descriptive statistics

was used as research design. Findings show that there is a claim that higher interest rate do not encourage banks to lend more, thus effect performance. Ibe (2013) studied the impact of liquidity rate on the profitability of banks in Nigeria. The researcher used Ex-post Fact as research design. Ordinary Least Square was used to analyze the hypotheses formulated. The result of the study shows that liquidity rate has significant effect on profitability.

Tomak (2013) studied the bank level (size and access to funds) and market risk base (interest rate, inflation rate, GDP) variables impact on bank behavior in Turkey. The study was on descriptive study. The result showed that interest rate and inflation rate significantly influences bank financial behaviors. Singh (2013), also did a research on impact of foreign exchange rate on financial performance of commercial banks. Data was collected from secondary sources. Pearson correlation, descriptive statistics and multiple linear regression analysis were used as analytical tools. Findings shows that exchange rate has a significant effect on financial performance of Commercial Banks. In the same vein, Lartey, Antwi and Boadi (2013) evaluates the relationship between liquidity rate and the profitability of banks listed on the Ghana Stock Exchange. The research design adopted was ex-post facto design. Result shows that there is a very weak positive relationship between the liquidity rate and the profitability of the listed banks in Ghana.

Gusti (2014) determines the effect of capital and liquidity risk to profitability on conventional rural banks in Indonesia. The research design used was Ex-post facto design. Findings show that capital risk and liquidity risk have a significant effect on profitability (ROA). Oleke, Eyisi and Onyeze (2014) studied the impact of inflation rate on Bank performance in Nigeria. Linear regression technique was used to test the hypotheses formulated, which showed that there is positive but not significant relationship between inflation, banks performance and the investment decision of commercial banks operating in Nigeria. Awoke (2014), in the same vain, studied the impact of credit and market risk on the performance of commercial banks in Ethiopia. The regression analysis conducted revealed that interest rate has significant effect on the performance of banks. Similarly, Waseem and Abdul (2014) in their study assessed the impact of interest rate changes on the profitability of four major commercial banks in Pakistan. Pearson correlation method was used in this study to analyze the data. Result shows that there is strong and positive correlation between interest rate and commercial bank's performance.

Equally, Jamal, Mahammed and Ali (2014) equally studied the impact of financial risks on the firm's performance. Ex-post Facto design was used as research design. The statistical tool used to test the hypotheses was standard deviation. Findings show that financial risks have a great impact on firm's

performance. Nwangi (2014) investigated the effect of liquidity rate on financial performance of deposit taking microfinance institution in Kenya. Ex-post facto design was used as research design. Ordinary least square was used as an analytical tool. The study reveals that liquidity rate has a significant association with financial performance. Ejoh, Okpa and Egba (2014), investigated the impact of credit and liquidity risk management on the profitability of deposit money banks in Nigeria. The research carried a descriptive study and standard deviation used in analyzing the data. Findings show that there is a significant relationship between liquidity rate and profitability.

Leyla (2015) studied the effect of foreign exchange exposure on the financial performance of commercial banks in Kenya. The study utilizes descriptive design. The study reveals that interest rate have an insignificant positive effect on the commercial bank performance; foreign exchange exposure has negative effect on the performance; inflation has negative effect on bank performance. Lambe (2015) assessed the impact of exchange rate on bank's performance in Nigeria. The study employed the usage of secondary sources of information and utilizes an auto regression conditional model as means for measuring risk. The study revealed that unit increase in exchange rate is driven by an increase in profit after tax (PAT) and equally indicated that there is a significant relationship between exchange rate management and performance of financial institutions.

Kamau and Njeru (2015) studied the effect of liquidity risk on financial performance of insurance companies listed at the Nairobi security exchange. The findings show that operational, market and credit risks have negative effect on the financial performance. Kiselakovai, Horvathova, Sofrankova and Soltes (2015) studied the analysis of market risks and their impact on enterprises financial performance. The researcher used secondary data of financial statements of selected companies, which is representative of the Slovak food industry. Findings show that market risks have a higher impact on performance of the enterprises. Ouma (2015), studied the effect of liquidity risk on the profitability of commercial banks in Kenya. OLS was adopted in analyzing the hypotheses. Findings show that there was a significant relationship between liquidity and profitability of commercial banks in Kenya.

Asian (2015) examined the impact of liquidity rate on growth of profit in pharmaceutical firms in Nigeria. Ex-post facto design was used and Haussmann test was conducted to choose between fixed effect and random effect model. Equally, descriptive analysis was used in the study and result indicated that there is a relationship between liquidity rate and profitability in pharmaceutical firms. Godfrey (2015) studied liquidity rate and bank performance in Nigeria. The research design adopted was Ex-post facto design. Ordinary Least square method was used in the analysis of hypotheses. The

result shows that liquidity rate significant affect performance of Nigerian Banks. Jane, Willy and Ken (2016) studied the effect of market risk on financial performance of commercial banks in Kenya. The pair wise correlations between the variables were carried out. From the result, financial leverage, interest rate and foreign exchange exposure have negative and significant relationship with bank profitability.

Aykut (2016) also examined the effect of credit and market risk on bank performance: evidence from Turkey. Ordinary least square was used to analyze the hypotheses. Findings show that credit and market risks have a positive and significant effect on conditional banks return volatility. Quamrul, Boris and Peter (2016), studied how inflation rate affects macroeconomic performance. Cross-country regression was carried-out to analyze the data collected. Findings show that an increase in inflation has a substantial deteriorating effect on performance. Muhammad, Mustabar, and Aisha (2016) studied the impact of liquidity rate on profitability: A comprehensive case of Pakistan's private banking sector. The study was carried on twenty two private sector banks registered under state bank of Pakistan from 2009-2013. Three models were specified and estimated using Ordinary Level Sqaure (OLS) techniques. The empirical results revealed that there is a statistically significant relationship between bank liquidity rate and return on assets.

Mohammed, Rezaul, and Momvon, (2016) carried out an investigation on the impact of net liquidity rate on profitability of banking business in Bangladesh. The findings of the regression analysis show that there is a strong relationship between liquidity rate and three profitability indicators, namely ROA, ROE and Eps banks in Bangladesh. Ahmed and Jaber (2016) studied the bank liquidity and its effect on rate of return applied study on banks in Gaza strip. Simple regression analysis was used to analyze the data collected. Results shows: (i) there is no correlation relationship and impact between bank liquidity rate and rate of return for Palestinian commercial banks combined. (ii) There is no correlation statistically significant between the liquidity rates for each bank separately and Return on Asset (ROA). Enekwe, Eziedo, and Agu, (2017) studied the effect of liquidity risk on financial performance of selected quoted commercial banks in Nigeria. The model estimation was executed using ordinary least square technique. Descriptive statistics, spearman rank order correlation and regression analysis were applied for the analyses. The result shows that liquidity risk affect financial performance of quoted commercial banks in Nigeria.

Abdellahi, Mashkani and Hosseini (2017) evaluated the impact of credit risk, market risk and liquidity risk on financial performance of banks in Iran. The research sample consisting of eight listed banks

on Tahran Stock Exchange (TSE). For data analysis, the research model was estimated using panel data estimation method. The result revealed that credit risk, liquidity risk and market risk have significant effect on net profit margin. Kassi, Rathnayake, Louembe and Ding (2019) examined the effect of market risk on financial performance of non-financial companies listed on the Moroccan stock Exchange. Pooled OLS model, fixed effect model, random effects model, the difference-GMM and the system-GMM models were applied in the study. Their result show that the different measures of market risk have significant negative influence on the company's financial performance.

3. MATERIAL AND METHOD

The study utilised *ex-post facto* research design. The population of the study was made up of the following 5 listed breweries companies on the Nigerian Exchange Group (NGX), as at 31st December 2021.

Table 1: Population of the Study

Name
1. Champion Brewery Nig. Plc.
2. Golden Guinea Brewery Plc.
3. Guinness Nig. Plc
4. International Breweries Plc.
5. Nigerian Breweries Plc

Source: NSE Factsheet, 2023

The study used purposive sampling technique to determine the brewery firms that made up the sample participants of the study. The criteria for inclusion in the sample participants were that each of the firms must have (a) been listed on the NSE for a minimum of 10 years from 2012 to 2021; (b) filed its published financial statements with NSE for the period of interest specified above, 2012 to 2021. The companies that met the criteria above were four (4) in number; they are shown below in Table 2:

Table 2: Sample Size of the Study

Name
1. Champion Brewery Nig. Plc.
2. Guinness Nig. Plc
3. International Breweries Plc.
4. Nigerian Breweries Plc

Source: NSE Factsheet, 2021

Secondary data were extracted from Central Bank of Nigeria (CBN) Statistical Bulletin and audited financial statements and annual reports of individual brewery firms. The instrument for data collection which comprised audited financial statements and annual reports of the sampled firms were examined over the 10-year period, 2012 to 2021. The instrument for data collection which is annual financial statements and annual reports of the sampled firms is deemed valid and reliable since they have been audited by external auditors and signed by management for decision making purposes. The data collected were descriptively analysed with the aid of mean, minimum values, maximum values and standard deviation. Diagnostic tests were conducted to check for the normality of the residuals, heteroskedasticity, autocorrelation and multicollinearity. On the other hand, the hypotheses formulated were tested using Ordinary Least Square regression technique at 5% level of significance. The test statistics was computed with the use of EVIEWS Version 13. The functional equation that depicts the relationship between market risk and financial performance is given below:

ATO = f(INF + EXR + INT+ ETR + LIQ + FSZE)……eqn (i)

The above equation is transformed to econometric model as follows:

$ATO_{it} = a_0 + b_1INF_{it} + b_2EXR_{it} + b_3INT_{it} + b_4ETR_{it} + b_5LIQ_{it} + b_6FSZE_{it} + e_{it}$……eqn (ii)

Where,

INF_{it} = Inflation Rate for firm i in period t.

EXR_{it} = Exchange Rate for firm i in period t.

INT_{it} = Interest Rate for firm i in period t.

ETR_{it} = Effective Tax Rate for firm i in period t.

LIQ_{it} = Liquidity Risk for firm i in period t.

$FSZE_{it}$ = Firm Size for firm i in period t

ATO_{it} = Asset Turnover for firm i in period t

e_{it} = error term for firm i in period t.

a_0 = constant.

b_{1-6} = coefficients of the predictors

The model incorporated one control variable Firm Size, which is measured as natural logarithm of total assets of the firm in an accounting period. Inflation rate, exchange rate, interest rate, tax rate and liquidity risk represent the independent variables in this study. Inflation rate is measured as the Years-on Percentage Change in Inflation Rates, as given by CBN Statistical bulletin (2021). Exchange rate is measured as Monthly Average Official Exchange Rate of the Naira (N/US$1.00). Interest rate is measured as the CBN monetary policy rate. Tax rate (proxy by effective tax rate) is measured as the ratio of tax expense to profit before tax of the brewery firms are taxed. Liquidity risk is measured as

current assets divided by current liabilities. Financial performance is the dependent variable which is represented by asset turnover. The measurement of the variables is given by the formula:

$$\frac{\text{Sales}}{\text{Total Asset}}$$

4. RESULT AND DISCUSSIONS

4.1 Descriptive Analusis of Data

In order to investigate how market risk affects the financial performance of listed brewery firms in Nigeria, there is need to first appreciate the descriptive properties of the variables by means of summary statistics. Thus, the variables of the study were descriptively analysed using measures of central tendency and measures of dispersion as shown here-under.

Table 3 Descriptive Analysis of Data

	ATO	INT	EXR	INF	ETR	LIQ	FSZE
Mean	0.714451	12.65000	259.7690	12.63300	0.393388	0.679639	7.896257
Maximum	1.191289	14.00000	399.9600	18.50000	3.486170	1.328268	8.683623
Minimum	0.244400	11.00000	157.3100	8.000000	-0.196705	0.073989	6.832458
Std. Dev.	0.246278	1.133409	85.70120	3.442420	0.530160	0.292543	0.648172
Skewness	-0.411628	-0.003210	0.091081	0.134051	5.104597	0.241960	-0.345319
Kurtosis	2.146307	1.387632	1.639227	1.822892	30.52659	2.848781	1.507627
Jarque-Bera	2.344236	4.332953	3.141477	2.429105	1436.568	0.428409	4.506932
Probability	0.309710	0.114581	0.207892	0.296843	0.000000	0.807183	0.105035

Source: Analysis Output Using Eviews Version 13 (2022)

Mean: Asset Turnover Ratio (ATO) which is the proxy for financial performance averaged 0.71 between 2012 to 2021 accounting periods, showing that the selected breweries firms generated N0.71 sales per N1 asset used in operation. The average interest rate (INT) from 2012 to 2021 was 12.65%. Exchange Rate (EXR), Inflation Rate (INF), Effective Tax Rate (ETR) and Firm Size (FSZE) averaged 259.7690, 12.63300, 0.393388, and 7.896257, respectively. More also, the average liquidity ratio (LIQ) of the firms over the period in review was 0.679639, showing that the selected firms on average had N0.68 current asset for every N1 current liability. This is a worrisome statistic since the average liquidity ratio of the selected firms was way below the recommended margin of 1.5 to 2.0. The standard deviation for each of the variables except for EXR shows that the average values can be relied upon.

Maximum: The highest values of ATO, INT, EXR, INF, ETR, LIQ and FSZE are 1.191289, 14.00000, 399.9600, 18.5, 3.486170, 1.328268, and 8.683623, respectively. Thus, the maximum value of LIQ implies that none of the sampled firms reached the recommended liquidity ratio of 1.5.
Minimum: The lowest values of ATO, INT, EXR, INF, ETR, LIQ and FSZE are 0.244400, 11, 157.31, 8, -0.196705, 0.073989, and 6.832458, respectively.

Skewness: While ATO, INT and FSZE were negatively skewed, the values in EXR, INF, ETR and LIQ were skewed to the right, i.e. the left hand-side of the curve. The implication of the former is that more data were scattered below the mean values of ATO, INT and FSZE. On the other hand, the values of EXR, INF, ETR and LIQ were predominantly scattered above their respective means.
Kurtosis: All of the variables have a kurtosis below 3, except EXR whose kurtosis was 30.53. This excessive kurtosis of EXR is an indication that the data on EXR significantly differs from a normal distribution.

Probability of Jarque-Bera: This test statistic is used to show whether a distribution has the properties of a normal distribution. If the probability of Jarque-Bera exceeds 0.05, it is concluded that the distribution has properties of a normal distribution. Judging from the various probability values of Jarque-Bera in **Table 3,** all the variables with the exception of EXR can be deemed to have come from a normal distribution. The implication is that some of the data on exchange rate were positive outliers, i.e., there values were greatly above the mean value of EXR. This abnormality would not reduce neither the efficiency nor the validity of the OLS result since the assumption of OLS is on normality of the residuals, and not normality of the individual distributions (Gujarati, 2011).

4.1.1 Model Diagnostics

The Ordinary Least Square (OLS) Analysis will remain the Best Liner Unbiased Estimate (BLUE) only when the properties or assumptions of the model are met (Wooldridge, 2015). To assess whether the assumptions were satisfied, the researcher carried out model diagnostic tests such as linearity test, multicollinearity test, heteroskedasticity test, normality test and autocorrelation test. The outputs of the tests and their implications are discussed here-under.

4.1.2 Linearity Assumption (Test)

It is assumed in OLS regression that the relationship between the response variable and the predictors is linear. That is, the dependent variable can be predicted using a linear combination of independent variables. If this holds, then the model is well specified. The test of the linearity assumption was carried out using Ramsey RESET Test presented in Table 4 below.

Table 4 Ramsey RESET Test

Equation: OLS_OUTPUT

Specification: ATO C INT EXR INF ETR LIQ FSZE

Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	0.501649	32	0.6193
F-statistic	0.251652	(1, 32)	0.6193
Likelihood ratio	0.313334	1	0.5756

Source: Analysis Output Using Eviews Version 13 (2022)

The result of the Ramsey RESET test above shows that the null hypothesis of well-specification is accepted. The basis of acceptance was that the Probability (F) = 0.6193 is greater than 0.05. Therefore, the financial performance of listed brewery firms (proxy by asset turnover) can be predicted using a linear combination of inflation rate, exchange rate, interest rate, effective tax rate, liquidity ratio and firm size.

4.1.3 Multicollinearity Assumption (Test)

It is assumed in OLS regression that the predictors used in the model must be independent of each other. In other words, there should be no strong correlation among or between the predictors in the model. The test of this assumption was carried out using Variance Inflation Factor (VIF) as shown inTable 5 below.

Table 5 Variance Inflation Factors

Date: 01/07/23 Time: 05:36

Sample: 1 40

Included observations: 40

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.304860	323.5103	NA
INT	0.000879	150.3577	1.167714
EXR	3.00E-07	23.79136	2.282549
INF	0.000166	30.15215	2.035552
ETR	0.003938	1.791894	1.145194

LIQ	0.014680	8.495415	1.299843
FSZE	0.002826	188.1932	1.228294

Source: Analysis Output Using Eviews Version 13 (2022)

The result of the VIF revealed that the model has no issue of multicollinearity. This is because none of the Centered VIF reached the threshold of 10. Conclusively, each of the predictors used in the model are independent of one another, and so can measure the specific impact it has on the financial performance of listed brewery firms in Nigeria.

4.1.4 Heteroskedasticity Assumption (Test)

In order to get an efficient estimator of the ceteris paribus effect of market risk on financial performance, OLS regression assumes that the variance of the residuals is constant. The preferred condition here is termed homoscedasticity. Breusch-Pagan-Godfrey was used to test for heteroskedasticity as shown in Table 6.

Table 6 Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.148819	Prob. F(6,33)	0.3568
Obs*R-squared	6.911417	Prob. Chi-Square(6)	0.3291
Scaled explained SS	3.351170	Prob. Chi-Square(6)	0.7637

Source: Analysis Output Using Eviews Version 13 (2022)

The result of the Breusch-Pagan-Godfrey test for heteroskedasticity revealed that the error terms have the same variance given any value of the explanatory variables. This conclusion was reached given that the Prob. F(6,33) = 0.3568 is greater than 0.05.

4.1.5 Normality Assumption (Test)

OLS assumes also that the residuals are normally distributed. The exact normality of the OLS estimators hinges crucially on the normality of the distribution of the residuals in the population. If the residuals are not normally distributed, the t statistics will not have t distributions and the F statistics will not have F distributions. This is a potentially serious problem because the inference used in hypotheses testing hinges on being able to obtain critical values or p-values from the t or F distributions. The normality test result is presented in Table 7 below.

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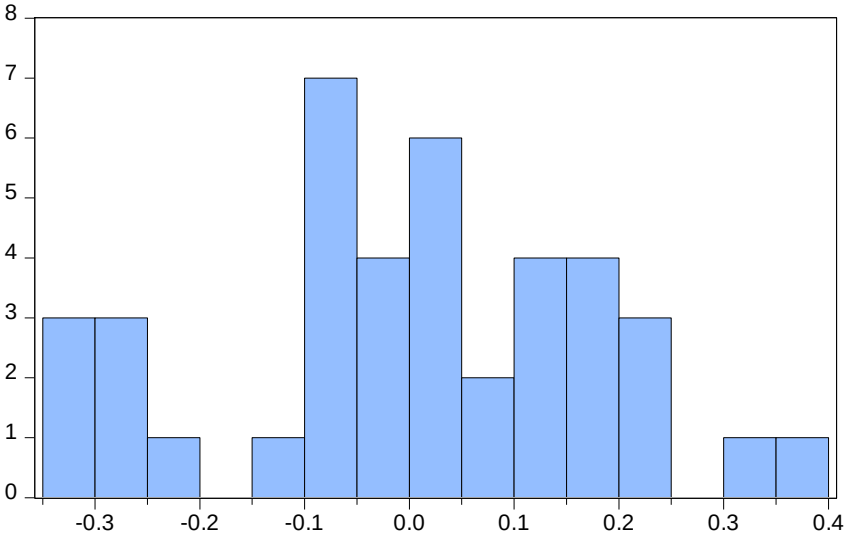
Table 7 Jarque-Bera Test Result



Series: Residuals	
Sample 1 40	
Observations 40	
Mean	-3.73e-16
Median	0.021099
Maximum	0.357658
Minimum	-0.346108
Std. Dev.	0.178591
Skewness	-0.245848
Kurtosis	2.424792
Jarque-Bera	0.954382
Probability	0.620524

Source: Analysis Output Using Eviews Version 13 (2022)

The result of the J-B test shows that the residuals from the linear model are close to a normal distribution. This is because the Prob(J-B) = 0.6205 which is greater than 0.05. Thus, the inference used in hypotheses testing was adequately based on p-values from the t-distributions.

4.1.6 Autocorrelation Assumption (Test)

This assumption specifies that the residuals should not be correlated across time. A linear model that suffers autocorrelation has the errors in two different time periods correlated. The result of the test for autocorrelation is shown in Table 8.

Table 8 Breusch-Godfrey Serial Correlation LM Test:

F-statistic	6.151279	Prob. F(2,31)	0.0056
Obs*R-squared	11.36428	Prob. Chi-Square(2)	0.0034

Source: Analysis Output Using Eviews Version 13 (2022)

The alternate hypothesis of auto-correlated error terms is accepted because the Prob. F(2,31) = 0.0056 is less than 0.05. Thus, the result of the Breusch-Godfrey Serial Correlation LM Test shows that the error terms suffer autocorrelation. To correct for this, it is expected that Generalized Least Square be used to estimate the regression coefficients since the OLS model is affected by autocorrelation.

4.1.6.1 Correcting Autocorrelation with Generalized Least Squares

The result of the Generalized Least Square regression is shown below in Table 9.

Table 9 Generalized Least Square Regression Result

```
. xtgls ATO INF EXR INT ETR LIQ FSZE, panels(iid) corr(independent)

Cross-sectional time-series FGLS regression

Coefficients:  generalized least squares
Panels:        homoskedastic
Correlation:   no autocorrelation

Estimated covariances      =         1          Number of obs      =         40
Estimated autocorrelations =         0          Number of groups   =          4
Estimated coefficients     =         7          Time periods       =         10
                                                Wald chi2(6)       =      36.07
Log likelihood             =  12.65501          Prob > chi2        =     0.0000
```

ATO	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
INF	.020325	.0117033	1.74	0.082	-.002613	.043263
EXR	-.0016453	.0004978	-3.31	0.001	-.0026209	-.0006696
INT	-.0282511	.0269223	-1.05	0.294	-.0810178	.0245157
ETR	.0745848	.0569984	1.31	0.191	-.03713	.1862997
LIQ	.4432496	.1100492	4.03	0.000	.2275571	.658942
FSZE	.2581514	.0482827	5.35	0.000	.163519	.3527838
_cons	-1.126569	.5015069	-2.25	0.025	-2.109504	-.1436334

Source: Analysis Output Using STATA Version 16 (2022)

The GLS output above reveals that the coefficients whose residuals do not suffer autocorrelation problem.

4.2. Test of Hypotheses

The researcher went ahead to estimate a linear model by OLS since the results obtained in the GLS are comparably similar to those obtained using OLS. More also, the OLS regression result is relevant since the R^2 obtained by OLS method is not affected by autocorrelation (Wooldridge, 2015). The output of the OLS is shown below in Table 10.

Table 10 Ordinary Least Square Regression Result

Dependent Variable: ATO

Method: Least Squares

Date: 01/07/23 Time: 06:54

Sample: 1 40

Included observations: 40

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.126569	0.552141	-2.040365	0.0494
INF	0.020325	0.012885	1.577430	0.1242
EXR	-0.001645	0.000548	-3.001998	0.0051
INT	-0.028251	0.029640	-0.953125	0.3475
ETR	0.074585	0.062753	1.188543	0.2431
LIQ	0.443250	0.121160	3.658376	0.0009
FSZE	0.258151	0.053158	4.856348	0.0000

R-squared	0.474140	Mean dependent var	0.714451
Adjusted R-squared	0.378529	S.D. dependent var	0.246278
S.E. of regression	0.194149	Akaike info criterion	-0.282750
Sum squared resid	1.243901	Schwarz criterion	0.012804
Log likelihood	12.65501	Hannan-Quinn criter.	-0.175887
F-statistic	4.959062	Durbin-Watson stat	1.016458
Prob(F-statistic)	0.001024		

Source: Analysis Output Using Eviews Version 13 (2022)

The OLS regression output in Table 10 shows that the linear combination of INF, EXR, INT, ETR, LIQ and FSZE explain about 47.41% changes in the asset turnover of listed brewery firms in Nigeria (R^2 = 0.4741). The inclusion of insignificant predictors reduced this goodness-of-fit to 37.85% (Adjusted R^2 = 0.3785). The model is statistically significant since the corresponding Prob(F-statistic) = 0.001024 is below the alpha level of 0.05. The control variable, Firm Size, has a positive and significant effect on the asset turnover of the listed breweries firms in Nigeria. However, the Durbin-Watson stat which is below the acceptable range of 1.5 to 2.5 shows the presence of autocorrelation in the model. This issue had already been addressed in sections 4.2.7 of this thesis. The researcher proceeds further to test the hypotheses using the estimates from the OLS regression which are exactly the same with the GLS coefficients.

4.2.1 THypothesis I

H_o: Inflation rate, Exchange rate and Liquidity risk have no significant effect on asset turnover of quoted breweries firms in Nigeria.

The result of the OLS regression analysis revealed that the coefficient of inflation rate is 0.020325 with a Prob(t) = 0.1242. The coefficient shows that inflation rate has a positive effect on asset turnover of listed brewery firms in Nigeria, such that an increase in INF by a margin will also increase ATO by 0.020. However, the Prob(t) = 0.1242 reveals that this positive effect is not significant at 5% alpha level. The conclusion is that since the Prob(t) = 0.1242 is greater than 0.05, inflation rate has a positive and non-significant effect on asset turnover of quoted breweries firms in Nigeria (β = 0.020, *p*-value = 0.1242). The result of this study agree with the findings by Farah (2013); but disagreed with the findings of Leyla (2015); Tomak (2013) that found a significant effect.

The result of the OLS regression analysis revealed that the coefficient of exchange rate is -0.001645 with a Prob(t) = 0.0051. The coefficient shows that exchange rate has a negative effect on asset turnover of listed brewery firms in Nigeria, such that an increase in EXR by a margin will reduce ATO by 0.002. The Prob(t) = 0.0051 reveals that this negative effect is significant at 5% alpha level. The conclusion is that since the Prob(t) = 0.0051 is less than 0.05, exchange rate has a negative and significant effect on asset turnover of quoted breweries firms in Nigeria (β = -0.002, *p*-value = 0.0051).This finding was also arrived at by Singh (2013); Lambe (2015).

The result of the OLS regression analysis revealed that the coefficient of liquidity risk is 0.443250 with a Prob(t) = 0.0009. The coefficient shows that liquidity risk has a positive effect on asset turnover of listed brewery firms in Nigeria, such that an increase in LIQ by a margin will increase ATO by 0.443 approximately. The Prob(t) = 0.0009 reveals that this positive effect is significant at 5% alpha level. The conclusion is that since the Prob(t) = 0.0009 is less than 0.05, liquidity risk has a positive and significant effect on asset turnover of quoted breweries firms in Nigeria (β = 0.443, *p*-value = 0.0009).This finding agrees with the results by Lartey, Antwi and Boadi (2013); Enekwe, Eziedo, and Agu (2017); Muhammad, Mustabar, and Aisha (2016); but disagreed with the results found by Ahmed, and Jaber (2016) that concluded that liquidity has no significant effect on financial returns of firms.

4.2.2 Hypotheses II

H_o: Interest rate and Tax rate have no significant effect on asset turnover of quoted breweries in Nigeria.

The result of the OLS regression analysis revealed that the coefficient of interest rate is -0.028251 with a Prob(t) = 0.3475. The coefficient shows that interest rate has a negative effect on asset turnover of listed brewery firms in Nigeria, such that an increase in INT by a margin will reduce ATO by 0.028. The Prob(t) = 0.3475 reveals that this negative effect is not significant at 5% alpha level. The conclusion is that since the Prob(t) = 0.3475 is greater than 0.05, interest rate has a negative and non-significant effect on asset turnover of quoted breweries firms in Nigeria (β = -0.028, *p*-value = 0.3475).The findings of the study agree with those of Jane, Willy and Ken (2016); but disagreed with the study by Leyla (2015) which found that interest rate positively affects financial performance.

The result of the OLS regression analysis revealed that the coefficient of effective tax rate is 0.074585 with a Prob(t) = 0.2431. The coefficient shows that tax rate has a positive effect on asset turnover of listed brewery firms in Nigeria, such that an increase in ETR by a margin will increase ATO by 0.075 approximately. The Prob(t) = 0.2431 reveals that this positive effect is not significant at 5% alpha level. The conclusion is that since the Prob(t) = 0.2431 is greater than 0.05, tax rate has a positive and non-significant effect on asset turnover of quoted breweries firms in Nigeria (β = 0.075, *p*-value = 0.2431).This finding disagrees with those of Asa, Christopher, Jens, Bert and Laura (2009); and Wu and Yue (2009) that found that corporate tax rate is harmful for growth of business entity.

CONCLUSION AND RECOMMENDATIONS

Thus, the general objective of the study was to determine the effect of market risk on financial performance of listed brewery firms in Nigeria. Specifically, the effects of inflation rate, exchange rate, interest rate, tax rate and liquidity risk on asset turnover of listed firms in Nigeria were examined with OLS estimation tool. The major finding was that market risk as represented by the above five proxies have a joint significant effect on the financial performance (proxy by asset turnover ratio) of listed breweries firms in Nigeria. However, the specific effects of inflation rate, interest rate and tax rate were not significant while the specific effects of exchange rate and liquidity risk are significant. From the findings of the study, it was shown that despite the increases in the general prices of goods and services in the Nigerian economy, the financial performance of breweries industry still goes up. This shows that the financial performance of firms under the brewery industry is not impaired by general price changes. The reason for this is because the consumers of breweries product are used to purchasing the product in spite of price increment. In addition, a good liquidity standing improves

firms performance since it shows that an optimal balance between liquidity and profitability trade-offs contributes positively to the performance of the firm. The corollary is equally true, that a sub-optimal balance between liquidity and profitability trade-offs will result in a negative influence on the financial performance of the firm. The study therefore recommends that:

1. Government should put in place measures to control inflation and also formulate and implement financial policies that enhance investment-friendly rate of interest.

   The management of brewery firms in Nigeria should use more hedging arrangements via financial instruments to reduce the risks resulting from unfavourable fluctuations in foreign currency exchange rates.

   The management of breweries firms in Nigeria should deploy optimal amount of liquid assets to offer more convenience in conjunction with fast delivery of products to customers in order to enhance firm profitability.

2. In order to help breweries firms boost their performance, the cost of credit facilities should be reviewed downwards to enable smooth repayment and increase in the demand for loans by breweries firms to enable them grow their businesses which will in effect have positive effect in the economy.

   The government to whom company income tax is paid should be up and doing in the provision of amenities and infrastructural development to encourage breweries firms pay taxes as and when due. This will make the firms not to bear the burden for the provision of such amenities themselves.

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