Relationship Between Inflation and Firms’ Performance—Evidence from Nigeria

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Abstract: This study aimed at relating inflation to profitability of corporate entities such as banks, therefore relied heavily on historical data. The data that were used in the analysis were generated from annual financial statement of the sampled banks that are operating in Nigeria between the periods of 2000 to 2014 and the CBN Statistical Bulletin of various issues. The population of the study consists of all the 18 commercial banks quoted in the Nigerian Stock Exchange that are in operation after 2005 banks’ consolidation. Our sample size is judgmentally selected to include, three first generation banks and three new generation banks. For the analysis of data, standard Ordinary Least Squares (OLSs) were applied to a panel series of data to test the hypotheses. The signs of the coefficients were relied upon in describing the direction and strength of linear relationship between variables while the t-statistics and p-value were relied upon in determining the magnitude of the effect between inflation and profitability of banks using reported profit, return on equity (ROE) and earnings per share (EPS) as performance indicator of the banks in the collection of our data series. The results revealed that that there is no significant positive relationship between inflation and reported profit vis-à-vis return on equity as a measures of profitability of commercial banks operating in Nigeria. This is an indicative that inflation has negatively impacted on the performance of banks by reducing their values. Hence, the recommends among other things that government should ensure that up to date policy reforms are always in place to replace the outdated ones to enable the banking industry maximize enough profit necessary for growth of the firm and shareholders’ wealth.

Key words: Inflation • Profitability • Banks • Nigeria • Performance • ROE • EPS

INTRODUCTION

Corporate performance is the primary concern of many interested parties-management, government, investors, economic analysts in any organization. In other words, the primary concern of all the interested parties in any organization centers on profit. This concern stems from the idea that the performance of profit maximizing corporations like banks manifest from their profitability position and the high retention of such profit will have great impact on the corporation’s survival and growth. Therefore, a study of the impact of inflation on corporate performance is of paramount important. It is widely accepted in the literature that profitability is one of the most important determinants of banks performance. In a market driven-economy, a highly concentrated inflation-prone market is believed to have a significant negative effect on corporate profit. While a low degrees of low inflation-driven market are inextricably associated with high levels of profits at the detriment of other performance indicators due to decreased inflation. The concept “inflation” is variously misconstrued, yet is one of the most frequently used terms in economic discussions. There are various definitions of inflation, but there is a general consensus among economists that inflation is a continuous rise in the prices of goods and services.

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Inflation according to Andrew [1] depicts an economic situation where there is a general rise in prices of goods and services, continuously. It could be defined as a continuous rise in prices as measured by either an index of the consumer price index (CPI) or by the implicit price deflator for Gross National Product (GNP). Studies have all shown that banks’ performance indicators like profitability and liquidity are negatively related to both anticipated and unanticipated inflation. Thus, the effects of inflation are not uniform across all banks’ performance indicators. The effect of inflation on banks performance is seen through its effect on the balance sheets and the income statements of the banks. Inflation distorts the “true” earnings of the banks when earnings are calculated in accordance with generally accepted accounting principles and the reported profits are based on historical data. This knowledge is very important because inflation has negative effects as it reduces the value of money, resulting in uncertainty of the value of gains and losses of borrowers, lenders, buyers and sellers. In line with this, Diamond [2] lamented that such increasing uncertainty which inflation brings discourages savings and investments as it has serious effect on reported profits because of high increase in the devaluation of money. The value of a firm today might be less tomorrow because of inflation and the decision made today on that financial position may be misleading in future as a result of inflationary effects. These problems arise because the financial reporting concept is based on age old concepts which for long have ignored the presence of inflation and its implication for decision making both by management and external users of financial report.

Problem Identification: We believe that most of the literatures on the relationship between inflation and banks performance were carried out mainly on industrialized economies. So many of the studies in the literature focus on determining how inflation impacts on the performance of banks in developed economies. The major issue which prompted our study is the general neglect of what inflation can do to financial reports of banks in developing countries in which Nigerian is one of them. Unfortunately, in most cases the effect can be disrupting to the values of the banks especially in emerging economies. Sequel to this, there is need to lay emphasis on the effect of inflation on the profitability positions of firms, thereby enabling them to actually know their financial position and this would be a good guide for financial actions and decisions. Though, did a very nice work on how inflation because of wrong application of financial reporting concepts impacted on the reported profits of Nigerian commercial banks between 2008 and 2012, but his work covered only 4 years period. Therefore, there is need for a study that would cover wider scope on current inflationary effect on banks’ performance, hence, this study. The objectives of the study are: to ascertain the relationship between inflation and return on equity as a measure of profitability of commercial banks in Nigeria to determine the extent to which inflation affects earnings per share (EPS) of commercial banks operating in Nigeria and to ascertain the relationship between inflation and the reported profit of commercial banks in Nigerian. The paper hypothesized that there is no significant positive relationship between inflation, reported profits, return on equity and earnings per share as measures of profitability of commercial banks operating in Nigeria between 2000 and 2014.

Conceptual Framework

Relationship between Inflation and Profitability: Tommasi [3] noted that it is easier to detect emerging changes in relative prices on both input and output prices when the general price level is stable than when all prices are going up. In addition to this, a high average rate of inflation normally involves greater variations in individual price fluctuations. These assertions are enough proofs to say that inflation affects profitability in various ways either positively or negatively as the case may be. [4], noted that inflation can affect profitability position of enterprises in four major ways thus: Firstly, it changes the cost of funds used to finance the business; secondly it increases costs of labour, raw materials and the price of the product; thirdly it affects the tax bill to be paid; and finally it causes shifts in demand levels. He noted that most companies make forecasts of the number of units of output to produce for sale, the man-hours and machine-hours that production will take and the volume of raw material to be purchases. These forecasts in terms of physical units can be converted to cash flows by multiplying the number of the items by the appropriate prices. In this case the cost of funds to a company is related to the level of interest rates. Based on the fact that business is risky, the overall cost of funds is always higher than the interest rate, but fluctuates negatively (fall) or positively (rise) as the interest rate changes. This expression is represented thus:
Overall cost of funds = Interest Rate + Risk Premium.

Effect of Inflation on other Economic Variables/Actors
As already noted inflation affects an economy in various ways, both negatively and positively. Negative effects of inflation include an increase in the opportunity cost of holding money, uncertainty over future inflation which may discourage investment and savings. The positive effect of inflation can be seen or noticed in its reduction of burden of debts, both public and private. It equally keeps nominal interest rates above zero so that central banks can reduce interest rate when necessary to stimulate the economy. Economists generally believe that high rates of inflation and hyperinflation are caused by an excessive growth of money supply. However, money supply growth does not necessarily cause inflation. [7], discussed the effect of inflation on a quite number of economic variables and economic actors or agents in an economy. The discussed variables and actors vis-à-vis the inflationary effect include: National income, savings and investment, production, income or salary earners, international trade, Debtors/Creditors, balance of payments, interest and exchange rates. Though, some of these are outside the scope of this work, but we deemed it necessary to explain some of them. In every economy, there are always gainers and losers as a result of inflation.

Looking at the effect of inflation on production, [8], noted that production will be more profitable at a time of rising prices since the prices of finished goods rise faster than the cost of production, thereby giving the producers opportunity to make profits. Even if the cost of production is high, the prices of customer goods will generally rise faster than the price of capital goods, as the cost will fall back on the final consumers. [9] in their own discussion of the effect of inflation on production noted that inflation brings changes in production and such changes in turn, lead to changes in employment and wages, thereby increasing the unemployment rates and eventually changing the prices. It is impossible to predict with any certainty the exact size or timing of these influences as the effects vary based on factors such as the stage of the economic cycle, environmental stance, the nature of economic condition and the level of the development of the financial market. For example, the impact of higher consumer demand on inflation during economic recession or during political instability is quite different from how it would be during economic boom or during political stability in the country.

Effect on the income earners, in every economy, there is always gainers and losers as a result of inflation. Inflation tends to increase inequalities in distribution of income and wealth. It was noted that the class of people who are likely to gain during high inflationary trend are

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those who are able to adjust their incomes quickly to rising prices so that their income will have an undiminished purchasing power. This group comprises mainly wage earners and traders whose unions are generally able to secure for their members frequent wage/price adjustments. On the other hand, workers, pensioners, landlords and landowners who earn fixed income loss during high inflationary trend. In support of this assertion, [10] opined that the effects inflation has on incomes derived from profit depend upon the type of inflation whether demand pull or cost push. For instance, losers during high inflationary period are fixed income earners or those whose incomes are relatively fixed in monetary terms. They include but are not limited to; pensioners, landlords and salaried workers and their incomes are adjusted only after long time interval. All these income recipients in this group suffer a fall in their real income during inflation. He noted that during demand pull inflation profits will tend to rise, whereas at cost-push inflation period, profits tend to be squeezed since there is no excess demand of goods.

Effect on savings and investment; [11] explained that a period of high rate of inflation represents a serious disincentive to save. In other words, high rate of inflation discourages people to save as the purchasing power of their savings is bound to decline because of persistent rise in prices of goods and services. In a more serious note, borrowers gain at the expense of lenders in a period of inflation. [12], noted that erratic inflation is particularly troublesome for longer contracts as it increases the risks involved in estimating the returns on investment prices. This might lead to distortions in decisions to save and invest and cause investment to be reduced below the efficient level. Inflation can adversely affect the growth of the economy by reducing the willingness of households to supply funds to businesses for productive investment. If inflation soars, savers might seek to liquidate their financial assets and purchase lands or items like antiques and other collectibles. Inflation not only distorts current choices but also can decrease confidence in the nation’s financial markets, thereby adversely affecting future opportunities as the amount of savings channeled into productive investment is reduced and a nation’s real GNP growth rate can be adversely affected.

The good news about inflation/investment relationship is that not all investments are affected by inflation, so when investing it is important to spread out the risk so that the investors do not suffer a large loss if things go wrong. In other words, there is need to avoid putting one’s eggs in one basket, hence, diversification of investment is the solution. Bonds and debentures are the best examples of investments that are not affected by inflation because of their fixed interest rates.

Effect on Balance of Payments, in emerging economies in which Nigeria is one of them, that depend heavily upon a high level of exports and imports, inflation usually leads to balance of payments disequilibrium. If other countries are not experiencing inflation to the same extent, the rise in the domestic price level will make exports less competitive and imports more competitive. This process if not properly checked may lead to a deficit on the current account in the balance of payments. This problem is particularly severe during a demand- pull type of inflation.

Discussing the effects of inflation on debtor/creditor, [13], opined that inflation has important effect on both debtors and creditors relationship. During inflation, debtors tend to gain since the purchasing power of the money repaid at the end of the loan is less than the purchasing power of the money borrowed. This may encourage spending rather than lending and hence reduces funds available for investment. Aside from this effect, it may lead to higher interest rate as creditors demand some additional returns as a compensation for the falling value of money. Effect on the international trade; it was noted that rising prices of domestic goods and services at home will lead to a fall in exports and to an increase in import. This is so because the country whose currency has been inflated is a good country to sell to and a bad country to buy from. This might lead to disequilibrium on the country’s balance of payments account, a loss of its foreign reserves or a fall in the international value of its currency, [14].

[15], noted that changes in interest rates, money supply and the price level can affect the ability of public enterprises to compete with foreign suppliers. High interest rate on loans resulting from high inflation in the economy discourages individual investors and corporate organizations who need funds to make productive investment from taking loans.

Discussing the general effect of inflation Miller and Benjamin [16] described inflation in economics term as a decline in the value of money, in relation to the quantity of goods and services it would purchase. It is the pervasive and continuous rise in the aggregate level of prices measured by an index of the cost of various goods and services. Such repetitive price increases rubbish the purchasing power of money and other financial assets with fixed values, creating serious economic distortions and uncertainty in the economy. In his own contribution
as per causes of inflation, [17], noted that inflation occurs when actual economic pressures and anticipated future developments cause the demand for goods and services to exceed the supply available at existing prices at a particular point in time. Historically, such continuous increases in the prices of goods and services were directly linked to wars, religious unrest, political instability, poor harvests, environmental upheavals like Bukhara sects, kidnapping and other social vices.

**Empirical Review of Literature:** There are considerable empirical supports for ascertaining the relationship between inflation and performance of firms in the literature. For example, [18] carried out empirical study on how inflation affects profit margins of corporate entities. His study revealed that inflation has significant negative effect on the profit margin of corporate organization because provision for such effect has not been made in the preparation of the financial statement. Another empirical study carried out by [19] which examined the micro foundations of the links between inflation and price dispersion found out that there is a coefficient correlation between the two variables-inflation and the reported profit. Sheshinski and Weiss [20], studied a monopolistic firm that faces additional cost for adjusting its selling price in an inflationary environment. Their result revealed that as price increases, the demand for the product decreases; thus the magnitude of a price change increases and this move affects profit of the firm negatively. Lucas [21], studies the impact of inflationary uncertainty on price mark-ups and found out that high rate of inflation impacts negatively on the firms’ profitability. Benabou and Gartner [22], introduced a stochastic shock on the costs of production and examined the effect of inflation uncertainty on price dispersion. Their findings revealed that increased inflationary uncertainty has both correlation and variance effects on welfare of consumers, hence, liquidity problem. Looking at the correlation effect, if sellers’ prices are correlated, inflation makes consumers search less when they observe a high price. On the other hand, consumers search more when they observe a low price because they believe better prices may be available. Considering the variance effect, because buyers can return to the first seller without a cost, an increase in inflation uncertainty increases the option value of search, hence there is confirmed indication that increased inflationary uncertainty promotes search and lowers the sellers’ market power, hence little or no profit. The summary of their finding is that the effect of inflationary uncertainty on market efficiency depends critically on the magnitude of buyer search cost and that low search costs make it possible that the benefits from an increase in inflation uncertainty outweigh the costs. Thus, high buyer search costs imply higher firm profit margins and decreased efficiency caused by high inflationary uncertainty. [23], conducted an empirical study with document asymmetric gasoline price responses to crude oil price changes and found out that in gasoline markets, increases in inflationary uncertainty do translate into higher profit margins. [24], conducted empirical study on inflation and the productivity decline in the United States. His findings revealed a close connection between the deviations in the levels of prices and the levels of productivity from their longer term trends and presents some evidence that the causal direction is from high price level deviations to low productivity level deviations. A repetition of the same topic on the economy of Canada yielded very similar results. [25], carried out a study on the interrelations between inflation and productivity in Canada, the finding revealed that “the increased inflation rates of the 1970s are sufficient to explain virtually the entire recorded slowdown in productivity growth. A similar study on Japan by Oritoni (1981) [26] also indicated similar negative effects of inflation on productivity and economic growth. His work concluded that the rate of economic growth in Japan has continued to grow higher than in the other industrialized countries since the inflation of the early part of the 1970s has been controlled.

Other researchers carried out a number of studies of periods of hyperinflationary episodes and their findings revealed that such periods lead to sharp drops in productivity as individuals and businesses revert to barter types of trade sequel to the collapse in the use of money as medium of exchange. Such sharp drops in productivity causes a decline in the profit level of the firm.

The empirical study of [27], on the same theme emphasized the degree to which changes in the unemployment rate and the related fluctuations in actual output relative to potential output were related to variations in productivity. The study of [28] on economic growth and its shorter-term variation had quantified the effects of shorter term demand fluctuations. The work of Moore (1980) on the same theme confirmed that these cyclical variations or fluctuations in prices, costs, productivity and profits are an important and integral part of business cycles and these timing interrelations have persisted for decades.
Recent study conducted by [29] on the relationship between inflation and dividend payout for companies listed at the Nairobi Securities Exchange (NSE) which considers a sample of all the firms that consistently paid dividend revealed that inflation rate has no impact on the dividend payout. The study reveals that, the exchange rate and the T-Bill rate have a positive correlation with dividend payout, while volume of money supplied has no impact on the dividend payout. Mohammed [30] studied the asymmetric effect of inflation on dividend policy of Iran’s stocks market using panel data approach to test the non-symmetric effect of inflation on the companies' decision in decreasing, increasing and maintaining of dividends. The finding revealed that inflation has the positive effect on increasing and maintained dividend decision of companies. But it has the inverse and negative effect on decreasing a dividend. Hence, inflation has significant contribution to the dividend policy making decision according to the status of companies as making profit or loss. [31], conducted empirical research on the relationship between dividends and inflation in Australia by testing for co-integration between these two variables. His finding revealed that inflation has positive effect on the dividend growth. This is an indicative that there is a desirable level of real dividend income to be paid out to the shareholders of the company as inflation has simply increases the nominal volume of corporate earnings and thereby leads to higher dividend payments. [32], carried out a study on the impact of imported inflation on the reported profit of corporate organization in both developed and emerging economies. His study revealed that during inflationary trend, most of the firms’ investment decision is subject to misleading as a result of misleading reported profit as contained in the financial statement because of inflationary effect.

[10], conducted a research on the way out of inflationary effect on the macroeconomic factors that determine the profitability position of firms. His result revealed that overstated profits as measured in monetary terms based on rising prices will always induce external users to make investment decision without appreciating the consequences of the reduced value of their investment caused by inflation.

Research Methodology: This research basically related inflation to profitability and operational efficiency of commercial banks operating in Nigeria. The study relies on secondary data; therefore, the Ex Post Facto research design was applied. The data were generated from annual financial statements of the sampled banks operating in Nigeria and from the CBN statistical bulletin of various years, between the period 2000 and 2014.


Sample Size of the Study: Our sample size is judgmentally selected as seen in the work of Steve [31]. By applying judgmental sampling method, three first generation banks (First Bank, Union Bank, UBA) and three new generation banks (Access Bank, Diamond Bank and Zenith Bank) were selected for the study.

Models Specification: Our models build on the existing empirical literature of [6] using ROE and EPS as alternative dependent variables for measuring the impact of inflation on banks’ financial decision. In this note, we test various regression models in which independent variable attempts to capture relationships between profitability, earnings per share, operational efficiency and reported profit of the banks.

Techniques of Analysis: For the analysis of data, standard Ordinary Least Squares (OLSs) were applied to a panel series of data to test the hypotheses. The signs of the coefficients were relied upon in describing the direction and strength of linear relationship between variables while the t-statistics and p-value were relied upon in determining the magnitude of the effect between inflation, return on equity (ROE), earnings per share (EPS) and operational efficiency of the banks in the collection of our data series.

Model Specification: The Hypotheses are appropriately tested using ordinary least square regression model which is a statistical tool establishing the relationship between one dependent variable known as Y- variable and the independent variable known as X- variable, [5]. In this study, the independent and dependent variables are fitted into an equation called a regression equation which expresses the relationship between variables. The simple
The results revealed that the reported profit and return on equity has the values (1.233) and 1.114 respectively greater than the critical value (1.102), hence the null hypothesis is hereby accepted, while the alternate hypothesis is rejected. This indicates that there is no significant positive relationship between inflation and reported profit vis-à-vis return on equity (as a measure of profitability) of commercial banks operating in Nigeria between 2000 and 2014. This is an indicative that inflation has negatively impacted on the reported profit of the banks vis-à-vis return on equity by reducing the values of the banks. The results equally revealed that other banks’ measures of performance vis-à-vis profitability applied in this work which includes earnings per share and operational efficiency have the values more than and less than critical value (1.102) respectively. The earnings per share which measures the amount of earnings attributable to one share of the bank has the calculated t-value of (1.111) as against the critical value of (1.102). Since the calculated t-value of (1.111) for earnings per share is more than the critical values (1.102) the alternate hypothesis is hereby accepted while, the null is rejected. This indicates that Inflation has adversely affected the earnings per share of commercial banks operating in Nigeria thereby reducing the earnings of the banks in relation to the number of shares outstanding. In other words, inflation impacts negatively on the EPS by reducing the value of each share held in the bank generates over a given time. For the operational efficiency which has the calculated t-value of (0.722) less than the critical value (1.102), the null hypothesis is accepted, thereby rejecting the alternate hypothesis. Hence, there is no significant positive relationship between inflation and the operational efficiency of commercial banks operating in Nigeria. The relationship is statistically negative as inflation increases the operational cost of the banks, thereby reducing the values of the banks’ reported profits.

### CONCLUSION AND RECOMMENDATIONS

The study concludes that the relationship between inflation and profitability of firms underscores much relevance in Nigerian commercial banks. The relationship is significant and obvious because the increase or decrease of inflationary effect determines the levels of earnings and values of the banks, hence, the favorability...
and un-favorability of the economic stability. Based on these facts, the paper recommends that certain measures should be taken to minimize the effect of inflation on banks' lending decision vis-à-vis their profitability as measure of performance. Government should ensure that up to date policy reforms are always in place to replace the outdated ones to enable the economy as a whole and the banking industry in particular to meet up with the ongoing financial globalization. Equally there should be a frantic effort to increase the expansionary policy mechanism as a tool to checkmate inflationary effects on firms’ performance and the economy at large. Finally, there is need for the government and private organization partnering effort gearing towards controlling the economic growth through the monetary policy timely implementation.

**Policy Implication:** Since it has been proved that in a market driven-economy, a highly concentrated inflation-prone market has a significant negative effect on corporate profit, while low degrees of a low inflation-driven market amount to reversal; therefore this knowledge becomes a vital source for government when developing monetary policy. Government can therefore use this knowledge to support or amend the monetary and credit regulatory procedures to be in line with the real economic stability and banking industry growth through low inflationary trends. Also it signals to the government a way to solve issue of fluctuations caused by inflations and non-implementation policy framework to the economy. The presence of inflation in the economy is difficult to detect especially at the incubation period and makes its management and control very difficult for the regulatory authorities. Since there are numerous causes of inflation, the panaceas do not lie in one probable solution. Thus attempt to apply the wrong therapy to root cause may rallies to enormous problems than was set to solve. Bearing this in mind from the insight of this study would help the CBN to formulate and apply control measures that would be used to control inflation. One of such measures is monetary policy whose main objective is the maintenance of confidence in the Nigerian currency through stabilization of domestic rise in prices. Under the monetary policy, the CBN controls the commercial banks through: prescribing minimum ratios of loans, advances and discounts which each commercial bank shall grant to borrowers, prescribing from time to time the cash reserve deposit ratio, which banks should maintain with the CBN etc. These monetary measures are heavily applied on the commercial banks because of the power of the banks to create money. The aim is to control the quantity of money in circulation which can lead to inflation when it is too much, therefore this study will enable the government to be in tune with the possible policy changes that are needed to fine-tune the growth of banking industry through reduced inflationary trends.

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