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INFLATION AND FIRM VALUE NEXUS OF LISTED HEALTHCARE PRODUCTS MANUFACTURING COMPANIES IN NIGERIA

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Abstract

This study investigated the link between rates of inflation in the economy and market value of firms in the Nigerian healthcare products manufacturing sector, using secondary data gathered from the World Bank Database and various company audited financial statements covering the period of 2001 to 2019. The study employed Ordinary Least Square analytical technique to test the hypotheses formulated on the study variables based on data generated on four major pharmaceutical firms comprising of GlaxoSmithKline, Fidson, May & Baker and Neimeth plc. The empirical evidence in the GlaxoSmithKline and Fidson models shows that the relationship between inflation and EPS is negative and insignificant. However, the finding in May & Baker and Neimeth models reveals a positive and insignificant relationship between inflation rate and company EPS. On the basis of the result the study concluded that rate of inflation affects firms' market value in the health sector, however the magnitude of the influence is weak. We therefore recommend that in business valuation inflation should be factored into the calculation to arrive at the financial worth of the firm under any mergers and corporate takeovers situation.

Keywords: Earnings per share, Economy, Firm value, Inflation, Market value

INTRODUCTION

In the recent years, investment becomes a common word in the society. Reilly and Brown (2012) stated that an investment is the current commitment of dollars for a period of time in order to derive future payments. It is believed that people who are giving up their money for investment will have expected to receive a greater amount of money in the future than what they have in present days. Although it has many advantages, capital market also poses many risks. Therefore, investors need accurate information so investors will not get stuck in adverse conditions, because investment in the capital market is a type of investment with a relatively high risk, despite relatively large gains too. As investor, they do not want to pay more for an asset than it is worth. As a consequence, an intelligent investor will consider an appropriate price to pay before making an investment in a portfolio. Muliani et al. (2014) stated that firm value is a value that measure the company quality and a value that shows how much the level of interest of a company in the eyes of its investors. Firm value could be obtained through different measures, each of them will give a value that differs from that obtained by another measure. Investors not only assess the firm value before making an investment decision, but also need to know the variables that will affect the firm value of the company to be purchased. By knowing the influence of these variables, investors can have a strategy to select companies that are considered as healthy company, so the company is ready to compete, survive and thrive. Bradford (1974) stated that firm value is influenced by the monetary position during a period of inflation or deflation.

Firm value signifies the ability of the business to maximize the shareholders wealth. It is an indicator through which future investors would find the business attractive to invest in. In the field of finance, firm value refers to as economic measure of firm performance that has reflected the worth of the business as a whole thereby efficient and effective use of economic resources can be ascertained. It represents the assets owned by the business which readily provided by the investors (equity shareholders and debt financiers). The firm value describes business propensity to grow which is translated into investors' propensity to invest. A good firm value attracts investors to join in the company. Since the doctrine of separation of management from the owners in the modern business practices, the firm values serve as measure of the managers' effort from the perspective of external stakeholders. Unlike the financial performance which is the reflection of the managers' effort from their own internal perspective.

A lot of arguments have been put forward in the field of finance as to what constitutes firm value as it to be different from the business financial performance. It is observed that there are some mix up as to what represent the difference. Firm value is of course a function of managers' ability to run the business to maximize the owners' wealth but that which is explained

by the perception of outsiders (investors). It shows the future cash flow of the business. The financial performance of the business, however, serves as a function of managers' ability to run the business to maximize owners' wealth however, serves as a function of managers' ability to run the business to maximize owners' wealth business to maximize the owners' wealth but that which is explained by the perception of outsiders (Investors). It is a reflection of past historical information that is reported by the business to demonstrate management stewardship. This position demonstrates that firm financial performance is a product of accounting ratios related to the past profit of the business and as such may not reflect the expectations about the future of the firm so also risk assessment level. It is argued that the firm's financial performance may be sensitive to inflation. These differences are applicable to the indicators/proxies usually employed to measure firm value and firm financial performance. Literature reports that firm value is commonly measured using Tobin's Q, Equity Share Prices, Price to Book Ratio, Enterprise value to name but few. While the financial performance indicators consist of Returns of Capital Employed (ROCE), Returns on Assets (ROA) or Returns on Equity (ROE). Some arguments put forward on the preferences of firm value indicators over financial performance accounting-based measures are that the former uses market prices of financial assets like stock which reflects assessment of business risk level. Firm value measures can include the firms' intangible assets. Firm value measures accommodate the assumption of maximizing shareholders wealth. They represent the viable objectives of businesses performance, capital structure and firm size on the firm.

We often see individual investors get stuck thinking of stocks as short-term trading vehicles. In our opinion, investors who consider themselves owners of companies rather than owners of stocks are more likely to be successful in reaching their goals. As owners, investors should not accept a return on their investment that is less than the risk-free rate plus an equity risk premium. Too often, people invest with long shot hopes of achieving short-term jackpot type returns. They forget the long-term goals of investing beat inflation and create wealth. One of the hardest things for investors to do is to separate day-to-day stock price gyrations from the fundamentals of the companies they own. It may help to remember that high quality companies are more likely to generate strong returns on capital regardless of stock market gyrations. In addition, if the economy shows or declines, profits of quality companies suffer less, which means their stock prices, in theory, should also fall less. Investors (aka owners) of such quality companies should be able to grow their own wealth in line with wealth-creating companies. Successful investors are able t outperform their peers and benchmarks over time precisely because they think long term and differentiate between company fundamentals and stock market volatility.

During the recession which lasted from 2016 to 2017, the inflation rate increased to over 20%**.** Between January and May 2016, there was a sharp rise in the inflation rate from less than 13% in January to 15.6% in May. In fact, data from the Nigerian Bureau of Statistics revealed that inflation rose from 13.7% in April to 15.6% in May. Presently, it is no news that many economies including Nigeria are currently in recession. In reality, the year 2020 has been eventful, chiefly with the novel corona virus (COVID-19). Its impact has continued to have a severe impact on businesses, households, and economies globally and one of its consequences is inflation. Even though inflation is a concept that affects all of us; but most importantly high inflation could be hostile to economy and business especially the micro, small and medium enterprises (MSMEs). With a persistent inflation, businesses and households usually perform poorly, and as expected, more money is paid for the same goods and services. This has been the troubling trend in Nigeria in recent times, where high price increases have been recorded in transportation, food cost, household needs, raw materials, pharmaceutical products, health care, motor cars, vehicle spare parts, equipment, and in prices of services among others. Admittedly, inflation erodes our value of money and also erodes the purchasing power for all of us. Therefore, the nexus of impact of inflation is the specific focus of this piece. However, it was mainly instigated by the continuous rise in the level of inflation rate in Nigeria in recent times.

Statement of the Problem

The consequences and impact of inflation (price instability) in Nigeria cannot be over-emphasized. Key among the consequences of inflationary pressure is the persistent decrease in the purchasing power of the citizenry, especially at a time when the economy is in recession and pandemic is ravaging.

There have been some studies in Nigeria which investigated the effect of exchange rate depreciation (a traditional cause of inflation) on the country's domestic inflation (Ogundipe & Egbetokun, 2013). But studies on institutional causes of inflation (causes emanating from product market and labour market sources) on Nigeria are not very visible. The financial statement is rated as the most important thing for the basic considerations in making investment decisions. Therefore, the company that issues stocks should report the financial statements periodically to the public. It is expected that stock prices can quickly react to the published information so that it will be achieved an easily liquefied, efficient, fair, and transparent securities trading.

The fact is that the health care sector plays the dominant role in the economy of Nigeria due to human capital development, and it also expects to be one of the influential factors on the

economy in the future. So, it seems that understanding the effect of inflation variables on stock prices can determine the general trend of capital market evolution and to play a considerable role in predicting the behavior of the stock market and thus to provide the possibility of appropriate policy and decision making.

Objective of the study

Thus, this study looks at the current inflation changes and how it affects the value of listed firms in Nigeria's healthcare sector. This can be specific as listed below:

1. To determine the relationship between inflation rate and the earnings per share of GlaxoSmithKline Plc in the health sector of Nigeria.
2. To investigate the relationship between inflation rate and earnings per share of Fidson Plc in the health sector of Nigeria.
3. To analyze the nature of the relationship between inflation and earnings per of May & Baker in the health sector of Nigeria.
4. To examine the relationship between inflation rate and earnings per share of Neimeth Plc operating in the health sector of Nigeria.

The above objectives formed the basis of the research questions addressed and hypotheses tested. Since very little attention has been given to research of this kind in Nigeria, the outcome and results generated from this research work will be of great significance to the accounting and finance profession by serving as a guide, reference or review for future researchers and students. It is also significant to finance managers of various companies in order to understand the effect of inflation on firm value. It establishes the indispensability of inflation on a firm's value.

The rest of this work is divided into four parts: part two which follows dealt with the review of relevant literature, while the study methodology is covered in part three. Data for the study, regression results and discussions are covered in part four, whereas the conclusion and recommended are provided in part five.

REVIEW OF LITERATURE

Conceptual Clarification

The Concept of Inflation

Inflation continues to be an economic fact of life in most countries. By definition, inflation is a rise in the general prices level of goods and services in an economy over a period of time. When the general price level rises, each unit of currency buys fewer goods and services. Consequently, inflation also reflects erosion in the purchasing power of money because of the

loss of real value in the internal medium of exchange and unit of account within the economy (Bortis, 2004). Inflation's effects on an economy are various and can be simultaneously positive and negative. Negative effects of inflation include an increase in the opportunity cost of holding money, uncertainty over future inflation which may discourage investment and savings, and if inflation is rapid enough, shortages of goods as consumer begin hoarding out of concern that prices will increase in future. Positive effects include ensuring that central banks can adjust real interest rates, and encouraging investment in non-monetary capital projects (Ali & Ibrahim, 2018)

Inflation affects profits by reacting on sales volume, through influencing the level of costs and by changing the relationship between cost and prices. Since manufacturing companies generally determine prices by reference to cost, pricing policy becomes particularly important in inflation and the level of profits differs according to whether prices are determined on basis of original cost or current replacement cost (Adam & Weber, 2019). The investigation into the existence and nature of the link between inflation and company's performance has been conducted for a long period of time. Although nowadays most economists accept that inflation has a negative effect on company's performance, but some of the researchers did not detect this effect in their data during their research. According to Konchitchki (2011), although the effects of inflation are not recognized in the nominal financial statements, but such effects will have economic consequences, even during a period in which inflation is relatively low. Ali and Ibrahim (2018) has emphasized the kind of information needed by managers to measure the effect of inflation, not only on profitability and shareholders' funds, but on planning, budgeting, and control.

In a free enterprise economy business firms are subject to two general types of constraints, one internal to the firm and the other external. The first type of constraint is self-imposed and arises from decisions of management. The second includes a wide range of external economic influences. Because general economic conditions are beyond the control of the firm, management must be able to adjust to these outside influences rapidly and with foresight. Such adjustments are complicated by the fact that the relative impact of various exogenous economic forces on business firms is subject to change over time. One of the most important changes which has occurred since World War II has been the continual and growing impact of inflation. As a result of the recognition and anticipation of inflation, research conducted prior to 1940 concerning the impact of inflation on business firms has become less applicable to the analysis of modern business conditions. Moreover, the literature of finance in general lacks operational guidelines for business managers with respect to the most appropriate use of debt.

Specifically, what mixture of assets and liabilities will enable the firm to maximize shareholder wealth under conditions of continuing inflationary pressure?

Types of Inflation

Cost-push inflation

One type of inflation that was found during the medieval period is cost-push inflation. Cost push inflation is caused by wage increases enforced by unions and profit increases by employers (Parkin, 2018). The basic cause of cost-push inflation is the rise in money wages more rapidly than the productivity of labor. The labor unions press employers to grant wage increases considerably, thereby raising the cost of production of commodities. Employers in turn, raise prices of their products. Higher wages enable workers to buy as much as before, in spite of higher prices. On the other hand, the increase in prices induces unions to demand still higher wages. In this way, the wage-cost spiral countries, thereby, leading to cost-push or wage-push inflation.

Price-push inflation

Another cause of cost-push inflation is profit-push inflation. Oligopolistic and monopolistic firms raise the price of their products to offset the rise in labor and cost of production to earn higher profits. There being imperfect competition in the case of such firms, they are able to administered price of their products. Profit-push inflation is, therefore called administered-price inflation or price-push inflation (Montiel, 1989; Shaikh et al, 2022).

Structural inflation

The concept of structural inflation entered into economics discussion and research about 40 years ago (Totonchi, 2011). It is related to the effect of structural factors on inflation, whereby structural analysis is conducted to recognize how economic phenomenon such as inflation, forms lawful relationships with other economics phenomena. According to this school of thought, inflation is the result of the structural changes in society and country. When a country transforms its economic situation and undergoes structural changes to achieve economic growth, inflation occurs as a result of structural improvement. Therefore, any government intervention in the market structure or common anti-inflation measures would only stop the economy from growing, thus would cause the economy to shrink (Harrison et al, 1999). Among factors that contributed to structural changes are population growth, immigration and intense competition among producers. According to this viewpoint, inflation is the manifestation of the

development of the economy and society depicted by the rapid growth of the economy (McCallum, 1987).

Inflation in Nigeria

Inflation is one of the most frequently used terms in economic discussions, yet the concept is variously misconstrued. There are various schools of thought on inflation, but there is a consensus among economists that inflation is a continuous rise in the prices. Simply put, inflation depicts an economic situation where there is a general rise in the prices of goods and services, continuously. It could be defined as 'a continuing rise in prices as measured by an index such as the consumer price index (CPI) or by the implicit price deflator for gross national product (GNP)'. Inflation is frequently described as a state where "too much money is chasing too few goods". When there is inflation, the currency loses purchasing power. Although inflation has a storied history among economists, focus on its legitimacy has been insignificant (Balac 2008; Hülsmann 2008; Bagus et al 2014). Writing in the late 16th century, the Spanish scholastic Juan de Mariana outlined the coercive nature of inflation (Huerta de Soto, 2006). David Hume's monetary writings in the 18th century assessed unit changes of the monetary stock as valuational changes that affect the unit value of other individuals' money holdings (Hume 1970). More recently, Hülsmann (2008) and Howden (2010) have delved into the history of relations between monetary economics and ethics. It is, however unfortunate, not too surprising that there has been a general neglect for attention heeded to ethical implications of inflation. Monetary economists are especially well-suited for analyzing inflation as they understand the process by which it originates and later propagates throughout the economy. A background in this knowledge is essential prior to assessing the methods to and legitimacy of evading such a tax. To measure inflation are three approaches. These are the gross national product (GNP) implicit deflator, the consumer price index (CPI) and the wholesome or producer price index (WPI or PPI). The period-to-period changes in these two latter approaches (CPI and WPI) are regarded as direct measures of inflation. There is no single one of the three that rather uniquely best measure inflation. The consumer price index (CPI) approach, though it is the least efficient of the three is used to measure inflation rates in Nigeria as it is easily and currently available on monthly, quarterly and annual basis (CBN, 1991). Existence of excess aggregate demand can cause inflation (demand pull inflation). Cost-push inflation arises from upward pressure of production costs, while structural inflation arises from constraints such as inefficient production, marketing and distribution systems in the productive sectors of the economy (CBN, 1996). Inflation has been apparent in Nigeria from the outset of our national life. This was propelled in the 1960s through the "cheap money policy" adopted by the government to

stimulate development after independence. Interest rates were lowered and targeted at the preferred sectors of the economy, and was meant to facilitate the implementation of the First National Development Plan and subsequently the prosecution of the civil war.

Inflation causes wealth transfer among different sectors of the economy consisting of business firms, household, and the government. Where they affect business profits, these transfers take place over and above the nominal increase in the value of the firm that follows from a general price level change. In the absence of the distortions represented by these transfers, classical theory of micro economic equilibrium would require that nominal equity values increase in exactly the same proportion as the price level. Under such ideal condition, a 10% increase in the general price level, for example would involve a 10% increase in the nominal value of all assets. Firms would neither enjoy a capital gain or losses, in real terms, as a consequence of the price level change. This is consistent with the fact that real returns from capital are dependent only on production function and factor proportions, which are invariant to price levels. However, the presence of wealth transfer due to inflation would imply that this fundamental postulate needs no longer hold: the market value of the firm will not be homogeneous of degree one in the price level.

Firm Value

Value of the firm is a specific condition that has been achieved by a company. The purpose of corporate financial management is to maximize the wealth of shareholders. It means the value of the company will be increasing, which is a measure of objective value by the public and an orientation to the survival of the company. Factors that influence the value of the company are company size, company growth, company uniqueness, ownership structure, debt policy (leverage), Dividend decision, asset value, value fluctuations and capital market conditions (Sumani, 2020). The dividend is a permanent payment for capital given by shareholders or company owners. Dividend decision is the percentage of profit paid to shareholders in the form of cash dividends, maintaining dividend stability from time to time, distribution of stock dividends and share buybacks (Sumani, 2020). Factors that can influence Dividend decision are investment opportunities and alternative sources of capital. Sources of corporate capital consist of the sale of new shares and capital from debt, managerial ownership (insider ownership), institutional ownership (institutional ownership), and collateralized assets (Sumani, 2020). The process of maximizing the value of a company often creates conflicts of interest between managers and shareholders, which is often called the agency problem. It is uncommon for management, the company manager, to have other goals and interests that conflict with the company's main objectives. Manager's interests that conflict with company

goals can jeopardize the survival and decrease the value of the company. Conflicts between managers and shareholders can be minimized by a supervisory mechanism that can align the interests of the parties, but also incur agency costs. There are several alternatives to reduce agency costs, one of which is managerial ownership/insider ownership (Sumani, 2020). According to Morck et al. (1989) in company's profits. Investment opportunities are interpreted as a combination of asset-in-place and investment choices in the future with a positive net present value. Myers (1977) introduced IOS concerning achieving corporate goals, where the value of the company formed through the indicators of the stock market value is also strongly influenced by investment opportunities. Sumani (2020) also emphasized that the component of a value of the firm and Dividend decision are the result of future investment choices and are expected to obtain higher returns, this is meant by the investment opportunity set (IOS). Macroeconomic variables, such as inflation will also have an impact on Dividend decision and value of the firm. According to Sumani (2020) with the constant rate of inflation, capital costs, labour costs, and raw material costs will increase unexpectedly so the company will decide to increase the selling price of its products to consumers. This condition also results in a decrease in purchasing power or commonly referred to as a decrease in purchasing power of money, causing companies to experience a decline in profits and financial performance or even losses (Sumani, 2020). By looking at this phenomenon, of course, the issue of dividend decision is an essential concern of the company in optimizing the value of the company, especially in economic conditions that are full of uncertainty as it is today. In a volatile global economy, Healthcare sectors that provide human capital needs can still be stable of the 23,640 health care facilities available in the country, only 7,300 representing 31% of the facilities were accredited by the NHIS to provide services to registered enrollee. Currently, 4.5 million people representing 3% of Nigeria’s population are covered under the Scheme. This percentage is mainly in the formal sector. The remaining 75% or more, in the informal sector are largely not covered yet. Under the present arrangement, the employer contributes 10% of the basic salary of the insured while the remaining 5% is paid by the employee. Lately, this has been revised to 3.5% and 1.75% of the basic salary by employers and employees respectively. However, in reality, this formula is not operational, as the Federal Government pays 750 Nigerian Naira per life insured, on quarterly basis, while the insured has no financial contribution into the Scheme. Besides, to prove the effect of leverage, insider ownership, investment opportunity set (IOS) and inflation on firm value through the role of dividend decision mediation and to determine the direct effect of dividend policy on a value of the firm in the healthcare industry. The organization and structure of health services delivery is fashioned along the three tiers (local, state and federal) of governance in Nigeria. Thus, there are three levels of health care, namely; primary,

secondary and the tertiary levels. While the management of the primary level care is domiciled at the local government, the secondary and the tertiary levels of care are managed by the state and the federal governments respectively. In Nigeria, primary health care is the adopted cornerstone of the National health policy. Apart from the orthodox system of service delivery, the Nigeria health system also includes the alternative and the traditional systems of health care delivery. The aforementioned health care delivery systems are all recognized by the government. Despite the available health care delivery systems available, previous United Nations health development agenda, concepts and goals did not achieve much. Health outcome indicators for Nigeria are among the poorest in the world. Sumani (2020) argued that the interests of managers and shareholders can be harmonized if the manager has a larger share of the company. The potential for agency conflicts to decline through dividend payments can affect the low agency cost incurred by shareholders (Kighir et al., 2015). In addition to insider ownership, funding policies (leverage), are reflected in debt-to-equity ratio (DER), as well as forming dividend and corporate value policies. According to Al Najjar (2012), the higher debt causes the burden on companies to become significant because of the burden of debt costs that must be borne. The higher the debt will cause the company's priority to pay dividends will be smaller because the company's debt costs reduce the earnings available distribution as dividend. Langit et al (2017) stated that company's main goal was to maximize company value. Low earnings quality will create bad decision-making by investors and creditors, so that company's market performance will decline. Soebyakto et al (2017) states that company's market performance will be reflected in market stock price. Moeljadi (2014) stated some concept of value to describes firm value, among others: the nominal value, market value, intrinsic value, book value and liquidation value. Moeljadi (2014) concluded that most representative concepts to determine the market company performance was intrinsic value, but it was very difficult to estimate the intrinsic value, because of its determination requires the ability to identify significant variables that determine the profitability of a company. Those variables differ from one company to another. Therefore, market value was used by reason of ease of data was also based on an assessment of a moderate. Sumani (2020) stated that higher company's market performance can attract investors to invest. Investors interested return or profit to be derived from the investment in form of embedded capital gains and dividends, being a part of advantage given to shareholders. In this case the manager must decide whether the profits from company during the period will be distributed in whole or in part only distributed as a dividend and remainder being held companies or so-called retained earnings. Company value can be seed from several approaches. Balance sheet approaches see company value

as value of its assets. This simple method sees company value in balance sheet. Method to measure company's income value was based on income statement. Company value can be determined by sales, earnings or other indicators. Another approach was goodwill. Company value was calculated from book value plus goodwill. Company value was a function of future cash flows and level of return. Brigham and Gapenski (2006) defines company value as the value given to management of financial markets and corporate organizations as a company continues to grow. This value was determined by market perceptions of companies' performance sustainability that represented by market value of shares outstanding. Some researchers use different measurement as proxy for company value. Most of them use Tobin's Q as a proxy for company value (Yermack, 1996). Tobin's Q was defined as the ratio of book value of debt plus the market value of equity divided by book value of equity. Brigham and Gapenski (2006), use a proxy ratio of market value to book value. This ratio was defined as the market value of equity divided by book value of equity.

Methods of firm valuation

Business valuation plays an important role in the development of the financial theory and its application in the market. It estimates the value of an organization, becomes a fundamental exercise that will help business managers to determine which financial strategy to follow, provides stakeholders with an overview about the financial situation and the expectations of the organization moving forward. However, over the years, many business valuation methods have been developed. These methods do not necessarily produce a unique result. Consistent with the above, it is relevant to review the most popular and currently-used valuation methods.

Discounted flow methods

The methods encompassed within this group are currently the most commonly used methods and, are also the most accepted methods in both the academic and business community. Generally, these methods try to determine the firm value through the estimation of the cash flows that will be generated in the future, and then discounting them an at appropriate rate according to the risk of such flows (Fernández, 2011).

The methods that are included in this group constitute an exercise in which incorporates different tools to allow an adequate, complete and dynamic analysis of the value of the organization. Therefore, this type of analysis represents multiple advantages related to the following factors. Firstly, the value estimation of the organization is originated in its capability to generate funding in the future, and it does not imply a static analysis based exclusively on the

performance of the firm in the past, as in the case of other methods explained earlier, such as accounting methods and valuation multiples.

Secondly, the purpose of this analysis is to incorporate a risk element through the discount of the flows at an appropriate rate, which includes a spread pertaining to the risk assumed by the firm actors in the development of the business operations. This marks a relevant difference regarding accounting valuation methods which do not include this element in an explicit or implicit way and it is also different from valuation multiples which do not include this element explicitly. Thirdly, although it is evident, it should be pointed out that these methods include the time value concept. This is relevant given that it allows a dynamic valuation in which an intertemporal analysis of investments can be made.

Finally, the business valuation through these methods includes a previous analysis of the firm context. Hence, it is important to point out that the starting line to estimate the value of an organization through discounted cash flow methods is to conduct a detailed review of the environment in which the organization operates. This is due to the fact that the knowledge and the understanding of the industry and economy that surrounds the firm are determinants to establish the conditions of the valuation exercise in terms of forecasts and value drivers. In accounting methods, these elements are not covered, whereas in valuation multiples and mixed valuation methods, this analysis should be done in an exhaustive form in order to ensure a reliable valuation practice.

The lack of speed and complexity of these methods are two factors that can be considered disadvantageous. The process of estimating the value of the organization should be as reliable as possible. Even though, in general terms the methodology of these methods follow general parameters in which flows are discounted through a certain rate, different proposals have been developed throughout time.

Book value method

This method emphasizes on the fundamental accounting equation, equating the firm value with the owner's equity of the organization. This value can also be obtained by subtracting the total liabilities from the total assets of the business.

Adjusted book value method

This method corresponds to the book value method reviewed above. In this case, however, the business value estimation is calculated by adjusting the assets and liabilities value to their market value.

Liquidation value method

This method incorporates the assumption that the firm will stop developing its operations at the moment of being sold. The business value estimation will focus on, and determine how much would be obtained if the Company was sold.

Replacement value method

This method, also known as "substantial value method", equates the business value to the cost incurred by the purchaser, if they decided to constitute a business with the same characteristics of the firm that is being evaluated.

Net real asset

This method is similar to the book value method, but aims to adjust the owner's equity to the most realistic value. It means that through this method, the business value corresponds to the assets which are susceptible to exploitation without the current liabilities of the firm at market prices.

Importance of firm value evaluation

Myers and Makluf (1984) state that if investors have low information about the true value of the firm, they may be unable to correctly decide about the firm's stock price. If the firm is forced to finance for its new projects by issuing shares, it is possible that firm is forced to issue the share prices less than the real market prices. This way, new investors may acquire a worth more than the net present value of the project, which result is the loss of the current shareholders. Therefore, in these cases, the firm is forced to ignore the acceptance and implementation of the investment projects that have positive net present value. Business valuation to a company is an important exercise since it can help in improving the company. Here are some of the reasons to perform a business valuation.

1. Litigation

During a court case such as an injury case, divorce, or where there is an issue with the value of the business, you may need to provide proof of your company’s worth so that in case of any damages, they are based on the actual worth of your businesses and not inflated figures estimated by a lawyer.

2. Exit strategy planning

In instances where there is a plan to sell a business, it is wise to come up with a base value for the company and then come up with a strategy to enhance the company’s profitability so as to

increase its value as an exit strategy. Your business exit strategy needs to start early enough before the exit, addressing both involuntary and voluntary transfers.

A valuation with annual updates will keep the business ready for unexpected and expected sale. It will also ensure that you have correct information on the company fair market value and prevent capital loss due to lack of clarity or inaccuracies.

3. Buying a business

Even though sellers and buyers usually have diverse opinions on the worth of the business, the real business value is what the buyers are willing to pay. A good business valuation will look at market conditions, potential income, and other similar concerns to ensure that the investment you are making is viable. It may be prudent to hire a business broker who can help you with the process.

4. Selling a business

When you want to sell your business or company to a third party, you need to make certain that you get what it is worth. The asking price should be attractive to prospective purchasers, but you should not leave money on the table.

5. Strategic planning

The true value of assets may not be shown with a depreciation schedule, and if there has been no adjustment of the balance sheet for various possible changes, it may be risky. Having a current valuation of the business will give you good information that will help you make better business decisions.

6. Funding

An objective valuation is usually needed when you need to negotiate with banks or any other potential investors for funding. Professional documentation of your company's worth is usually required since it enhances your credibility to the lenders.

7. Selling a share in a business

For business owners, proper business valuation enables you to know the worth of your shares and be ready when you want to sell them. Just like during the sale of the business, you ought to ensure no money is left on the table and that you get good value from your share.

Determination of firm value

In determining the firm value, the investor buys and sells the firm's securities and attempts to determine the market value of these securities. If a firm is going to maximize the wealth of shareholders, it must determine its targets such that to increase the investment demand by investors for the acquisition of shares and other securities of the firm. Such requests will increase the price of those securities in the market. One way to increase shareholder's

wealth is through increasing the firm value and share's value. Therefore, the important point is that managers to consider those variables or factors that in the process of determining the value of securities are considered by investors.

Inflation and Firm Value

Inflation is defined as the increasing prices of goods massively. It is either because the demands of the services are greater than the supply that can be provided or the raising cost to produce the goods. The increase of inflation might harm the company profitability because the prices of equipment are high and the demand of services will be lower because the lower purchasing power of customer is lower than the prices of the services. At the end, the investors get the lower capital gain than it has to be. The negative association between similar researches is revealed by Akbar et al (2012) and Naik and Padhi (2012), who researched the Indian stock market index (BSE Sensex) from April 1994 to June 2011. Akbar et al (2012), found that a negative relationship between inflation and stock prices suggests that stocks are not a good hedge against inflation. While, Naik and Padhi (2012) revealed that the negative relationship between inflation and stock return can be explained through the dividend discount model. Since, stock price can be viewed as the discounted value of expected dividend, an increase in inflation may enhance the nominal risk -free rate and thus the discount rate leading to declining stock price.

Impact of Inflation

Issues regarding the impact of inflation on growth, productivity and output have been extensively debated in the field of macroeconomics. Theoretical models in the money and growth literature analyse the impact of inflation on growth focusing on the effects of inflation on the steady state equilibrium of capital per capita and output (Orphanides and Solow, 1990). Inflation affects the growth of the economy in many ways, its burden has been shifted on retired people whose income is fixed. For example, when prices for goods and services increases, these pensioners would not get the same amount of goods they could buy previously. This discourages savings and reduces economic growth because the economy needs a certain level of savings to finance investment which boosts economy growth. Besides its burden on investment makes it to plan for what to produce, where to produce and for whom to produce in future because business cannot predict the demand for their product due to the higher prices they will have to charge so as to cover their cost. It also causes uncertainty about future prices, interest rate, and exchange rates, and this in turn increases the risks among potential trade partners as well as discourages trade. The effect of inflation

on investment occurs directly and indirectly. It increases transaction and information which directly inhibits economic development. For instance, when inflation makes nominal value uncertain, investment planning becomes difficult. Individual may be reluctant to enter into contracts when inflation cannot be predicted making relative prices uncertain. This reluctance to enter into contracts over time will inhibit investment which will affect economic growth. In this case inflation will inhibit investment and could result in financial recession (Case et al, 2020). Traditional economic theory predicted that under competitive pressures, with inflation expected to continues, the firm's prices, required rate of return and, for an unlevered company, costs, profits, dividends and stock prices would rise at the same rate as prices generally. Such theory would have led one to anticipate an extremely high positive correlation between the profit of a company and at least expected inflation. Inflation affects profits by reacting on sales volume, by influencing the level of costs and by changing the relationship between costs and prices (Mankiw, 2014). Since manufacturing companies generally determine prices by reference to cost, pricing policy becomes particularly important in inflation. The level of profits differs according to whether prices are determined on the basis of original cost or current replacement cost. Sustained inflation is damaging to long-run growth and the financial system in general. Increase in inflation lead to lower real returns not just on money, but on all other assets too. These low returns interfere with the functioning of financial markets and the allocation of investment. Low real returns have the effect of severely damaging the credit market. As a result, higher inflation contracts the supply of credit available to fund capital investment damaging the economy (Blume, 1978). This implies that inflation affects investment in several ways mostly inhibiting economic growth. The source of inflation is money and the supply of it. Investors need to be able to expect returns in order for them to make financial decisions. If people cannot trust money, then they are less likely to engage in business relationship. This results in lower investment, production and loss socially positive interactions. Among other effects, people may start to attempt to trade by other less efficient, means in order to avoid the unpredictable price levels due to inflation.

Inflation has a corrosive effect on business. It discourages productivity growth, leads to inefficient allocation of resources, depresses company valuations, and carries the seeds of future recession. To protect the adverse effects of inflation, companies must assess the risk of inflation to their businesses, develop an in-depth understanding of their real costs and prices and create strategies to protect their gross margins and safeguard their investment programs (Ulrich et al, 2010). In general, inflation has both the positive and negative impacts on firms. However, firms prefer inflation to be low and stable. High inflation rate may increase

the cost of production. Some of the causes of inflation for firms are menu costs, wage inflation, uncertainty and confusion, and international competitiveness (Pettinger, 2016). However, inflation can also be beneficial to firms in a way that it reduces the real value of the firms' debt. On the other hand, moderate inflation resulted from strong economic growth is a stimulus to demand-pull inflation. Rising inflation allows firms to increase the price level and hence increase in profitability of the firms. Relationship between inflation and firms' performance in Nigeria indicated that inflation has negatively impacted the performance of firms. The study analyzed the performance of banks to represent corporate entities as their subject of study. The magnitude of the effect between inflation and profitability of banks were using reported profit, return on equity (ROE) and earnings per share (EPS) as performance indicator of the banks. The results revealed 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 (Chioma, 2015).

Research into the impact of inflation on business firms has varied widely in a number of important areas. Most studies use the same criteria for identifying debtor and creditor firms, but some apply the criteria to average measures while others use only the first year. The time periods are rarely identical, and many methods have been used for testing the data. Even the underlying assumptions are different in some studies. Due to these and other inconsistencies, it is not surprising that the results of research undertaken thus far have often been conflicting.

Until the late 1960s, businessmen, economists, and the general public assumed that a period of rising prices acts as a stimulus to the economy and that, in general, business firms are debtors and, therefore, gain from inflation. This widespread belief that business firms gain from inflation was popularized by John Maynard Keynes and Irving Fisher in 1933.

Why Firms Gain from Inflation

The most prevalent explanation is that of the Keynes-Fisher hypothesis discussed above. The key argument to this hypothesis is that business firms borrow and, therefore, contract to repay fixed dollar amounts. When unanticipated inflation occurs, the decline in the real value of money which results causes losses to creditors and gains to business firms because the real value of the debt is diminished. The essence of this particular explanation rests on the assumption that interest rates fail to completely reflect price level changes during inflation. The Keynes-Fisher Hypothesis then is based on the assumption that interest rates have traditionally been biased estimators of future prices. Without this assumption, the conclusion that creditors lose and debtors gain does not necessarily follow.

Theoretical Framework

Signaling Theory

Signaling theory is fundamentally concerned with reducing information asymmetry between two parties (Spence, 1973). For example, Spence's (1973) seminal work on labor markets demonstrated how a job applicant might engage in behaviors to reduce information asymmetry that hampers the selection ability of prospective employers. Spence illustrated how high-quality prospective employees distinguish themselves from low-quality prospects via the costly signal of rigorous higher education. This work triggered an enormous volume of literature applying signaling theory to selection scenarios that occur in a range of disciplines from anthropology to zoology (Bird & Smith, 2005). Management scholars have also applied signaling theory to help explain the influence of information asymmetry in a wide array of research contexts. A recent study of corporate governance, for example, shows how CEOs signal the unobservable quality of their firms to potential investors via the observable quality of their financial statements (Zhang & Wiersema, 2009). Diversity researchers use signaling theory to explain how firms use heterogeneous boards to communicate adherence to social values to a range of organizational stakeholders (Miller & Triana, 2009). Signaling theory is frequently used in the entrepreneurship literature, where scholars have examined the signaling value of board characteristics (Certo, 2003), top management team (TMT) characteristics (Lester et al, 2006), venture capitalist and angel investor presence (Elitsur & Gavious, 2003), and founder involvement (Busenitz et al, 2005). Signaling theory is also important to human resource management, where a number of studies have examined signaling that occurs during the recruitment process (Suazo et al, 2009). As illustrated in Figure 1, the use of signaling theory has gained momentum in the management literature in recent years as scholars have expanded the range of potential signals and the contexts in which signaling occurs. Despite the emergence of signaling theory in management research, as of yet there exists no concise review in the management literature. As a result, management scholars almost universally refer to either Spence's (1973) examination of signaling in job markets or Ross's (1977) study of managerial incentives as signals to describe the theory's central tenets. Over time, however, the key concepts underlying signaling theory have become blurred (Highhouse et al, 2007), causing some to argue that signaling theory is ill defined (Ehrhart & Ziegert, 2005). Although a number of studies integrate signaling concepts with related management theories (Deephouse, 2000; Ryan et al, 2000; Sanders & Boivie, 2004), but no existing management research has systematically described the core ideas of signaling theory and how management scholars have

applied them. We address this gap in the literature by reviewing management research relying on signaling theory.

Stakeholder theory

Stakeholder theory was a collection policies and practices relating to stakeholders, values, compliance with legal requirements, respect the community and environment, as well as the commitment of business to contribute to sustainable development. Stakeholders basically have the ability to control or affect economic resources used by company. Therefore, power of stakeholders was determined by strength of stakeholders toward source (Ghozali and Chariri, 2007). These strengths were ability to restrict the use of limited economic resources (capital and labor), access to influential media, ability to manage company, or the ability to affect the consumption of goods and services produced by company (Ghozali and Chariri, 2007). When stakeholders controlling economic resources important to company, then company will react in ways to satisfy desires of stakeholders. Therefore, stakeholder theory generally relates to how to manage their stakeholders. Ullman (1985) explains stakeholder's management depends on strategy adopted by company. There were two strategies that can be used, active or passive. Active strategy was when company tried to affect the organization's relationship with stakeholders that considered influential or important. Meanwhile, companies that adopt passive strategies tend not to constantly monitor the activities of stakeholders and deliberately did not seek the optimal strategy to attract the attention of stakeholders.

The Keynesian school of thought (established by John Maynard Keynes 1883 – 1946) on the other hand emphasizes the increase in aggregate demand as the source of demand-pull inflation (Hayes, 2020). The aggregate demand comprises consumption, investment and government expenditure. When the value of aggregate demand exceeds the value of aggregate supply at the full employment level, the inflationary gap arises. The larger the gap between aggregate demand and aggregate supply, the more rapid is the inflation (Parkin, 2018). According to demand-pull inflation theory of Keynes, policy that causes decrease in each component of total demand is effective in reduction of pressure demand and inflation. One of the reductions in government expenditure is tax increase and to control volume of money alone or together, can be effective in reducing effective demand and inflation control. In difficult conditions, during war times for example, when hyperinflation is created, control of the volume of money or decrease in general expenditure may not be practical if the increase in tax go against the direct action for control on demand (Keynes, 1936).

Empirical Review

Etale and Ogiriki (2021) investigated the effect of inflation on earnings of manufacturing firms in Nigeria. The evaluation of data collected from a sample of eleven companies using multiple regression analysis revealed that inflation had negative effect on earnings per share. Ochieng and Kinyua (2013) investigated the relationship between inflation and dividend payout for firms quoted on the Nairobi Securities Exchange. They also considered the relationships between exchange rate, Treasury bill rate and dividend payout. The study employed multiple correlation technique to analyze data collated from a subset of the 59 listed companies at their exchange for the period 2002 to 2011. The study revealed, via a coefficient of determination of 0.055, that inflation rate has statistically insignificant impact on dividend payout. However, a positive correlation exists between exchange rate, Treasury bill rate and dividend payout.

Umaru and Zubairu (2012) critically and empirically examined the influence of inflation on the growth and economic development of Nigeria using time series data extracted from Central Bank of Nigeria (CBN) for the forty-one years period 1970 – 2010. The study employed Augmented Dickey-Fuller (ADF) test statistics for confirming presence of unit root (to determine non-stationary condition) and the Granger causality test to determine the existence of causation between Gross Domestic Product (GDP) and inflation using F-statistic. The study revealed that all the entered variables are stationary via ADF and GDP causes inflation. Further, there is a positive relationship between inflation and GDP. Konchitchki (2011) looked into the effect of inflation and nominal financial reporting on firm performance and stock prices. He adopted the content analytical technique and observed that though the monetary unit assumption of financial accounting assumes a stable currency (i.e., constant purchasing power over time), yet, even during periods of low inflation or deflation, nominal financial statements violate this assumption. He notes that, while the effects of inflation are not recognized in nominal statements, such effects may have economic consequences. Further, that unrecognized inflation gains and losses help predict future cash flows as these gains and losses turn into cash flows over time. He, also, discovered significant abnormal returns to inflation-based trading strategies, which suggest that stock prices do not fully reflect the implications of the inflation effects for future cash flows. Additional analysis reveals that stock prices act as if investors do not fully distinguish monetary and nonmonetary assets, which is fundamental to determining the effects of inflation. Based on the above, he posited that, although inflation effects are not recognized in nominal financial statements, they have significant economic consequences, even during a period in which inflation is relatively low.

Jubaedah et al (2016) although studied the impact of financial performance, capital structure and macroeconomic factors on the value of the firm highlighted the significant

influence exerted by the independent variables (financial performance, capital structure, inflation and exchange rates) on corporate value. The study achieved this using panel regression analysis on cross-sectional time series data collated from the audited annual reports of twenty textile firms listed on Indonesian stock exchange.

Daferighe and Charlie (2012) examined the relationship between inflation and the performance of the stock market, specifically, Nigerian Stock Exchange (NSE). The study employed time series (secondary) data on the exchange for a twenty years period (1991-2010). It developed four models made up of four dependent variables (market capitalization ratio, total value of shares traded ratio, percentage change in all share indexes and turnover ratio) and a single independent variable. The results of multiple regression indicated negative relationships between the response variable and the explanatory variable (inflation). It aligned with the result of a later study conducted by Zhongqiang (2014).

Effiong et al (2011) investigated the correlational and differential influence of historical cost and current cost profits on the operating capabilities of the firm. They adopted the survey technique to investigate thirty-one (31) Nigerian companies carrying first-tier securities under seventeen industrial classifications. Their financial statements were adjusted for effects of price changes using the Consumers' Price Index (CPI). Correlation influence between the historical cost profits on the operating ability of the firm was measured and established on one hand and that of current cost profits on the other hand Differential impacts of the method of profit measurement on the operating capability of the firm was equally measured and established. The weighted value of students' t-distribution reveals a correlation which is materially significant between profits and operating ability of the firm. In addition, the F-test result reveals substantial differential impacts of profits measured on historical and current cost bases on the operating ability of the firm during periods of rising prices. They postulated that the operating ability of the firm is significantly influenced by the reported profit. That is, the profits declared and distributed will, to a greater extent, increase or reduce the operating capabilities and operational capacity of the firm.

Saeedi and Akbari (2010) in their study of the impacts of inflation on the effectiveness of economic value added (EVA) of firms in Iran adopted both survey and panel techniques in choosing a sample of 374 firms over a period of 6years (2002-2007). Quota sampling method ensured proper representation of production companies. They investigated the relative ability of the adjusted EVA and nominal EVA to measure firm performance as reflected in stock returns, stock prices, net assets and operating cash flows. Using an inflation corrected EVA metric, they measured the sensitivity of EVA to a high two-digit rate of inflation. Except for Cement, Metals and Metal products, Pharmaceutical and Chemical industrial groups, they found no evidence

that adjusted EVA is superior to nominal EVA for firm performance evaluation on the basis of stock price. Also, except for Metals and Metal products industrial group level, the results do not show that adjusted EVA is superior to nominal EVA for evaluation of firm performance on the basis of operating cash flows. Collectively, the results show that they cannot strongly concur that for the companies listed in Tehran Stock Exchange the adjusted EVA is superior to nominal EVA for firm performance evaluation as reflected in stock return, stock market price, net assets and operating cash flows. Therefore, in spite of the high rate of inflation in Iran the results of this study are inconsistent with Warr (2005).

El Mir and Seboui (2008) in a study about corporate governance investigated the relationship between EVA and CSV and concluded that EVA is not an appropriate parameter because it cannot explain CSV. Using regression analysis, they found that convergence or divergence of EVA and CSV could be explained widely through corporate governance criteria such as the characteristics of the Board, auditors, share ownership of the executive members, institutional ownership and composition of remuneration.

Sameti and Moradian (2008) examined the relationship between firm value and inflation rate for firms operating in Tehran Stock Exchange during the period 1995 to 2005. Based on the results, the effect of inflation on the value of the firms was not significant. Hassas (2009) examined the relationship between institutional investors and the value of firms in Iran. To test their hypothesis and to determine the firm value, they used multiple linear regression and CSV, respectively. The results of their research showed a positive relationship between institutional investors and the firm value.

Baradaran and Hossein (2013) investigated the relationship between some corporate governance mechanisms considering the created value for shareholders and the economic value added for the years 2007 to 2011. In the study, the value created for shareholders using the Fernandez model and the economic value added using the model proposed by Stewart were measured. The results showed that from eight mechanisms of corporate governance in the study, four mechanisms, including the amount of government's influence and ownership, the ownership of institutional shareholders, capital structure, and the amount free-floating shares, were related to the value created for shareholders. As well as from eight corporate governance mechanisms examined in this study, three mechanisms, including the amount of government's influence and ownership, the ownership amounts of institutional shareholders, and the amount free-floating shares, were related to the economic value added.

Shariati et al. (2013) in a study by investigating the effect of long-term relationship of variations of stock index and oil prices on the economic growth of countries participating into the D-8 Group, examined relationships between variables such as oil price changes, interest rate,

changes in stock index and GDP in D-8 countries for the period 2000 to 2010. In this study, Johansson and VECM methods were used for data analysis. The results suggest that increased oil prices lead to the increased production. This suggests that increased production of member countries is due to the oil exporting or oil derivatives with high added value.

Bradley and Jarrell (2003) examined the effects of inflation on the standard Constant-Growth valuation model using content analytical method. They discover that the presence of inflation vitiates the generally accepted expression of this model for the value of a firm that either makes no new investments or invests only in zero net present value projects. In other words, if expected inflation is positive, the generally accepted and widely used expression for the value of the firm under either of these two conditions seriously understates the true value of the firm, even at modest levels of inflation. They also examine the effects of inflation on the firm's weighted-average cost of capital (WACC). They also find that the popular WACC equation developed by Modigliani and Miller in 1958 (M&M, 1963) is not inflation-neutral when stated in nominal terms. Specifically, when expected inflation and corporate tax rates are positive, the nominal M&M WACC understates the firm's true nominal WACC by a significant amount. They deduced how to adjust the standard M&M formula to correct for this understatement and concluded that the WACC equation developed by Miles & Ezzell (1985) is inflation neutral when stated in nominal terms, and thus, there is no need to adjust the equation in the presence of positive expected inflation which is invaluable in the practical application of company valuation techniques.

Hondroyiannis and Papapetrou (2006) studied the dynamic relationship between real stock returns and expected and unexpected inflation utilizing a Markov Switching vector autoregressive model (MS-VAR). A Markov regime-switching model (MS) was employed to capture the structural breaks during the estimation period once the two parts of inflation are determined. Then able investigate the validity of Fama’s proxy hypothesis, the permanent parts of inflation were significantly negatively correlated with real stock returns. The Markov regime-switching model has the advantage that it was able to capture the dependence structure of the series both in terms of the mean and the variance. The results suggest that actual inflation does not significantly influence real stock market returns. Inflation was then decomposed into two components, one due to supply shocks (permanent inflation) and one due to demand shocks (temporary inflation).

Lee (2010) re-evaluates whether the stock return and the inflation relation indeed due to inflation illusion by reexamining the hypothesis using longer sample period of the US and international data. The inflation illusion hypothesis explained the post-war relation well; it was not compatible with some features of the pre-war relation. A major problem is that while this hypothesis anticipates underpricing of stock prices with high inflation. Thus, the study observed

the overpricing with high inflation in the pre-war period. This implies that although the mispricing component plays an important role in the stock market and inflation relation in both subsample periods. The result found the two types of stock return and inflation relations without imposing a particular permanent and temporary restriction on the two types of shocks. The two regimes hypothesis show positive and negative inflation shocks can be easily compatible with both pre- and post-war relations in the US. There were indeed two distinct forces in the economy in each period, and they drive the relation in opposite directions. The observed relations in the pre-war and post-war periods are consistent with the relative importance of these shocks. The bivariate VAR identification found that there are two type of stock return and inflation relationships in developed countries. Researcher considered and the observed negative relations in these countries were again consistent with the relative importance of the two types of inflation shocks.

Kim and In (2005) investigated the Fisher hypothesis and its examination of the relationship between stock returns and inflation by using the wavelet analysis and hence examines nominal and real stock returns and inflation over the different time scales. They also investigate the variances, covariance of nominal and real returns and inflation. Correlations and cross-correlations between nominal and real returns and inflation were calculated for the different time scales. On the other hand, the study also examines the long-run relationship between stock returns and inflation not only in nominal but also in real terms. The results of the regression analysis in the wavelet domain and the wavelet correlation show that the relationship was positive at the short horizon. Another, results indicated that in all regression analyses, real returns have a significant negative relationship with inflation except for the shortest time scale (d1) and the longest smooth scale (s7) in wavelet analysis.

Khil and Lee (2000) observed real stock return and inflation relations in the U.S. and 10 Pacific-rim countries for the sample period of 1970 to 1997. In the study, they document a negative real stock return and inflation correlation in nine Pacific-rim countries as well as in the U.S. However, Malaysia was the only country that exhibits a positive relation between real stock returns and inflation. Thus, their study provided an empirical framework that attempts to disentangle the sources of these correlations. There were several reasons that they were interested in the stock return and inflation relation in the Pacific-rim countries. First, it was become more important to understand financial markets in Asian countries. Second, while the U.S. and European countries tend to experience mild inflation, Asian countries experience widely different types of inflation. Third, the U.S. experience shows that the stock return and inflation relation may be either positive or negative. Fourth, monetary authorities and their policies in most Asian countries tend to be more prone to political influence than in the U.S. Fifth, one of the hypotheses that explain the negative correlation between stock returns and

inflation was the tax hypothesis. But Malaysia experiences a positive correlation between stock returns and inflation. As such, it would be interesting to look into Malaysia's experience to see whether it has a different tax treatment of depreciation compared with other countries. The result shows the relationship between real stock returns and inflation appeared to be inconsistent with the predictions of the Fisher hypothesis and common sense that common stocks should be a hedge against inflation but was in line with the post-war experience of the U.S. and European countries. Malaysia was a country that exhibits a positive relation between stock returns and inflation. Second, the identification and decomposition analyses show that the interaction of real and monetary disturbances appears to explain at least nine countries observed stock return and inflation relation. In these countries, the real output disturbances drive a negative between stock return and inflation relation, while monetary disturbances yield a positive in stock return and inflation relation. Third, Indonesia and Malaysia turn out not to follow the above-mentioned pattern of real and monetary disturbances. In Malaysia, both real and monetary components yield a positive relation between stock returns and inflation. In Indonesia, both real and monetary components yield a negative relation between stock returns and inflation.

Rapach (2002) measured the long-run response of real stock prices to a permanent inflation shock for 16 individual industrialized countries by using recent developments in the testing of long-run neutrality propositions. Under long-run inflation neutrality, an exogenous increase in the trend rate of inflation (trend rate of money stock growth) will have no long run effect on real stock prices. However, some well-known theories suggested that an increase in trend inflation can bring about a long-run decrease in real stock prices. The result found little plausible evidence for a negative long-run real stock price response to a permanent inflation shock in the countries to assume that the contemporaneous decrease in inflation in response to a productivity shock and the liquidity effect were large. The study also shows the evidence that the long-run real stock price response to a permanent inflation shock was positive in a number of industrialized countries. The structural bivariate VAR approach found that a permanent inflation shock significantly increases long-run real output levels in some relatively low-inflation industrialized countries (Austria, Finland, Germany, and the United Kingdom). A long-run increase in real output should permanently increase anticipated earnings and thus real stock prices. The study found evidence against a long-run Fisher effect with respect to nominal interest rates on short-term government bonds for a number of industrialized countries (Belgium, Canada, France, Germany, Ireland, Netherlands, United Kingdom, United States). More specifically, the nominal interest rates typically increase less than one-for-one with inflation in the long-run in response to a permanent inflation shock and thereby lowering real interest rates in the long run. Using a trivariate structural VAR framework, Rapach (in press)

also finds that the long-run real interest rate typically falls in response to a permanent inflation shock for a large number of industrialized countries. A lower long-run real interest rate on risk-free bonds should also increase long-run real stock prices by lowering the rates at which anticipated earnings were discounted.

Abu (2005) explored the varying volatility dynamic of inflation rates in Malaysia for the period from August 1980 to December 2004. Exponential generalized autoregressive conditional heteroscedasticity (EGARCH) models are used to capture the stochastic variation and asymmetries in the financial instruments. Besides modeling the asymmetric effect of shocks to inflation uncertainty, the EGARCH-Mean model was employed to test whether the effect of inflation uncertainty on inflation rate in Malaysia either positive or negative. In this study, the positive and significant value of β3 coefficient implies that positive shocks have a greater impact on inflation uncertainty as compared to negative shocks. Another result shows that there was no contemporaneous relationship between inflation uncertainty and inflation level. There was sufficient empirical evidence that higher inflation rate level will results in higher inflation uncertainty.

Geyser and Lowies (2001) attempts study the impact of inflation on stock prices in two SADC countries which were South Africa and Namibia. The study used simple regression analysis. The result was not one of the two selected countries offers a perfect hedge against inflation. The South African experience shows that the companies listed in the mining sector are negatively correlated against inflation. The selected companies in financial services, information technology, and food and beverage sectors show slightly positive correlation between stock price changes and inflation. All the selected companies of Namibia except Alex Forbes show a strong positive correlation between stock price changes and inflation.

Schwert (1981) analyzed the reaction of stock prices to the new information about inflation. He stated that the important reason to expect a relationship between stock returns and the unexpected inflation was that unexpected inflation contained new information about future levels of expected inflation. Despite of debtor or creditor hypothesis, it was difficult to predict the distributive effects of unexpected inflation on stock returns. The unexpected inflation has variety of effects on the value of the firm, and unexpected increase in expected inflation could cause government policy-makers to react by changing monetary of fiscal policy in order to counteract higher inflation. He found that the stock market seems not react to unexpected inflation during the period of Consumer Price index was sampled on several weeks before the announcement date.

Diaz and Jareno (2009) investigate the short run response of daily stock prices in the Spanish market to the announcements of inflation news on a sectorial level. The aim was to study the relationship between unanticipated inflation news and stock returns, focusing our analysis on the sector of activity. The methodology based on time-series event-study

methodology included a large number of recent papers used these approaches to analyze the repercussion of some macroeconomic announcements on returns of different market indexes, interest rates or stocks. The result shown coefficients of all sectors in the preannouncement period are not statistically significant. No evidence of a significant relationship between abnormal returns and total inflation during this period is found. The proximity to the announcement originates uncertainty in the market but these abnormal returns were independent of the final amount of the total inflation rate. Moreover, the coefficients of all sectors are always positive and higher than coefficients corresponding to the pre-announcement period. In contrast to literature and the study was observe a significant positive relationship between stock returns and inflation changes for the Spanish market as a whole and for several sectors. In terms of the “flow-through” theory, most companies seem to have a high capability to transfer the inflation to the prices of products or services. This was the case of the companies from sectors that show an insignificant relationship between abnormal returns and inflation rate, and also from sectors in which this relationship is significant and positive. Lastly, relationship between inflation rate and abnormal returns was negative in the post-announcement period, but the coefficient is statistically insignificant. There was no evidence of a possible adjustment of prices subsequent to an overreaction on the announcement day

METHODOLOGY

Research Design

This study adopted explanatory research. An explanatory research method is the type of studies that establish causal relationships between variables. It is aimed to test a theory or hypothesis or strengthen or even to reject those existing theory or hypothesis. we follow a longitudinal study design in this study.

Source of Data

The data used in this research is secondary data. The secondary data implies data extracted from published sources. The sources are the World Bank, Central Bank of Nigeria and company annual reports. Time series data are data collected over several time periods that can be implied from the data gathered from 20-year-annual report of selected health sector firms and also the inflation rate that collected during 2001 to 2019.

Population and Sampling

Target population includes all listed healthcare companies on Nigeria Stock Exchange from 2001 to 2019. The list includes Ekocorp Plc, Evans Medical Plc, Fidson Healthcare, Glaxo

Smith Kline Consumer, Juli Pharm Plc, May & Baker Nigeria, Neimeth International Pharm, Nigeria-German Chemicals, Pharm-Deko Plc, and UnionDac Plc. The systematic elimination method was used for sampling four of the listed healthcare firms for inclusion in the study. The applied criteria for the selection of sample are as follows:

(i) During the study period, no trading interruption more than three months could have occurred. (ii) Financial information needed for study in the period 2001 to 2019 should have been presented to the Nigeria Stock Exchange and they should be available and accessible. (iii) During the study period, no change in the financial year is allowed. Secondary and time series data were used in this research. Time series data were collected over 19 years annual reports of healthcare companies in Nigeria stock exchange and also the inflation rate for the periods 2001 to 2019. Whereas, the inflation rate as the macroeconomic analysis was gathered from the official website of World Bank.

Measurement of Variables

Dependent Variable

The dependent variable of this research is firm value. We proxy firm value using market value of firms in terms of their earnings per share (EPS). The EPS of firms are extracted from the audited consolidated financial statement of firms published annually and used in this study as proxy for market value. This variable also used by previous researchers such Etale and Ogiriki (2021), Arsal (2021), and Etale and Egba (2020). Although in other research studies like the works of Ghani et al (2023), Gharaibeh and Qader (2017), and Fu et al (2016) firm value was measured by using Tobin's Q ratio. However, this research uses EPS as the proxy for market value. EPS as a measure is arithmetically estimated as follows:

$$EPS = \frac{PRICE\ PER\ SHARE}{EARNINGS\ PER\ SHARE} \quad (1)$$

Independent Variable

Inflation rate is the independent variable of this study. Inflation is the price which increases simultaneously and occurs in general. According to Blanchard and Johnson (2013), inflation rate is the rate at which the average price of the goods in the economy is increasing over time. The data of inflation rate is collected using the inflation report issued by World Bank.

Model Specification

The model specification used in this study is based on the description of the relationship between the predictor and the criterion variable of this research work.

$Y = f(X)$ (2)

Where; Y= outcome variable represents market value of firm which is represented by EPS.

X= predictor variable which represents inflation.

Because of the entities studied and the general nature of inflation as a macroeconomic variable we create separate models to accommodate the four firms (GlaxoSmithKline, Fidson, May & Baker and Neimeth plc). We express each company into distinct model relationships in a functional form as follows:

$GSKEPS = (INFLATION)$ (3)

$FIDEPS = (INFLATION)$ (4)

$M\&BEPS = (INFLATION)$ (5)

$NMTHEPS = (INFLATION)$ (6)

We respecify the functional equation into econometric relationship as follows:

$$GSKEPS_t = \beta_0 + \beta_1 INFLATION_t + \varepsilon_t \quad (7)$$

$$FIDEPS_t = \beta_0 + \beta_2 INFLATION_t + \varepsilon_t \quad (8)$$

$$M\&BEPS_t = \beta_0 + \beta_3 INFLATION_t + \varepsilon_t \quad (9)$$

$$NMTHEPS_t = \beta_0 + \beta_4 INFLATION_t + \varepsilon_t \quad (10)$$

Where;

GSKEPS represents GlaxoSmithKline earning per share

FIDEPS means Fidson earnings per share

M&BEPS implies May & Baker earnings per share

NMTHEPS is Neimeth earnings per share

ε_t means stochastic error term

INFLATION this is as already known

Method of data analysis

We adopt a simple Ordinary Least Square (OLS) regression which is a classical linear regression model. The OLS technique is used to test relationships in an econometric model. We have adopted it due its proper of being the best linear unbiased estimator.

Method of Hypothesis Testing

The above models have implications for both individual hypothesis testing and joint hypothesis testing. Whereas the former focuses on the significance of the individual variables represented by the betas, the latter serves two purposes: (1) it tests the joint significance of all explanatory variables (2) it tests the joint significance of the lags of each explanatory variable.

Here, we specify four individual hypotheses; hence, the t-test would be employed for hypothesis testing. We discuss each testing procedure in the following sub-sections.

Test of Individual Significance

The individual hypothesis testing would be based on the popular student-test. The t-test statistic is given as:

$$t - statistic = \frac{\hat{\beta}_i}{S.E(\hat{\beta}_i)} \quad (11)$$

Where; $\hat{\beta}_i$ = estimated β_i for *i* = 1, 2, …, *N* and *S. E.* = standard error.

Traditionally, the t-statistic would be compared with the critical value obtained from the t-distribution table to determine its significance. The statistic is significant if it is greater than the obtained critical value. However, the p-value or the probability of t-statistic, which measures the exact significance level and is automatically generated by most statistical software packages including E Views, is now used for hypothesis testing. The p-value is usually expected to be lower than the chosen significance level for the test to be significant.

ANALYSIS AND RESULTS

Presentation of Data

Table 1: Summary earnings per share and inflation for the period 2001 to 2019

YEAR	INFLATION %	EPSGSK (N)	EPSM&B (N)	EPSFID (N)	EPSNEIMETH(N)
2001	18.87364621	0.45	**2.92**	**3.64**	**8.69**
2002	12.8765792	1.7	**4.07**	**2.18**	**9.71**
2003	14.03178361	1.03	**5.96**	**5.21**	**9.47**
2004	14.99803382	1.21	**10.28**	**5.67**	**8.27**
2005	17.86349337	1.96	**35.96**	**3.47**	**3.75**
2006	8.22522152	1.001	**22.28**	**5.56**	**6.75**
2007	5.388007969	1.51	**18.51**	**11.52**	**6.47**
2008	11.58107517	1.63	**20.12**	**10.53**	**6.02**
2009	12.55496039	1.78	**16.63**	**0.50**	**2.50**
2010	13.72020184	2.57	**4.70**	**12.38**	**3.69**
2011	10.84002754	2.4	**4.83**	**12.74**	**2.08**
2012	12.21778174	2.95	**10.21**	**0.92**	**11.05**
2013	8.475827285	2.1	**17.20**	**3.92**	**17.29**
2014	8.062485824	2.52	**7.85**	**8.55**	**23.72**
2015	9.009387183	2.45	**10.65**	**5.31**	**17.10**
2016	15.67534055	1.02	**19.66**	**5.13**	**15.34**
2017	16.52353998	0.41	**12.09**	**5.25**	**10.80**
2018	12.09473155	0.12	**7.87**	**1.65**	**5.28**
2019	11.39679497	2.3	**0.75**	**3.98**	**2.35**

Sources: World Bank and Annual Statement

The table 1 shows time series collection of the datasets over the study period. Nevertheless, the graphical illustration below captures the rate across time.

Figure 1: Graphic presentation of inflation rate in Nigeria

Source: World Bank

Results of Analysis

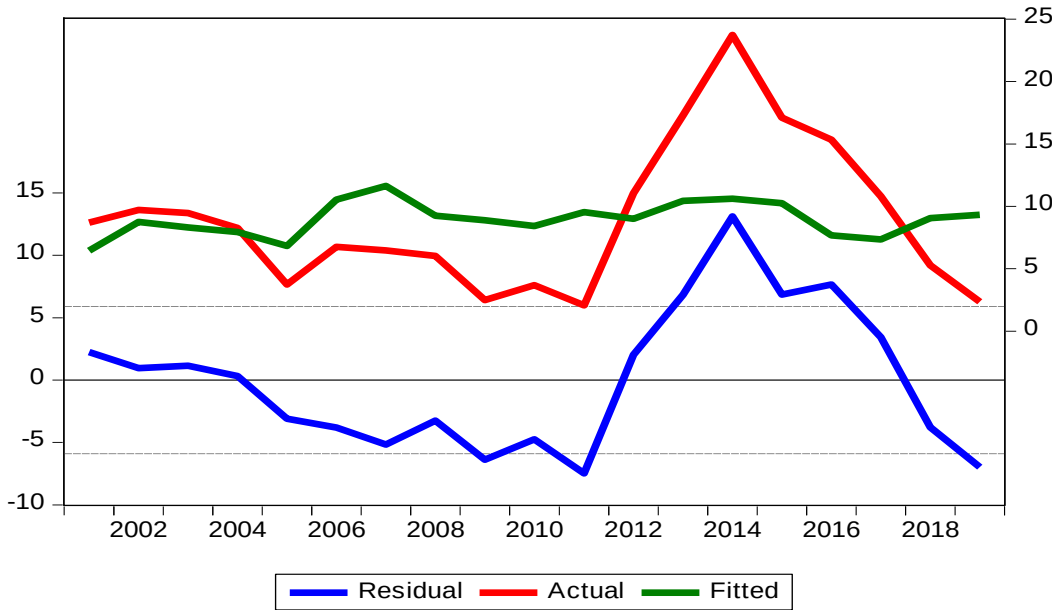

Figure 2: Residual and fitted graph

In Figure 2, we examine the capacity of the models to explain the various relationships. As indicated in the green and red lines both appears to move with limited dispersion of the fitted line from the actual. The movement captures the nature and behaviour of the datasets. The fitted line mimics the actual in a certain way until there is wider space between the lines which indicates error, however it is minimal.

Analysis of Glaxosmithline estimate

Table 2: Glaxosmithkline OLS Result

Dependent Variable: EPS
Method: Least Squares
Date: 02/25/21 Time: 16:28
Sample: 2001 2019
Included observations: 19

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.738892	0.656783	4.170163	0.0006
INFLATION	-0.089280	0.051259	-1.741748	0.0996
R-squared	0.151429	Mean dependent var		1.637421
Adjusted R-squared	0.101513	S.D. dependent var		0.815404
S.E. of regression	0.772909	Akaike info criterion		2.421990
Sum squared resid	10.15561	Schwarz criterion		2.521405
Log likelihood	-21.00891	Hannan-Quinn criter.		2.438815
F-statistic	3.033685	Durbin-Watson stat		1.449446
Prob(F-statistic)	0.099615			

The market value of Glaxosmithkline is represented with earnings per share and by a priori we expect we expect the relationship to be negative given the fact that higher inflation drops the value of assets in nominal terms. From the Table 2 result above the coefficient of Inflation is -0.089280 which is negative. This finding is in line with expectation. The implication of the result is that a unit per cent change in rate of inflation reduces the worth of Glaxosmithkline (GSK) value by approximately 0.08928%, however this is seen to be insignificant.

Hypothesis One

H_{01}: There is no significant relationship between inflation rate and EPS of GlaxoSmithKline plc.

We test the formulated hypothesis in this study using the estimated probability statistics. On the GSK model the *p*-value of inflation is 0.0996 which is greater than 0.05 significant level. Based on decision criteria the null of no significant relationship is not rejected. Conclusive inference shows a positive and insignificant relationship between inflation rate and EPS.

Analysis of Fidson result

Table 3: Fidson OLS Estimate

Dependent Variable: EPS
Method: Least Squares
Date: 02/25/21 Time: 16:41 Sample: 2001 2019
Included observations: 19

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.986504	3.104432	3.216854	0.0051
INFLATION	-0.348253	0.242286	-1.437365	0.1688
R-squared	0.108361	Mean dependent var		5.690000
Adjusted R-squared	0.055912	S.D. dependent var		3.759954
S.E. of regression	3.653329	Akaike info criterion		5.528455
Sum squared resid	226.8958	Schwarz criterion		5.627870
Log likelihood	-50.52033	Hannan-Quinn criter.		5.545280
F-statistic	2.066019	Durbin-Watson stat		2.181773
Prob(F-statistic)	0.168766			

From Table 3, it is clear that inflation declines EPS of Fidson by approximately 0.348253% which conforms to expectation. This implies that holding other things constant, the coefficient of inflation which is -0.348253 decreases EPS when inflation rate rises by unit amount.

Hypothesis Two

H_{02}: There is no significant relationship between inflation rate and EPS of Fidson plc.

From the Table 3 *p*-value of inflation rate is 0.1688 which is greater than 0.05 significant level, hence we could not reject the null of no significant relationship between inflation and EPS of Fidson Plc. There is an insignificant relationship between inflation and EPS.

Analysis of May & Baker Result

Table 4: May & Baker OLS estimate

Dependent Variable: EPS
Method: Least Squares
Date: 02/25/21 Time: 16:43 Sample: 2001 2019
Included observations: 19

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	12.13794	7.570963	1.603223	0.1273
INFLATION	0.008187	0.590876	0.013855	0.9891
R-squared	0.000011	Mean dependent var		12.23895
Adjusted R-squared	-0.058812	S.D. dependent var		8.658615
S.E. of regression	8.909591	Akaike info criterion		7.311434
Sum squared resid	1349.474	Schwarz criterion		7.410849
Log likelihood	-67.45863	Hannan-Quinn criter.		7.328259
F-statistic	0.000192	Durbin-Watson stat		1.050108
Prob(F-statistic)	0.989107			

In the Table 4 the coefficient of inflation is 0.008187 which implies that a unit percent increase inflation increases EPS of May & Baker by approximately 0.008187%, however in nominal terms this appears to comply with expectation.

Hypothesis Three

H_{03}: There is no significant relationship between inflation rate and EPS of May & Baker plc.

The *p*-value of inflation in Table 4 is 0.9891 which is also greater than 0.05 level of significance. according to the decision criteria the null is accepted. The conclusive inference indicates an insignificant relationship between inflation and EPS of May & Baker plc.

Analysis of Neimeth OLS Result

Table 5: Neimeth OLS result

Dependent Variable: EPS
Method: Least Squares
Date: 02/25/21 Time: 16:45
Sample: 2001 2019
Included observations: 19

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	13.70694	5.008966	2.736481	0.0141
INFLATION	-0.384379	0.390925	-0.983255	0.3393
R-squared	0.053810	Mean dependent var		8.964737
Adjusted R-squared	0.001848	S.D. dependent var		5.889165
S.E. of regression	5.894605	Akaike info criterion		6.485253
Sum squared resid	590.6882	Schwarz criterion		6.584667
Log likelihood	-59.60990	Hannan-Quinn criter.		6.502078
F-statistic	0.966791	Durbin-Watson stat		0.529355
Prob(F-statistic)	0.339270			

In Table 5, the coefficient of inflation rate is -0.384379 which is negative revealing that one percent increase in inflation rate declines EPS of Neimeth by approximately 0.384379%. In real terms this result complies with expectation since inflation reduces the real worth of a quantity.

Hypothesis Four

H_{04}: There is no significant relationship between inflation rate and EPS Neimeth plc.

The *p*-value of inflation in the Neimeth EPS model is 0.3393 which is greater than 0.05 level of significance in Table 5. Considering the decision criterion, the null of hypothesis is accepted while the alternate is rejected. The conclusive inference indicates there is no significant relationship between inflation rate and EPS of Neimeth plc.

DISCUSSION OF RESULTS

The relationship between inflation and market value of firms is insightful. In the four major pharmaceutical firms in the Nigerian health sector, their market values expressed as EPS react differently from inflationary spirals. For instance, the GSK and Fidson are impacted negatively by rising inflation. The implication is that market value of EPS drops with inflation which contradicts outcome of inflation. Ordinarily, inflation causes persistent increase in monetary values of items in the balance sheet. In the GSK model it is the reverse. Both variables rather move in the opposite direction. The model generating the result has a coefficient of determination of 15.14%. The value of *F* statistics shows model significance. The effect of the negative relationship is hypothetically insignificant.

However, in the M&B and Neimeth model a positive relationship is observed between EPS and inflation. The implication is that increase in inflation increases EPS contemporaneously. The extent to which EPS grows in nominal value due to inflation is not significant at 5%. Inflation can be said to add value to EPS. This makes value of companies to rise above its intrinsic worth. This study findings support prior research works of Sameti and Moradian (2008); Ochieng and Kinyua (2013); Hondroyiannis and Papapetrou (2006); and Rapach (2002) who found that the relationship between inflation and market value of firms to be insignificant.

However, this study findings are not aligned the study results of Etale and Ogiriki (2021), Daferighe and Charlie (2012), Kim and In (2005), Geyser and Lowies (2001) who found that inflation had negative effect on stock prices; as well as Diaz and Jareno (2009), and Khil and Lee (2000) who found that inflation had no impact on stock performance and mixed effects respectively.

CONCLUDING REMARKS

Summary

This study examines the relationship between inflation and value of firms operating in the healthcare sector in Nigeria. The study utilized the ordinary least square of the classical linear regression model and in summary the estimate shows that: the relationship between inflation and market value of GlaxoSmithKline is inverse and insignificantly related; when Fidson plc is modelled the evidence also turned insignificant and negative; while the relationship between May & Baker EPS as well as Neimth EPS and market value are positive and insignificant. The implication is that even though inflation is a significant macroeconomic factor, company market values are impacted differently.

Conclusion

This study investigated the link between rates of inflation in the economy and market value of firms in the Nigerian healthcare products manufacturing sector, using secondary data gathered from the World Bank Database and various company audited financial statements covering the period of 2001 to 2019. The study employed Ordinary Least Square analytical technique to test the hypotheses formulated on the study variables based on data generated on four major pharmaceutical firms comprising of GlaxoSmithKline, Fidson, May & Baker and Neimeth plc. The empirical evidence in the GlaxoSmithKline and Fidson models shows that the relationship between inflation and EPS is negative and insignificant. However, the finding in May & Baker and Neimeth models reveals a positive and insignificant relationship between inflation rate and company EPS. On the basis of the result the study concluded that rate of inflation affects firms' market value in the health sector, however the magnitude of the influence is weak.

Recommendations

1. Based on the findings from the research, we recommend that although the relationship between inflation and firm value is weak, listed health sector companies should always be conscious of the effect of inflation as this may be significant in the nearest future.
2. Future research should be undertaken in the health sector to include more samples of pharmaceutical firms in the sector. More variables should be added in the model, including the unobserved computed using a panel data framework. This will generate more plausible result for policy making.
3. In business valuation inflation should be factored into the calculation to arrive at the financial worth of the firm under mergers and corporate takeovers situation.

Contribution to Knowledge

The study is able to expand the existing literature using an updated data that will be useful for literature review for further studies by upcoming researchers. We have shown that inflation is a macroeconomic variable that affects even the balance sheet elements of firms such as its market value, however the degree of the influence is not significant.

Scope for Further Research

Further studies can be conducted on this topic expanding the time scope and geographic scope. This study covered the period 2001 to 2019 whereas other researchers can extend the time period to 2024 in conducting future research on the topic in the middle of year 2025. Also, the connection between inflation and firm value can be examined for other sectors

of the economy just as the current was done on the healthcare sector. Furthermore, studies can be carried out on this topic using from others geographic locations or countries. This would make it possible for scholars to make international comparisons.

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