Asian Journal of Empirical Research

journal homepage: http://aessweb.com/journal-detail.php?id=5004

ARE BUILDING MATERIALS STOCKS A HEDGE AGAINST INFLATION IN NIGERIA

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ABSTRACT

This paper investigates the extent to which stocks of Building materials *firms listed in Nigerian Stock Exchange (NSE) are a hedge against the expected and unexpected inflation in Nigeria over the period 2000–2011. Unexpected inflation is computed as the difference between the actual inflation and the estimates of the expected inflation. The study used real rate of return on equity and regression analysis to find the stocks that provide positive real return and offer inflation-hedging potentials respectively. The findings revealed that in terms of real return based on shareholders' funds and total return to equity, all the firms were not susceptible to adverse effect of inflation but when based on dividend yield all the firms offered no significant hedge against inflation.*

Keywords: Return on equity, Real return, Nominal return, Consumer price index, Inflation-hedging capacity, Shareholders funds, Dividend yield, Capital gain yield

INTRODUCTION

Inflation creates a perennial concern for government, policymakers, and investors (individuals and firms) generally; it causes uncertainty, decreases the purchasing power of money, and ultimately stunts investment and economic activity (Nwude and Herbert, 2013). In consequence, investors are always looking out for the best way to protect their wealth from the ravages of inflation. Preserving the purchasing power of one's investment is the essence of inflation hedging which is vital in achieving long-term financial security. However, because long-term inflation rates will always be highly uncertain, it is difficult to preserve the real value of one's assets by relying on traditional stock and bond investments alone. Accordingly, active investors seem to develop a proclivity to rotate investments into asset classes with different characteristics.

One classical way to hedge against inflation is to diversify into a number of instruments or assets – financial and real – such as stocks, precious metals, foreign currencies and other durable assets. In fact, investment analysts believe that the selective use of commodities within one's investment strategy can prove highly effective not just for achieving portfolio diversification but also as a hedge against inflation, albeit with additional risk. There is a long-held theoretical inflation-hedging strategy about investing in a tangible asset whose supply cannot be increased at the same rate as the currency in which it is being measured. Besides, there is a sense in holding an asset with growing demand and limited supply whose intrinsic value is equally increasing might even harbour a better inflation-hedging attribute.

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The present authors have recently conducted a series of empirical investigations into the inflation-hedging characteristics of stocks of a wide range of product-specific firms quoted on the Nigerian Stock Exchange (NSE). In an earlier study, we investigated the extent to which stocks of breweries listed in NSE are a hedge against the expected and unexpected inflation in Nigeria (Nwude and Herbert, 2013). This and subsequent studies present the results of empirical exploration of this important phenomenon of interest in a variety of stocks quoted on the NSE. In the present study, we report the investment performance of Building materials stocks listed in the NSE with respect to their inflation-hedging potential.

The relationship between stock returns and inflation suggests that investment in equity markets can provide a good hedge against inflation if the revenue and earnings of a company grow over time. Consequently, while governments and policymakers evolve various policies and strategies (fiscal and monetary), investors on their part jostle for smart ways to protect the purchasing power of their investments. In this fifth paper, we look at the stocks of Building materials firms as a recessionary hedge and portfolio diversification tool. In particular, long-term investments, such as equities and bonds, are mostly vulnerable to inflation. Hence, long-term investors show much concern about the risk of inflation. Precisely, investors face a common problem: how to maintain the purchasing power of their asset holdings over time and achieve a level of real returns consistent with their investment objectives. Both dimensions of this problem are often considered together, but there remains an active debate regarding the first, namely which asset type provides the most effective hedge against inflation. The focus on inflation-hedging properties, naturally, panders to the fluctuations in inflation itself. The most intense burst of activity in this area followed the persistent rise in inflation through the 1970s to the 1980s. However, because inflation has remained a constant threat in the economic development of most developing countries, chiefly those of Sub-Sahara Africa (SSA), and with the impetus of government reforms and diversification of the economy, there is a renewed focus on inflation hedging properties of stocks of quoted firms in those sectors.

Countries like Nigeria with a constant history of inflation have a lot more to contend with after the recent global financial crisis of 2007/2008. The meltdown forced governments all over the world to evolve policy tools aimed at stemming the tidal wave of the raging financial tsunami. These policy tools warranted particularly massive injections of liquidity and quantitative easing, with significant implications for risk of inflation. Even before the crisis, inflation had been rising on a global scale. The economic implications of this crisis juxtaposing wider gaps in productivity have unleashed inflation pressure on already weak economies, like Nigeria. While policymakers are working hard to stabilize output and stave off deflation, inflation however remains a major concern. Investors' apprehension makes inflation hedging an important component of an investment strategy.

Over the years, investors have been concerned about the negative effects of rising inflation on the purchasing power of their investments. While there are several investment options at the investors' disposal, not all of them have inflation-hedging properties. In particular, following the recent global financial meltdown with the attendant inflation worries spreading, investors are scrambling to find smart ways to protect the purchasing power of their investments.

Traditional versus evolving inflation hedges

According to Nwude and Herhert (2013), since not all investment options have inflation-hedging properties, in general, inflation hedges can be dichotomized into traditional versus evolving approaches. Traditional inflation-hedging vehicles include commodities (agricultural products, crude oil, precious metals, etc.) and commercial real estate. Commodities have enjoyed historical appeal because of the tendency of their prices to keep pace with inflation. For example, the prices of commodities such as agricultural products (cocoa, palm oil, foodstuffs in general), energy (oil and gas), metals (gold, silver, copper) always go up as inflation rises. Sometimes, inflation is induced by the increases in the prices of these goods. Unlike commodities, Treasury Inflation Protection Securities (TIPS) adjust their principal and interest payments regularly (e.g. monthly) according to changes in the Consumer Price Index (CPI), which is the most common measure of inflation. In recent times, wealth management firms and financial advisers (e.g. Nuveen Investments) have cautioned that the so-called traditional inflation hedges may not hold up so well in today's technology-driven markets. This view is corroborated by a historical comparison which shows that oil offers an excellent hedge against inflation on a 37-year compounded return of 8.5% since 1970, while real estate returned 6.15% over the same time span (see Michael Pento, Senior Market Strategist at Delta Global Advisors, Inc) (www.DeltaGlobalAdvisors.com). He also found that TIPS have been worse inflation protection vehicles, with an average compounded yield of just 5.4% since their inception in 1997. By comparison, gold's return over that same ten-year timeframe has been 8.7%.

New instruments for hedging inflation

In recent years, as a consequence of innovations in financial markets, financial derivatives and their exotic variants have evolved as new forms of instrument trading as well as investment options with inflation-hedging potentials. Table 1 isolates four asset classes with a potential for inflation-hedging. Although each asset class has unique characteristics with a different role in a portfolio, they can help the portfolio keep track of inflation (Nuveen Investments, 2013). According to Nuveen investments, TIPS have a high correlation to U.S. fixed income but can help diversify the fixed-income portion of a portfolio with an inflation hedge; commodities have a low correlation to both equities and fixed income but can be a volatile addition to a portfolio; commercial real estate provides diversification through low correlation to both fixed income and equities, along with some income potential and; global infrastructure offers attractive returns and lower risk than other asset classes and a higher correlation to equities. Its global equity nature makes it a good inflation-oriented diversifier for the international equity component of a portfolio (ibid).

Table 1: Distinctive Characteristics of Four Inflation Hedges

Inflation Hedge	TIPS	Commodities	Commercial Real Estate (REITs)	Global Infrastructure
Inflation-fighting features	Return adjusted to most common measure of inflation – CPI	□ Return adjusted on the basis of demand for goods and services that affects demand for commodity inputs □ Rising prices of commodities, such as oil, can also be driver of inflation	□ Property values tend to adjust to inflation □ Rent increases often tied to CPI	□ Replacement values of infrastructure assets adjust to inflation □ Regulated contracts often have built-in inflation adjustments, such as toll roads and utilities □ Includes companies that can benefit from rising prices
Potential reward/risk	Lowest volatility Lowest returns	Highest volatility Highest returns	High volatility High returns	Moderate volatility Moderate returns
Correlation	Low correlation relative to equity, but higher to fixed	Low correlation to both equity and fixed income	Low correlation to fixed income; moderate correlation to	Low correlation to fixed income; low correlation to equity

	income		equity	
Portfolio construction	Can replace a portion of fixed income allocation to add inflation hedge	Overall portfolio diversifier and inflation hedge to be used in moderation due to high volatility	Overall portfolio diversifier that adds inflation hedge and some income	Can replace a portion of international/world equity allocation
Underlying investment categories	Government-backed bonds whose principal and interest payments adjust to monthly changes in the CPI; backed by the full faith and credit of the federal government	Raw materials used to create products (oil, natural gas, metals, and agricultural products) that can be traded on an exchange	Securities issued by REITS (companies that own and operate commercial real estate)	Securities issued by companies that own, operate, or build infrastructure assets (e.g., toll roads, airports, energy distribution, waste management)

Source: Nuveen Asset Management, 2013 (as in Nwude and Herbert, 2013)

A large literature exists about the inflation-hedging potentials of various classes of assets, including stocks, bonds, Treasury bills, commodities, and real estate (see for example, Bodie, 1976; Boudoukh & Richardson, 1993; Campbell & Vuolteenaho, 2004; Choudhry, 2001; Crosby and Otto, 2000; Fisher and Webb, 1992; Gorton & Rouwenhorst, 2006; Griffiths, 1976; Hoesli *et al*, 1996; Hoesli *et al*, 2006; Mengden and Hartzell, 1988; Worthington & Pahlavani, 2007; Hoevenaars *et al*. 2008; Bekaert & Wang, 2010; and Bruno & Chincarini, 2010). Equity stocks are by far the most widely studied asset class with inflation-hedging properties. These studies argue that stocks provide protection against increases in the general price level, especially pension funds, whose liabilities usually dovetail with inflation. While every country experiences inflation, the rates vary from one country to another. In most advanced economies, inflation rate is relatively moderate to a low single digit level unlike the trend in developing economies like Nigeria where inflation rate is often in double digit figures.

The effect of inflation is profound and this makes it a major challenge in investment decisions. For example, a prolonged period of inflation results in a change in the foreign exchange value of the currency. Because of the negative impact of inflation on the economy and citizens' incomes, every government tries to mitigate the incidence through appropriate monetary and fiscal policies. Inflation occasions a chain of reactions with debilitating consequences on the citizens and the economy as a whole. With inflation or expected inflation, there will be unrelenting increases in prices of goods and services, continuous decline not just in the value of the local currency but also in profits and earnings from investments of economic entities (including households). The urge to defer current consumption to future date for investment purposes will wane, and prices of real and financial assets will skyrocket.

In Nigeria, inflationary pressure has been dense and persistent and the nation is yet to break out from this vicious circle. In the 1990s, inflation spiked from 13% in 1991 to 46% 1992 and to 72.8% in 1995. From then, it steadily declined to 6.9% in 2000 before rising to 10.8% in 2011 and has remained within +2% brackets since then. Several industrialized economies had witnessed raging inflationary pressure as at 1974, with inflation rates in UK, France, Italy, Holland, Belgium, Japan, and the USA at 20, 14, 20, 10, 13, 24, 12 percent, respectively (Griffiths, 1976). Inflation in Nigeria has been attributed to a number of factors, including low productivity, excess liquidity in the financial system, perennial high cost of funds, continued depreciation of the Naira, poor or weak infrastructure (especially, epileptic electricity supply, poor transportation network, high cost of transportation amidst high pump price, incongruous fiscal and monetary policies, and weak and corrupt governance.

From a macroeconomic standpoint, budget deficits are the fundamental cause of inflation, particularly in countries with prolonged high inflation like developing economies, whose deficits are nearly always financed through money creation. The period immediately following the return to democratic political governance in Nigeria in 1999, witnessed persistent increases in government expenditures and increase in aggregate demand which, in the process, resulted in a general rise in the price level of goods and services as well as increase in interest rates. The economic logic is that government's unguarded expenditures amidst a corrupt system of governance will give rise to persistent fiscal deficits and inflation. The standard macroeconomic theory argues that fiscally dominant governments running persistent deficits would sooner or later finance the deficits via money creation, which naturally have inflationary effects (Dockery, Ezeabasili & Herbert 2012). This view is supported by Fischer & Easterly (1990) who earlier noted that rapid growth in the money supply could be driven by underlying fiscal imbalances, which will detonate rapid inflation. The ensuing higher interest rates will crowd out private investment and thus reduce private sector investment in productive activities less profitable as a consequence of excessive government borrowing from the financial markets. The search for alternative (protected) investment outlets compels investors to jostle for inflation-hedging assets.

Nigeria is chosen for this empirical investigation for a number of reasons. Despite the obvious fact that Nigeria is an oil-rich country with a large inflow of oil revenue, the country has nonetheless experienced prolonged spell of double-digit inflation. In fact, an important feature of the Nigerian economy is the transition to high rates of inflation. In the 1970s, the overall inflation rate averaged 15.3 percent; in the 1980s it increased to an average of 22.9 percent, and in the 1990s the average inflation rate soared to 30.6 percent, but by 2006 the economy experienced a sharp average fall of 18.4 percent in the inflationary trend (Dockery *et al.*, 2012). These high rates of inflation are caused by the widening fiscal deficits, sources of deficit financing, and the depreciation of the Naira exchange rate (Ezeabasili *et al.*, 2012). The high inflation rates over a prolonged period have resulted in substantial costs and large decline in purchasing power, at the same time as the performance of the economy has declined, exacerbated by poor macroeconomic management and political uncertainty (ibid.).

One of the perennial policy challenges facing Nigeria, and indeed most Sub-Saharan African (SSA) countries, is inflation and how to control it. The challenge of controlling inflation has both monetary and fiscal policy implications. Prior to the recent financial crisis, many developing countries including Nigeria had been grappling with the insidious challenge of unrelenting inflation. The conundrum caused by the financial meltdown forced policy makers and regulators to quickly adopt a number of conventional and unconventional tools as experimental measures to mitigate the tsunamic effects of the global financial crisis. These include a broad range of stimulus packages and quantity easing. While these measures were aimed to resolve one problem – the financial crisis – they nevertheless left in their trail another invidious challenge, inflation. Thus, the crucial consideration for investment purpose is how to protect investments from the scourge of inflation.

Since the 1990s, equity investment in banking stocks has been on a steady increase in the Nigerian stock market. The main reason for this attraction is the belief that stock market investment acts as a better inflation-hedge than most other investment assets. This constitutes the basis of this research. Precisely, the questions are: Is this belief right or wrong? Is there any evidence to support this assertion from the Nigerian Stock Market? In providing answers to these questions, the remainder of this paper is structured as follows: the next section provides a summary of the previous work and the section that follows deals with the methodology employed in the empirical analysis. The penultimate section takes care of the empirical results and its discussion, while the last section provides the summary of findings, concluding remarks and recommendation.

LITERATURE REVIEW

There is a general concession that investment in common stocks is a good hedge against inflation. The empirical evidence for this belief has its origin in the seminal work of Irving Fisher (1930) which proposed that expected nominal interest rates should move in tandem with expected inflation. Fama and Schwert (1977) exemplified how the Fisher (1930) proposal could be used to test the inflation hedging characteristics of investment assets. Following Fama & Schwert (1977), many studies have sprung up in determining the inflation hedging characteristics of some investment assets. For example, with a quarterly data set covering the period 1976 and 1986 at the property sector level and Treasury bill rate as a measure of expected inflation, Limmack & Ward (1988) used the Fama and Schwert (1977) framework and found that all commercial property sectors hedge against inflation and that only the industrial sector hedged against unexpected inflation. Brown (1991) used monthly investment property databank returns from 1987 to 1990 to offer evidence that property provides a hedge against both expected and unexpected inflation. Hamerlinks and Hoesli (1996) used cointegration approach to examine the inflation-hedging capacity of the UK commercial property and found that it does not exhibit short-term hedging characteristics but show a positive correspondence between property return and expected/unexpected inflation in the long run.

Miles (1996) compared real returns on various types of investment in the U. K. over a period of 50 years and found that most tangible assets - commodities (with the exception of gold), houses, land and equities - generated real returns above the average for all the asset classes, with the highest return generated on equities. The assets whose returns are set in nominal terms such as bonds, bank and building society deposits had the least performance over the period. The findings of Hoesli *et al*. (1995) show that real estate has poorer short-term hedging characteristics than shares, but better hedging characteristics than bonds. Newell (1996) examined the inflation-hedging characteristics of Australian commercial property between 1984 and 1995 and found that both office and retail property provide a good hedge against actual, expected and unexpected inflation in 10 Australian cities studied. Hoesli (1994) used monthly, quarterly, annual and five-year data on common stocks and real estate in Switzerland for the period between 1943 and 1991 and discovered that Swiss real estate provides a better hedge against inflation than common stocks. Hamerlink & Hoesli (1996) employed hedonic and autoregressive models to show that Swiss stocks, bonds, real estate and real estate mutual funds are positively related to expected inflation and negatively related to unexpected inflation.

Hartzell *et al.* (1987) carried out a study on inflation-hedging potential of residential property, commercial property, farmland, REITs, commingled real estate funds and stock exchange listed property firms and found significantly positive coefficients for expected and unexpected components of inflation. A later study by Park *et al*. (1990) on equity REITs in U.S.A. reported significantly negative coefficients for both expected and unexpected inflation. Fogler (1984) found positive impact of including real estate in portfolios of U.S.A. stocks and bonds. With causality and cointegration analysis on the relationship between inflation and property returns, Barkham *et al.* (1996) observed that in the short run, changes in expected and actual inflation affect returns from investments in property. Bello (2005), splitting inflation into actual, expected, and unexpected and applying the Fisher (1930) model and static regression analysis in assessing inflation hedging attributes of ordinary shares, real estate, and Naira-denominated time deposits between 1996 and 2002, discovered that the extent of hedging against actual inflation was highest in ordinary shares, very weak in Naira-denominated time deposits, and non-existent in real estate. However, hedging against expected inflation was seen only in real estate and Naira-denominated time deposits.

The theoretical expectation is that a positive relationship exists between equity stock returns and inflation since equity stock represents residual claims on the firm's assets. A large body of evidence indicates that the stock market tends to perform poorly during inflationary periods (Brueggeman *et al.*, 1999; Bello, 2000; Brown, 1990). The rising inflation in the 1970s inspired a number of studies on the hedging properties of a variety of assets against inflation, especially equity stocks. For example, Bodie (1976), and Fama & Schwartz (1977) examined the inflation-hedging properties of common stocks vis-à-vis other financial and real assets in the U.S. A number of studies however have reported negative relationship between equity returns and inflation (both unexpected inflation and expected inflation). These include Reilly *et al.* (1970), Bodie (1976), Fama & Schewart (1977), Fama (1981), Day (1984), Erb & Harvey (1995), and Chatrath *et al.*, & Song (1996). Thus, contrary to the generally held belief, the empirical literature shows that there is a negative relation between stock returns and inflation, implying therefore that common stocks do not possess inflation-hedging properties.

Nevertheless, some other studies have found contrasting evidence to the above conclusion. For example, in a study of 26 countries during the post war period, Gultekin (1983) found support for the hypothesized relationship between stock returns and inflation. Other studies that support the hypothesis of positive relationship between common stocks and inflation include, Boudoukh and Richardson (1993) and Choudhary (2001).

The average conclusion from extant literature redounds to two facts: first, there is no consensus on the empirical relationship between assets, in particular stocks and inflation; and second, definitive details concerning inflation-hedging attributes of stocks and real estate are still unclear. This ambivalent situation calls for more empirical evidence, especially in other sectors. As Spierdijk & Umar (2013a&b) observed, most studies analyzing the relationship between stock returns and inflation - that is, inflation-hedging properties of stocks - focus mainly on equity indices that represent the aggregate stock market. Thus, assessment of inflation-hedging capacity based on individual stocks, sectoral analysis of equity stocks, or specific sector assets has received little empirical attention.

This study seeks to bridge this gap by assessing the inflation-hedging properties of specific sector assets - Airlines/Automobile/Road transport/Maritime firms stocks – in this case, as part of a much wider examination of the hedging-properties of sector-specific stocks. Besides, the lack of empirical consensus on the inflation-hedging properties of common stocks is a sufficient justification for further and sectoral examination of the phenomenon of interest. As evidenced by the studies cited above, most of them have been in the developed economies, notably USA and Europe. In recent times, many developing countries, including African countries, have embarked on a plethora of economic and financial reforms with serious implications for monetary and fiscal policies. An important component of government reforms in Nigeria, and many Sub-Saharan African (SSA) countries, is the diversification of the economy. In Nigeria's case, there has been a series of attempts to diversify the economy away from monolithic crude oil base to Airlines/Automobile/Road transport/Maritime industries. Notwithstanding these efforts, inflation in African countries has remained adamant and has continued to pose a serious challenge for both policymakers and investors. For both government and investors, diversification into Airlines/Automobile/Road transport/Maritime industries and other productive sectors opens up the economy to greater investment opportunities. While empirical search for inflation-hedging assets continue to engage researchers and professional investment analysts, assessment of attributes of Airlines/Automobile/Road transport/Maritime firms stocks may be a fruitful proposition and a useful contribution to the debate.

Inflation hedging and diversification: The potentials of agricultural commodities

Commodities are assets imbued with tangible properties, such as agricultural products, metals and oil. Commodity investments have historically had a positive correlation with changes in inflation and a low correlation to stock and bond returns (Worah and Johnson, 2013). Investment analysts use commodities to hedge against inflation as well as to enhance portfolio diversification. The underlying economic fundamentals, due largely to growing demand from emerging markets and underinvestment in infrastructure, suggest a continuing upward trend in commodities over the long term. However, the caution by Worah and Johnson (supra) those commodities are volatile investments, which should only form a small part of a diversified portfolio, may be apt even if somewhat at odds with their earlier postulation. The authors had opined that “commodities have historically had a positive correlation with inflation and a non-correlation with stock and bond returns, making them an attractive vehicle to enhance portfolio diversification and guard against inflation”. There is no doubt that diversification does not guarantee a profit nor does it protect against a loss; but it portends good omen for an economy, for an investor, and for the society at large.

Despite the multi-year rally that has been witnessed across most of the commodity spectrum, only recently have investors taken agricultural commodities seriously as an important inflation hedge (ibid). These portfolio managers have further suggested that due to several watershed macroeconomic factors, the agricultural commodities asset class may be entering into a secular trend which will cause it to be a leading provider of real returns. As global money supply is growing at approximately 15%, far above the production rates of most commodities, the increase in the supply of agricultural commodities like gold is also running far below the rate of global money supply growth. But unlike gold, the intrinsic value of agricultural commodities is increasing because of their burgeoning use in energy production, the shrinking of available arable land for crop production and growing demand from an increasingly prosperous world population, especially China. Not only is the current supply and demand balance for agricultural commodities favourable, but estimates from the Food and Agricultural Policy Research Institute (FAPRI) suggested that the supply/demand balance will remain tight for the foreseeable future. Evidence of this tightness is the fact that current stock-to-use ratios for many agricultural commodities are at historic lows (ibid). Both capital values and income streams associated with prime agricultural assets have remained relatively stable throughout history.

Agriculture in its ramification has investment portfolio attributes. First, agricultural land acts as a recessionary hedge and portfolio diversification tool. Research by the firm, Agcapita Farmland Investment Partnership (a Canadian based agriculture private equity firm – available on their *Agricultural Investment Report*) **-** shows that farmland (and agriculture in general) acts as a hedge against recession. Because it has repeatedly benefited from ‘flight to quality’ investment behaviour, agriculture performs comparatively well during times of market uncertainty, thus acting as an ideal recessionary hedge. As the title of an *Economist* March 2009 article “Green Shoots” puts it, “No matter how bad things get, people still need to eat” (*The Eco*nomist, 2009). Further, according to a UK 2011 agricultural land market survey, “Over the past three years, farming and forestry have topped the investment performance league in the UK; the stable returns from agricultural property during the past few years clearly show the recession proof nature of this asset and its value in inflationary environments” (Savills Agricultural Land Market Survey 2011). A further study on US farmland conducted in 2002 compared the effects on portfolio efficiency of including farmland in a mixed asset portfolio under market conditions of certainty and uncertainty (Hardin and Cheng, 2005). The authors concluded that, in both certain and uncertain world models, farmland could be shown to improve portfolio efficiency.

Farmland as a portfolio diversification tool

A number of studies and investment analyses - such as Ibbotson Associates, 1991; Hardin and Cheng, 2005; Savill Survey, 2011; Worah and Johnson, 2013 - have shown that, historically, farmland returns have a low or negative correlation with traditional asset classes such as stocks and bonds and only a modest positive correlation with commercial real estate. A study in the US, using data over a 33-year period up to the 1980s, considered six asset classes including farm real estate, large and small capitalization stocks, long-term corporate bonds and Treasury bills. The study concluded that inclusion of farmland in the portfolio had highly attractive characteristics, particularly in view of the low correlation with other assets in the portfolio, especially large capitalization stocks (Ibbotson Associates, 1991). These characteristics make farmland an attractive diversification tool that can help reduce the impact of broader market volatility on a diversified investment portfolio. The farmland component can be further diversified by varying crop types, management styles and geographic distribution within the portfolio. In a direct ownership structure, investors can acquire farmland across a range of farms in different countries and/or climate zones and under different asset managers. (For more, the reader is referred to: http://www.dgcassetmanagement.com/investing/agriculture/agricultural-land/farmland-investment-portfolio-diversification#sthash.rZwzgz1m.dpuf).

METHODOLOGY

Like most of previous studies, this study followed the methodology of Fama and Schwert (1977). The form of regression equation typically used in this regard is

$$R_{it} = \alpha_{it} + \beta I_t + e_{it}$$

where: R_{it} represents nominal return on the *i*th asset during period t, α_{it} is a constant, β is inflation hedging coefficient, I_t is the inflation rate during period t, while e_{it} is a random disturbance.

The decision rule for β is as follows: An asset is a complete hedge against inflation if the value of β is not significantly less than 1. An asset is a partial hedge against inflation if the value of β is between 0 and 1. An asset has zero hedges against inflation if the value of β is not significantly different from zero. An asset has a perverse hedge against inflation if the value of β is negative. The inflation-hedging potential of each Airlines/Automobile/Road transport/Maritime stock was assessed against actual inflation. In previous studies, measures of actual inflation were generally derived from the consumer price index (CPI) percentage change, while proxies available to estimate the level of expected inflation included economic variables at the time, such as short-term interest rate, (e.g. 90-day Treasury Bill rates) as in Fama (1975), Fama and Schwert (1977), Hoesli(1994), Limmack and Ward (1988). Others include survey-based inflation forecast as in Newell (1995a, 1995b), Newell & Boyd (1995), and Park, Mullineaux & Chew (1990); autoregressive integrated moving average (ARIMA)-based inflation estimates as in Brown (1991), Fama & Gibons (1982), Hartzell *et al.* (1987), Limmack & Ward (1988). The unexpected inflation is usually computed as the difference between the actual inflation and the estimates of the expected inflation. In this study, the actual inflation proxy that was used is CPI percentage change.

Our analysis covers the period 2000-2011. This period not only experienced high inflationary trend but ensured a relatively homogenous phase as well as guarantee sufficient availability of data of the companies' equity stocks. The returns on equity were compiled from the ordinary shares of the seven active quoted Airlines/Automobile/Road transport/Maritime stocks on the Nigerian Stock Exchange (NSE) using their annual reports and accounts from 2000-2011. The return on equity was computed under five models namely; 1) return on equity based on PAT/Shareholders' funds, 2) return on equity based on sum of dividend yield and capital gain yield, 3) return on equity based on dividend yield before tax, and 4) return on equity based on dividend yield after tax, 5) return on equity based on capital gain yield. This segregation is necessary to capture the inflation potential of the stocks in terms of return on equity based on (1) what the enterprise earns on shareholders' funds at its disposal, (2) the sum of earnings of dividend yield and capital gains yield, (3) returns to the shareholders before tax, and (4) net returns to the shareholders after tax, (5) what the shareholders earn based solely on capital gain.

RESULTS AND DISCUSSIONS

Tables 2 to 6 show the five categories of nominal returns on the equity sub-indices related to the Building materials firms from 2000 to 2011.

Table 2: Actual Inflation Rates (%) and Nominal Return on Equity based on shareholders' funds (%)

Year	Inflation	Ashaka	Benue	CCNN	N. Ropes	N. Wire	Wapco
2000	6.90	26.22	-33.64	-191.42	35.62	30.65	8.15
2001	18.9	39.34	-471.38	-550.28	56.48	33.46	9.26
2002	12.9	26.70	111.83	118.37	26.88	5.99	-15.03
2003	14.0	33.57	27.45	-16.04	11.45	-11.56	-52.67
2004	15.0	46.83	25.63	58.81	5.76	-16.08	-129.46
2005	17.9	53.80	-162.62	13.96	5.40	-3.93	19.27
2006	8.2	29.07	37.16	-2.26	7.95	-8.50	42.68
2007	5.4	14.95	13.03	4.40	7.14	-6.93	32.55
2008	11.6	16.18	30.14	38.49	10.05	1.31	27.81
2009	12.5	7.18	59.37	42.97	-85.47	-0.77	11.57
2010	13.7	18.61	49.80	-	-1.19	-	10.11
2011	10.8	18.76	41.34	-	2.55	-	15.18
AVE	12.32	27.60	-22.66	-40.25	6.89	1.97	-1.71
STD	4.087	13.82	156.003	176.141	33.486	15.311	47.068

Source: Inflation rates from CBN statistical Bulletin 2011 and ROE computed from firms Annual Reports

Table 3: Actual Inflation Rates (%) and Nominal Return on Equity based on Dividend and Capital gain Yields (%)

Year	Inflation	Ashaka	Benue	CCNN	N.Ropes	N.Wire	Wapco
2000	6.90	22.07	85.66	0.43	-1.66	5.54	-9.06
2001	18.9	100.08	-0.63	18.53	7.87	9.80	17.59
2002	12.9	49.70	0.63	109.09	8.33	-4.71	-25.10
2003	14.0	-11.02	-0.42	-18.26	0.96	-7.00	-12.89
2004	15.0	53.26	1.68	24.92	-5.71	-0.88	-1.94
2005	17.9	36.24	22.47	26.42	-20.71	0	-19.16
2006	8.2	59.09	183.50	49.45	39.81	0	196.03
2007	5.4	48.09	198.99	107.49	57.40	0	85.77
2008	11.6	-38.41	-12.49	-26.58	45.24	349.55	-74.79
2009	12.5	-69.24	-18.41	-28.10	-48.43	5.16	76.11
2010	13.7	73.40	55.11	-	3.66	-14.45	58.39
2011	10.8	8.39	131.83	-	235.69	-71.52	11.71
AVE	12.32	27.64	53.99	21.95	26.87	22.62	25.22
STD	4.087	48.252	78.070	46.330	71.838	105.137	70.480

Source: Inflation rates from CBN statistical Bulletin 2011 and ROE computed from firms Annual Reports

Table 4: Actual Inflation Rates (%) and Nominal Return on Equity based on Dividend Yield before Tax (%)

Year	Inflation	Ashaka	Benue	CCNN	N.Ropes	N.Wire	Wapco
2000	6.90	8.72	0	0	0	7.84	0
2001	18.9	5.61	0	0	0	9.80	0
2002	12.9	3.06	0	0	0	0	0
2003	14.0	11.21	0	0	0	0	0
2004	15.0	13.35	0	1.73	0	0	0
2005	17.9	8.51	0	1.38	0	0	2.44
2006	8.2	3.54	0	0	3.50	0	2.77
2007	5.4	0	0	0	2.26	0	1.81
2008	11.6	0.79	0	5.94	1.57	0	4.33
2009	12.5	0	6.01	9.52	0	0	0.41
2010	13.7	1.49	1.96	-	0	0	0.65
2011	10.8	1.86	1.06	-	0	0	1.77
AVE	12.32	4.85	0.75	1.55	0.61	1.47	1.18
STD	4.087	4.576	1.766	3.046	1.181	3.459	1.434

Source: Inflation rates from CBN statistical Bulletin 2011 and ROE computed from firms Annual Reports

Table 5: Actual Inflation Rates (%) and Nominal Return on Equity based on Dividend Yield afterTax (%)

Year	Inflation	Ashaka	Benue	CCNN	N. Ropes	N. Wire	Wapco
2000	6.90	7.85	0	0	0	7.06	0
2001	18.9	5.04	0	0	0	8.82	0
2002	12.9	2.75	0	0	0	0	0
2003	14.0	10.09	0	0	0	0	0
2004	15.0	12.01	0	1.55	0	0	0
2005	17.9	7.66	0	1.24	0	0	2.19
2006	8.2	3.18	0	0	3.15	0	2.49
2007	5.4	0	0	0	2.03	0	1.63
2008	11.6	0.71	0	5.35	1.42	0	3.89
2009	12.5	0	5.41	8.57	0	0	0.37
2010	13.7	1.34	1.76	-	0	0	0.59
2011	10.8	1.67	0.96	-	0	0	1.60
AVE	12.32	4.36	0.68	1.39	0.55	1.32	1.06
STD	4.087	4.118	1.589	2.743	1.063	3.113	1.288

Source: Inflation rates from CBN statistical Bulletin 2011 and ROE computed from firms Annual Reports

Table 6: Actual Inflation Rates (%) and Nominal Return on Equity based on Capital Gain Yield (%)

Year	Inflation	Ashaka	Benue	CCNN	N. Ropes	N. Wire	Wapco
2000	6.90	13.34	85.66	0.43	-1.66	-2.30	-9.06
2001	18.9	94.48	-0.63	18.53	7.87	0	17.59
2002	12.9	46.64	0.63	109.09	8.33	-4.71	-25.10
2003	14.0	-22.22	-0.42	-18.26	0.96	-7.00	-12.89
2004	15.0	39.91	1.68	23.19	-5.71	-0.88	-1.94
2005	17.9	27.73	22.47	25.04	-20.71	0	-21.59
2006	8.2	55.56	183.50	49.45	36.31	0	193.26
2007	5.4	48.09	198.99	107.49	55.14	0	83.96
2008	11.6	-39.19	-12.49	-32.52	43.67	349.55	-79.11
2009	12.5	-69.24	-24.42	-37.62	-48.43	5.16	75.70
2010	13.7	71.91	53.15	75.66	3.66	-14.45	57.73
2011	10.8	6.53	130.76	-43.49	235.69	-71.52	9.94

2012		-43.31	-1.70	-46.16	-5.61	0	10.81
AVE	12.32	22.79	53.24	23.08	26.26	21.15	24.04
STD	4.087	47.523	78.496	53.459	71.666	105.418	70.415

Source: Inflation rates from CBN statistical Bulletin 2011 and ROE computed from firms Annual Reports

A test was carried out to find out if these building materials stocks provide positive real return on equity over the period. Using the Fisher model, the return on equity in real term is given by the model, R = (1+NR)/(1+IR) – 1, where NR represents nominal rate of return on equity, IR represents inflation rate, and R represents real rate of return on equity. Applying the Model, the real rate of return on each of the stocks has been computed and displayed in Table 7 to Table 11 showing the four classes of return on equity.

Table-7: Real Return on Equity based on Shareholders' funds (%)

Year	Ashaka	Benue	CCNN	N.Ropes	N.Wire	Wapco
2000	18.07	-37.92	-185.52	26.87	22.22	1.17
2001	17.19	-412.35	-478.70	31.61	12.25	-8.11
2002	12.22	87.63	93.42	12.38	-6.12	-24.74
2003	17.17	11.80	-26.35	-2.24	-22.42	-58.48
2004	27.68	9.24	38.10	-8.03	-27.03	-125.62
2005	31.45	-153.52	-2.60	-9.91	-17.89	1.94
2006	19.29	26.77	-9.67	-0.23	-15.43	31.87
2007	9.06	7.24	-0.95	1.65	-11.70	25.76
2008	4.10	16.61	24.09	-1.39	-9.22	14.53
2009	-4.73	41.66	27.08	-87.08	-11.80	-0.83
2010	4.32	31.75	-	-13.10	-	-3.16
2011	7.18	27.56	-	-7.45	-	3.95
AVE	13.58	-28.63	-52.11	-4.74	-8.71	-11.81

Source: Computed from Annual Reports of the Firms

Based on enterprise return on shareholders' funds, Ashaka Cement has been consistent in providing positive real return except in year 2009 and this culminated into an average of 13.58 percent. The huge negatives WAPCO Larfarge recorded in 2002-2004 turned its average return into negative. Nigerian Ropes and Nigerian Wire Industries have been making losses especially in real term, so it is not surprising to see each end up with average negative real return. Formerly Benue cement but presently Dangote Cement came out of its crisis in 2002, slumped into it again in 2005, have been on the positive path since 2006. However it reports an average negative return of -28.63 percent for the 12-year period. It is not quite clear why Cement Company of Northern Nigeria (CCNN) has not picked up and stabilized up to this moment. CCNN produced the worst average real return of -52.11 percent. So far Ashaka, Benue, and WAPCO-Larfarge look promising in terms of generating better future real return.

Table 8: Real Return on Equity based on Dividend and Capital Gain Yields (%)

Year	Ashaka	Benue	CCNN	N.Ropes	N.Wire	Wapco
2000	14.19	73.68	-6.05	-8.01	-1.27	-14.93
2001	68.28	-16.43	-0.31	-9.28	-7.65	-1.10
2002	32.60	-10.87	85.20	-4.05	-15.60	-33.66
2003	-21.95	-12.65	-28.30	-11.44	-18.42	-23.59
2004	33.27	-11.58	8.63	-18.01	-13.81	-14.73
2005	16.44	4.68	8.05	-32.23	-14.53	-30.91
2006	47.03	162.01	38.12	29.21	-7.58	173.60

2007	40.50	183.67	96.86	49.34	-5.12	76.25
2008	-44.81	-21.59	-34.21	30.14	302.82	-77.41
2009	-72.66	-27.48	-36.09	-54.16	-6.52	56.54
2010	52.51	36.42	-	-8.83	-24.76	39.31
2011	-2.18	109.23	-	202.97	-74.30	0.82
AVE	13.60	39.09	13.19	13.80	9.38	12.52

Source: Computed from Annual Reports of the Firms

From the perspective of dividend and capital gain yields Benue Cement has an average of 39.09 percent for the period and provided huge positive real returns in the years 2006-2007 and 2011 when the Nigerian capital market was in boom session. Nigerian Ropes and Ashaka Cement provide an average of 13.80 and 13.60 percent respectively with mix of negative and positive real returns in the study period. In fact all the stocks exhibited series of positive and negative real rate of return on equity with positive average real return for the 12-year period as can be seen in table 8 above.

Table 9: Real Return on Equity based on Dividend Yield before Tax (%)

	Ashaka	Benue	CCNN	N. Ropes	N. Wire	Wapco
2000	1.70	-6.45	-6.45	-6.45	0.88	-6.45
2001	-11.18	-15.90	-15.90	-15.90	-7.65	-15.90
2002	-8.72	-11.43	-11.43	-11.43	-11.43	-11.43
2003	-2.45	-12.28	-12.28	-12.28	-12.28	-12.28
2004	-1.43	-13.04	-11.54	-13.04	-13.04	-13.04
2005	-7.26	-14.53	-13.35	-14.53	-14.53	-12.44
2006	-4.31	-7.58	-7.58	-4.34	-7.58	-5.02
2007	-5.12	-5.12	-5.12	-2.98	-5.12	-3.41
2008	-9.69	-10.39	-5.07	-8.99	-10.39	-6.51
2009	-11.11	-5.77	-2.65	-11.11	-11.11	-10.75
2010	-10.74	-10.33	-	-12.05	-12.05	-11.48
2011	-8.07	-8.79	-	-9.75	-9.75	-8.15
AVE	-6.53	-10.13	-9.14	-10.24	-9.56	-9.74

Source: Computed from Annual Reports of the Firms

Assessment based on dividend yields both before and after tax shows that the return on equity in terms of cash reward to equity holders yielded negative real returns. This shows that dividends received are not good hedge against inflation in this sector and this may be the reason why people try to sell off when price appreciates.

Table 10: Real Return on Equity based on Dividend Yield after Tax (%)

Year	Ashaka	Benue	CCNN	N.Ropes	N.Wire	Wapco
2000	0.89	-6.45	-6.45	-6.45	0.15	-6.45
2001	-11.65	-15.90	-15.90	-15.90	-8.47	-15.90
2002	-8.99	-11.43	-11.43	-11.43	-11.43	-11.43
2003	-3.43	-12.28	-12.28	-12.28	-12.28	-12.28
2004	-2.60	-13.04	-11.69	-13.04	-13.04	-13.04
2005	-7.99	-14.53	-13.47	-14.53	-14.53	-12.66
2006	-4.64	-7.58	-7.58	-4.66	-7.58	-5.27
2007	-5.12	-5.12	-5.12	-3.19	-5.12	-3.58
2008	-9.76	-10.39	-5.60	-9.13	-10.39	-6.91
2009	-11.11	-6.30	-3.49	-11.11	-11.11	-10.78

2010	-10.87	-10.50	-	-12.05	-12.05	-11.53
2011	-8.24	-8.88	-	-9.75	-9.75	-8.31
AVE	-6.96	-10.20	-9.30	-10.29	-9.69	-9.85

Source: Computed from Annual Reports of the Firms

Table 11: Real Return on Equity based on Capital Gain Yield (%)

Year	Ashaka	Benue	CCNN	N.Ropes	N.Wire	Wapco
2000	6.02	73.68	-6.05	-8.01	-8.61	-14.93
2001	63.57	-16.43	-0.31	-9.28	-15.90	-1.10
2002	29.88	-10.87	85.20	-4.05	-15.90	-33.66
2003	-31.77	-12.65	-28.30	-11.44	-18.42	-23.59
2004	21.66	-11.58	7.12	-18.01	-13.81	-14.73
2005	8.34	3.88	6.06	-32.75	-15.18	-33.49
2006	43.77	162.01	38.12	25.98	-7.58	171.04
2007	40.50	183.67	96.86	47.19	-5.12	74.54
2008	-45.51	-21.59	-39.53	28.74	302.82	-81.28
2009	-72.66	-32.82	-44.55	-54.16	-6.52	56.18
2010	51.20	34.70	54.49	-8.83	-24.76	38.72
2011	-3.85	108.27	-49.00	202.97	-74.30	-0.78
AVE	9.26	38.36	10.01	13.20	8.09	11.41

Source: Computed from Annual Reports of the Firms

From the perspective of capital gain yield, all the stocks on the average reports positive real return thereby providing good hedge against actual inflation.

The positive average returns exhibited by these stocks from the tables 7, 8, and 11 above indicate some degree of protection against actual inflation. However, Brown (1991) and Newell (1996) opine that the above basis of analysis is insufficient to conclude that each of these firms is an effective hedge against inflation. Consequently methods such as regression analysis and cointegration approach have been variously suggested in the literature to determine the degree of protection against inflation offered by investment assets (see Worthington & Pahlavani 2007).

Regression Analysis

The regression equation used to determine the degree of protection against inflation is $R = \alpha + \beta CPI + e$, where R represents Real return in time t, CPI represents percentage change in consumer price index in time t (i.e actual inflation estimate), β is the inflation coefficient which determines the inflation attributes of each of the stocks, while α is a constant. The regression equation, $R = \alpha + \beta CPI + e$ was used to assess the inflation-hedging performance of these firms against the actual inflation. The analysis is presented in Tables 12 to 16 below.

Table 12: Inflation-hedging performance of the Stocks based on return on Shareholders' funds

Asset Class	Mean	∂	R	R^2	E	F	DW	β	T	CONST
1. AshakaCem	27.60	13.82	0.610	0.372	0.847	5.926	0.564	.610	2.434	2.198
2. BenueCem	-22.66	156.003	-0.556	0.309	10.036	4.463	1.611	-.556	-2.113	238.479
3. CCNN	-40.25	176.141	-0.297	0.088	13.014	0.964	1.448	-.297	-0.984	117.170
4.N.Ropes	6.89	33.486	0.099	0.010	2.578	0.099	1.425	.099	0.314	-3.097
5. N.Wire	1.97	15.311	0.080	0.006	1.181	0.064	0.463	.080	0.254	-1.719
6.Wapco	-1.71	47.068	0.353	0.125	3.406	1.428	1.800	-.353	-1.195	48.422

Source: Regressed from table 4.1 above

While Ashaka Cement returns moved appreciably in the same direction with inflation, Benue Cement, CCNN and WAPCO-Larfarge returns moved in opposite direction as can be depicted from the beta coefficients in table 12 above. One can infer that Ashaka Cement offered substantial positive hedge against actual inflation while Benue Cement, CCNN and WAPCO-Larfarge have perverse hedge against actual inflation. The extent of perverse inflation hedging was highest in the ordinary shares of Benue Cement with β = -0.556.

Table 13: Inflation-hedging performance of the Stocks based on dividend and Capital Gain

Asset Class	Mean	∂	R	R^2	E	F	DW	β	T	CONST
1. AshakaCem	27.64	48.252	0.195	0.038	3.661	0.395	1.970	.195	0.628	-0.697
2. BenueCem	53.99	78.070	-0.737	0.544	4.080	11.919	1.443	-.737	-3.452	227.467
3. CCNN	21.95	46.330	-0.272	0.074	3.449	0.798	1.950	-.272	-0.893	59.896
4.N.Ropes	26.87	71.838	-0.315	0.099	5.274	1.104	1.278	-.315	-1.051	95.116
5. N.Wire	22.62	105.137	-0.030	0.001	8.130	0.009	2.044	-.030	-0.096	32.239
6.Wapco	25.22	70.480	-0.396	0.156	5.008	1.854	2.204	-.396	-1.362	109.218

Source: Regressed from table 4.2 above

From table 13, the strength of inflation hedging appeared only in the ordinary shares of Ashaka Cement with β = 0.195 and highest though perverse in the ordinary shares of Benue Cement with β = -0.737. Wapco-Larfarge, Nigerian Ropes and CCNN have perverse partial hedge against inflation as the β-coefficients are not up to 1. Hence four of the six firms namely Wapco, Nigerian Ropes and CCNN which constitute 67 percent of the population provided perverse partial hedge against inflation over the period while one, that is, Ashaka Cement making up 16.5 percent of the population offered weak positive hedge against inflation.

Table 14: Inflation-hedging performance of the Stocks based on Dividend Yield before Tax

Asset Class	Mean	∂	R	R^2	E	F	DW	B	T	CONST
1. AshakaCem	4.85	4.576	0.378	0.143	4.443	1.668	0.914	.378	1.292	-0.369
2. BenueCem	0.75	1.766	0.028	0.001	0.137	0.008	1.556	.028	0.088	0.605
3. CCNN	1.55	3.046	0.072	0.005	0.235	0.052	1.380	.072	0.228	0.888
4.N.Ropes	0.61	1.181	-0.587	0.344	0.074	5.253	1.420	-.587	-2.292	2.700
5. N.Wire	1.47	3.459	0.142	0.020	0.265	0.205	0.660	.142	0.453	-0.008
6.Wapco	1.18	1.434	-0.234	0.055	0.108	0.581	1.633	-.234	-0.762	2.194

Source: Regressed from table 4.3 above

From the angle of dividend yield before and after tax, Ashaka stood the best of the six in terms of hedge against actual inflation. Benue, CCNN, had nothing to show in terms inflation hedge based on dividend yield before tax, while Nigerian Ropes and Wapco had perverse hedge. Nigerian Wire had very weak positive hedge against actual inflation.

Table 15: Inflation-hedging performance of the Stocks based on Dividend Yield after Tax

Asset Class	Mean	∂	R	R^2	E	F	DW	B	T	CONST
1. AshakaCem	4.36	4.118	0.378	0.143	0.295	1.665	0.914	.378	1.291	-0.331
2. BenueCem	0.68	1.589	0.028	0.001	0.123	0.008	1.557	.028	0.087	0.545
3. CCNN	1.39	2.743	0.072	0.005	0.212	0.051	1.380	.072	0.227	0.801
4.N.Ropes	0.55	1.063	-586	0.344	0.067	5.240	1.423	-.586	-2.289	2.428
5. N.Wire	1.32	3.113	0.142	0.020	0.238	0.205	0.659	.142	0.452	-0.005

6.Wapco	1.06	1.288	-0.235	0.055	0.097	0.586	1.632	-.235	-0.765	1.977

Source: Regressed from table 4.4 above

Table 16: Inflation-hedging performance of the Stocks based on Capital Gain

Asset Class	Mean	∂	R	R^2	E	F	DW	β	t	CONST
1. AshakaCem	22.79	47.523	0.161	0.026	3.628	0.268	2.048	.161	0.571	-0.332
2. BenueCem	53.24	78.496	-0.734	0.539	4.124	11.682	1.437	-.734	-3.418	226.861
3. CCNN	23.08	53.459	-0.169	0.028	4.077	0.293	2.404	-.169	-0.541	50.254
4.N.Ropes	26.26	71.666	-0.306	0.094	5.278	1.036	1.268	-.306	-1.018	92.416
5. N.Wire	21.15	105.418	-0.035	0.001	8.151	0.012	2.035	-.035	-0.110	32.247
6.Wapco	24.04	70.415	0.391	0.153	5.014	1.806	2.233	-.391	-1.344	107.022

Source: Regressed from table 4.2 above

Table 16 presents the hedging capacity of the stocks based on capital gain yield, from which only Ashaka stock showed very weak positive hedging ability, while Benue had high negative hedging capacity. CCNN, Nigerian Ropes, Nigerian Wire and Wapco showed a modest negative correlation with actual inflation, though with very low indexes. The positive hedging capacity though weak is reflected only in Ashaka Cement Company.

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

In this study, attempt had been made to discover the inflation potential of the equities of the active stocks quoted in the Building Materials sub-sector of the Nigerian Stock Exchange. The Fischer's model and regression analysis were employed as tools to capture the wanted potentials of the subject firms. In terms of real return using Fischer's model, and based on enterprise return on shareholders' funds, only Ashaka Cement generated positive real return on equity over the 12-year period and from the structure of the distribution of the returns in the years it portrays Ashaka as the only stock with good partial hedge against actual inflation. From the perspective of dividend and capital gain yields all the stocks produced positive average real return for the 12-year period, hence they all constitute good hedge against actual inflation. Assessment of inflation hedging based on dividend paid using before and after tax bases yielded perverse hedge against inflation. This indicates that dividend yield has no inflation-hedging capacity in the Building Materials sector.

From Nwude and Herbert (2013), the theoretical expectation is that a positive relationship exists between equity stock returns and inflation since equity stock represents residual claims on the firm's assets. A large body of evidence indicates that the stock market tends to perform poorly during inflationary periods. Other notable studies found negative relationship between equity returns and inflation. Thus, contrary to the generally held belief, the empirical literature shows that there is a negative relation between stock returns and inflation, implying therefore that common stocks do not possess inflation-hedging properties.

Earlier studies conducted by Wurtzbach *et al.* (1991) and Brueggeman *et al*. (1984) indicated that the extent of inflation hedging is a function of the degree of the inflation, that is, whether high or low. However, in this study, one point that has been established is that from the stocks examined, in terms of return on shareholders' funds, only Ashaka Cement could offer partial hedge against actual inflation in this sector while perverse hedge against actual inflation is highest in Benue Cement. Again, in terms of total return on equity, only Ashaka provided partial hedge against inflation though weak over the period. From the perspectives of dividend yield before and after tax, Ashaka stood as the best of the six in terms of hedge against actual inflation, followed by Nigerian Wire, Benue Cement, and CCNN with weak positive hedge against actual inflation.

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