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INFLATION AND PERFORMANCE OF LISTED FIRMS IN GHANA

MAWULI ZORMELO HOWARD

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INFLATION AND PERFORMANCE OF LISTED FIRMS IN GHANA

BY

MAWULI ZORMELO HOWARD

Dissertation submitted to the Department of Finance of the School of Business, College of Humanities and Legal Studies, University of Cape Coast in partial fulfillment of the requirements for the award of Master of Business Administration in Finance

DECEMBER, 2022

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DECLARATION

Candidate's Declaration

I hereby declare that this dissertation is the result of my own original research and that no part of it has been presented for another degree in this University or elsewhere.

Candidate's Signature: …… Date: …….

Name: Mawuli Zormelo Howard

Supervisor's Declaration

I hereby declare that the preparation and presentation of the dissertation were supervised in accordance with the guidelines on supervision of dissertation laid down by the University of Cape Coast.

Supervisor's Signature: …… Date: ……..

Name: Prof. Anokye Mohammed Adam

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ABSTRACT

Inflation is a major phenomenon in the economies of countries as it increases the prices of commodities resulting in a decline in the purchasing power of money. The aim of this study is to analyze the impact of inflation on listed manufacturing companies' performance in Ghana using net asset growth and gross profit level as the basis. Companies listed on the Ghana Stock Exchange were sampled using criterion-based sampling technique. The study employed quantitative research technique and the use of panel data. Data was analyzed using both descriptive and inferential statistics and a dynamic panel estimation technique was used. The study revealed that most companies' net assets grow on yearly basis. However, this growth in net assets when adjusted for inflation declines or runs into negative indicating the significant impact inflation has on the growth of net assets of listed companies. Further, the finding of the research shows that inflation has no direct effect on gross profit but indirectly affects gross profit through cost of production. The study therefore recommends that investors in using the growth in net assets as a basis for measuring the performance of a company must consider the real growth in net asset measured by the inflation adjusted growth in net asset as this gives true measure of a companies' performance. Also, manufacturing companies' in making price related decisions must consider the effect of the prevailing inflation rate on their cost of production and ultimately their profit levels.

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I am most grateful to God Almighty for this accomplishment. I am also grateful to my supervisor, Prof. Anokye Adam Mohammed, for his advice and support towards the successful completion of this research work. I am thankful to my family.

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DEDICATION

To; Richla Obeng

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LIST OF ACRONYMS

CPI	Consumer Price Index
CRR	Cash Reserve Ratio
EPS	Earnings per Share
GDP	Gross Domestic Product
GSE	Ghana Stock Exchange
NAG	Net Asset Growth
ROA	Return on Asset
ROE	Return on Equity

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CHAPTER ONE

INTRODUCTION

The performance of companies is undoubtedly affected by both microeconomic and macroeconomic factors. It is therefore imperative for companies to have an in-depth knowledge of these factors particularly macroeconomic factors such as inflation which are beyond a company's control in order to effectively mitigate it effect on the company's performance while taking advantage of their associated benefits. The purpose of this study is to examine the impact of inflation on the performance of listed firms on the Ghana Stock Exchange (GSE). Company performance for the purpose of this study was measured using net assets growth, gross profit and cost of production.

Background of the study

Inflation is a global phenomenon that most countries battle to mitigate. This mitigation hustle includes the G8 countries also known as the world super powers. Inflation is the general increase in the prices of goods and services through a reduction in the purchasing power of money due to loss of real value in the medium of exchange and unit of account within the economy (Bortis, 2004).

Economies are affected both positively and inversely by inflation (McCallum, 2007). Inflation in its self cannot be classified as good or bad because minimal inflation level enforces economic activities and help the economy grow healthily. On the other hand, excessive inflation can result in consumers refraining from spending. The measures that most countries put in place to check inflation are usually macroeconomic policies. In as much as

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these measures are effective, it is sometimes challenged by unforeseen economic volatility downturns.

In Ghana, the economy is mostly populated by Small and Medium Scale enterprises. However, most Small and Medium Scale Enterprises are not able to survive economic fluctuations. Due to this, they fall out leaving the listed companies to drive the economy till new ventures are created. A listed company's performance can be affected by the prevailing inflation rates when analyzed from the perspective of a manufacturing, non-manufacturing and a service rendering firm.

Performance of companies can also be affected by other factors such as management decisions, innovation, strive for market share and competitions. Sometimes profitability, productivity, dynamics of revenues, costs and liquidity is the guide for making such assessments (Gupta & Batra, 2016; Zimon, 2018). It should be noted that from a qualitative perspective, goals achievement, leadership style, customer satisfaction and employee behaviour can also be used as a scale to weigh performance (Anggadwita & Mustafid, 2014).

There are numerous studies conducted in this field to analyse the extent to which inflation affects the performance of businesses. These studies have taken various forms and dimensions. Alpkan, Yilmaz, and Kaya (2007), used product and process innovation, and organizational and marketing innovation. However, this study used a quantitative and causal relationship on definite financial statement variables. These key variables are net asset, gross profit and cost of production. The external variable which is also the independent variable was inflation. In this study the indicator for performance will be the

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gross profit and cost of production for manufacturing listed companies and net assets for listed companies on the Ghana Stock Exchange (GSE) for the period under study.

Due to the emerging need for flourishing performance of every country's listed company, this study is very vital to understanding what influences high performance and how to manipulate these factors to yield the best results. In the case of developing countries, it has been found that developing countries should concentrate effort on agriculture and manufacturing sector to grow a strong economy. Hence, the need to include a specific study on listed manufacturing firms in this research.

The second part of this research analyzes the effect of inflation on the performance of listed companies with respect to cost of production and gross profit. Ghana's economy is strongly driven by the agricultural sector; however, its manufacturing sector contributes about 25% of the country's GDP and employs about 600,000 skilled and unskilled labour.

Due to the recent signing and Ghana being chosen as the hub for the African Continental free Trade Area, most multinational manufacturing firms are considering partnerships and investing in manufacturing plants in Ghana. Due to this emerging trend of chain investors coming into the country to establish manufacturing enterprises, it has become prudent that studies are conducted to make available the needed economic information needed to mitigate risk and poor performance thus, the reason for the second part of this study.

Although in recent times Economists accept that inflation affect company performance negatively, some researchers did not detect this impact in their

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research. According to Yaniv (2011), although the effect of inflation is not captured in the nominal financial statements, such effect has economic consequences even during periods in which inflation is relatively low.

The use of information on how inflation affects business performance also extends to areas such as planning budgeting and control of business operations as suggested by Yaniv (2011). Although other researchers have emphasized in their study that there are other factors that contribute to the performance of businesses, they also affirm that net asset and gross profit is a good measure of performance to general businesses and manufacturing companies respectively.

The external environment of a company affects its operations and performance (Seile, 2009). Inflation affects the performance of financial institutions that form part of the external environment of the listed companies if not all. Boyd, Levine and Smith (2000) concluded in their study that the effect inflation has on the performance of the financial sector can further adversely impact the performance of listed companies.

Problem Statement

The Stock Exchange trades a wide range of financial assets. The value and prices of these assets are determined based on the demand and supply as well as performance of these assets. However, outperforming the market and hence making profit from trade is usually based on the efficiency level of the market measured on the basis of the type of information available to investors (Smal & De Jager 2001). This makes access to information about listed companies very important. All listed companies are required by law to prepare and make publicly available their audited comprehensive financial reports.

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It is argued that inflation and stock prices have an inverse relationship (Jaffe & Mandelker, 2006; Fama & Schwert, 2007). This however contradicts Fishers' one to one increasing relationship between stock returns and inflation. If an investor or a company decides to engage in any form of economic activity without laying hands on accurate data, the level of uncertainty or possible variation in expected result is bound to be high (Tang, 2001; Tommassi, 2004).

Kimani and Mutuku (2013) carried out a study on inflation dynamics on the overall stock market performance, and found that there is a negative relationship between inflation and stock market. Without the information that this study provides, all the above listed stakeholders are on course to experiencing adverse reactions or effects ranging from losses due to unexpected low returns to the country losing investors and the creation of business enterprises.

Ghana has a remarkable history about inflation and how it has been managed by successive governments. Whiles some existing empirical studies focused on the impact of board size, diversity, composition, etc. on firm performance, others researched on the impact of macroeconomic variables on firm performance (Obeng-Krampah, 2018).

A critical analysis of existing literature reveals that most literature on company performance in Ghana was performed using macroeconomic variables. However, results of these studies do not give conclusive link on how these macroeconomic variables affect firm performance as most of these studies focused on firms in developed markets as opposed to emerging or developing markets (Abor & Biekpe, 2007).

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This reveals the gap that exists in examining the effect of macroeconomic variables on the performance of firms in developing markets, such as Ghana, with lower efficiency level and institutional arrangements. Also, it is evident that there exist a gap in extensively studying the impact of inflation on the performance of listed companies with respect to net asset growth and gross profit growth. This study therefore focuses on the impact of inflation as the macroeconomic variable on firm performance using net assets, cost o production and gross profit as proxies.

Inflation is a macroeconomic variable which has chain relationship with several other economic variables. Inflation and the stock market have a multi directional relationship as it drives up the prices of stock and assets on the stock exchange (Geetha, Lucas, & Dawson, 2011). Moreover, inflation was found to drive down economic growth and activity (Munir, Black, & Yermack, 2009; Datta, Donaldson, & Parks, 2011).

Net asset represents the difference between a company's total assets and total liabilities (US SEC 2013). It is a key indicator for analyzing company performance (Mohammed, 2016). Growth in net assets is always desirable by shareholders because from the perspective of shareholders, it represents a proportionate increase in the returns or value of their assets. However, a growth in net assets results from two ways; either by extra investments by owners or a positive growth of operational performance of the company.

Growth in net asset without the contribution from shareholders indicates a positive growth of income of the company. Notwithstanding, with a company as a going concern, shareholders prefer a positive growth in the value of the company's assets and operations. As a result, adjusting inflation

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to the growth in net reveals the true source of the growth. The above assertions informed the choice of net asset growth as a measure of firm performance as it will enable investors to consider inflation adjusted net asset growth when making investment decisions.

Research Objectives

This study's objective is to determine the effect of inflation on the performance of listed firms in Ghana. The specific objectives for the study was to

1. Examine the relationship between inflation and net assets of companies listed on the Ghana Stock Exchange.
2. Determine the effect inflation has on cost of production of listed manufacturing firms on the Ghana Stock Exchange.
3. Examine the effect inflation has on the gross profit of listed manufacturing companies on the Ghana Stock Exchange.

Research Questions

1. What is the effect of inflation on the net asset of listed companies on the GSE?
2. What is the effect of inflation on cost of sales of listed manufacturing firms on the GSE?
3. What is the effect of inflation on gross profit of listed manufacturing firms on the GSE?

Significance of the Study

This study specifically examines the effect of inflation on performance of listed companies in Ghana. The findings from this study will be of benefit to academia by contributing to literature for further research work. It will help

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both international and local investors to be well informed on how inflation can affect the expected returns from a listed company they choose to invest in. This study is also to benefit government and state institutions like the Central Bank in drawing policies that help them control the economy. The study is also to provide insight on the performance of listed companies and how efficiency can be applied since Ghana was recently named the headquarters for the African continental free trade area (AfCFTA).

Delimitation

The study covers only listed firms on the Ghana Stock Exchange. Data on listed Companies' statement of financial position and performance only were used as well as prevailing inflation rates. The data cover five-year period from 2016 to 2020. The study is delimited to only listed companies that have complete financial statements. Out of thirty seven (37) listed companies, twenty four (24) had complete financial statement and data set to qualify them for the first part of this study. Eight (8) of the fourteen (14) listed manufacturing companies also qualified on the same basis and hence were sampled for the second part of the research.

Limitations

This study is limited to some extent. The first is that, it employed firms listed on Ghana Stock Exchange. This means application of results from this study should align with similar situations or variable sets. The study focused on the effect of inflation on firm performance. Performance in this study was defined as growth in net asset and growth in gross profit. Thus, the study does not take into consideration other factors and definitions for company performance.

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Organization of the Study

This study is divided into five chapters. Chapter one provides an introduction to the study comprising of the background to the study, statement of the problem, objectives of the study, significance of the study as well as the study's limitation. The second chapter provides the theoretical and empirical review while Chapter three outlines the research methods employed for this study. Chapter four presents the results and discussion of findings. The final Chapter is devoted to summary, conclusion and recommendations based on the findings of the study.

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CHAPTER TWO

LITERATURE REVIEW

Introduction

This chapter reviews existing literatures conducted in line with the study. It begins by highlighting theories that relates to the study. It then reviews empirically other existing research works that have been done and then presents pictorially, the concepts of the study. The chapter further concludes by summarizing all issues that have been reviewed in the study.

Theoretical Review

Theories of Inflation

Several schools of thought have propounded varying economic theories to explain the phenomenon of inflation. These different theories each identify its own paradigm and concept on inflation and performance of companies. Generally, theories of inflation are broadly categorized into labels, namely, Monetarists, Keynesians and Structuralists. However, this study greatly boarders on theories that identify the relationship between inflation, net assets, cost of sales and gross profit.

The classical school of thought propounded the Quantity Theory of Money. This theory suggests that the quantity of money in circulation determines the general price levels. The Neo-Classical school of thought led by Prof. Milton Friedman further supported the monetary effect on inflation. They were of the view that monetary policy, as opposed to fiscal policy was an effective instrument in economic stabilization. The monetarist emphasized the role of money by stating that inflation is a monetary phenomenon that

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arises from a more rapid expansion in the quantity of money than in total output.

Monetarists believe that excess money supply causes inflation. This assertion was however disagreed by some non-monetarist known as the Keynesian school of thought. Keynesians proposed that changes in money supply do not directly affect prices as increase in production cost can result in cost push inflation. Cost-push inflation is caused by increases in the prices of factors of production such as wage increases enforced by labour unions without a commensurate increase in the productivity of labour (Parkin, 2014). Labour unions press employers to increase wages resulting in high production cost of commodities.

Employers with a profit making motive, in turn shift the burden of the increase in wage to consumers by raising the prices of their products. Higher wages increases the purchasing power of employees. However, the increase in prices induces unions to agitate for a further increase in wages. In addition, cost-push inflation may result in profit-push where oligopolist and monopolist firms increase prices of their products to compensate for the rise in wages and other production cost. This is as a result of the imperfect competition within which they operate making them price makers and hence enabling them to fix the price of their products (Montiel, 2009).

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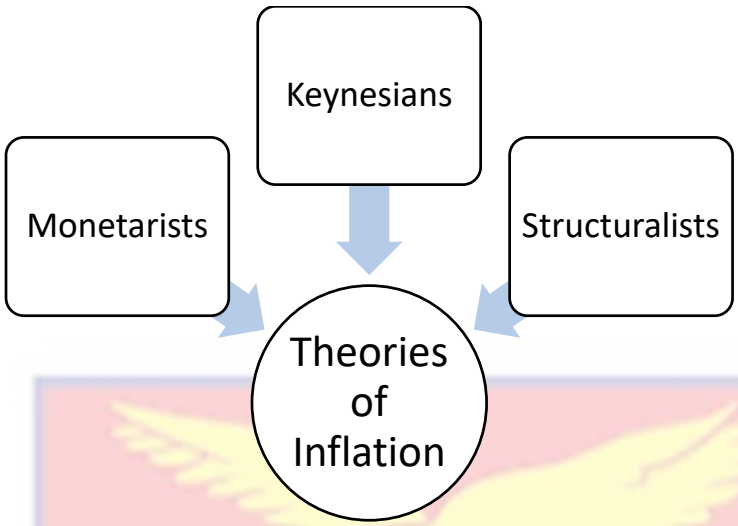

Figure 1: Theories of inflation

Source: Author's construct (2022)

Empirical Review

Historically, a great deal of economic literature was concerned with the causes and effect of inflation. Existing studies on inflation focus on two basic issues. The first refers to the process of establishing the most suitable model of accounting for changing prices (Chambers & Dean, 1979) while the second concerns the evaluation of the effects of inflation upon the performance of economic units (Robbins, 2000). However, most empirical research is on the latter kind.

Inflation and Net Asset Growth

Mohammed (2016) researched on the impact of inflation on the growth of net assets of 30 listed companies in Bangladesh. For the purposes of the study, 30 companies listed on the Dhaka Stock Exchange were sampled. The study compared nominal growth and inflation adjusted growth of net assets of the 30 sampled companies. It was found that inflation has significant impact

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on the growth of net assets and as a result, investors should consider inflation adjusted net assets growth in making investment decisions.

Inflation, Cost of Production and Gross Profit

Empirical literature on the impact of inflation on an organisation's performance ranges from gross profit of a company to the impact of inflation on market power. Benabou (2002) researched on inflation and mark up in the U.S. retail trade sector. The study found expected and unexpected inflation has a small but significant negative effect on retail mark-ups. This is consistent with the findings of Kaskarelis (2003) relating to the UK manufacturing industry.

On the other hand, a research by Chirinko and Fazzari (2000) found that inflation has a positive effect on market power heterogeneous across the eleven US industries. Similarly, a study by Bloch and Olive (2001) show that aggregate inflation has a positive influence on prices and mark-ups by using 21 two-digit SIC industries in the USA for the period 1948 to 1979. Borenstein, Cameron, and Gilbert (2007) revealed that asymmetric gasoline price responds to crude oil price changes. In gasoline markets, increases in inflation uncertainty translate into higher profit margins

Another study on the impact of inflation on companies' performance in Malaysia was done by Maimunah and Patmawati (2018). The research was a cross-sectional study where fifty manufacturing firms were sampled from the population using cluster random sampling. The finding of this research shows that there is a positive relationship between gross profit and inflation rate. This indicates that inflation contributed to higher earning in manufacturing companies instead of lowering profits.

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A research by Zuhaib and Nizam (2015) focused on the effects of macroeconomic variables on the performance of textile industry of Pakistan. The study used panel data from sampled fifty textile firms listed on the Karachi Stock Exchange. Return on Asset (ROA) and Return on Equity (ROE) were used as indicators for firm performance. Findings from the research revealed that inflation has a significant positive effect on ROA and a positive but insignificant relationship with ROE.

This finding is in contrast with a study by Oleka (2015). The study researched on the relationship between inflation and firm performance in Nigeria. The study analysed the performance of banks to represent corporate entities as their subject of study. The study used reported profit, ROE and earnings per share (EPS) as performance indicator of banks. The study revealed that there is no significant relationship between inflation and reported profit as well as ROE as a measure of profitability of commercial banks operating in Nigeria.

Another study was conducted by Obeng-Krampah (2018) to examine the relationship between macroeconomics and performance of listed firms on the Ghana Stock Exchange. ROE and ROA were used to measure firm performance. Other variables such as growth in the sales of firms, total assets, leverage, GDP, inflation, interest and exchange rate were used for the study. The study analysed a panel data from 2007 to 2015. The study established a relationship between macroeconomic variables and firm performance.

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Control Variables

The study control for factors or variables that contributes to firm performance such leverage and return on asset. Leverage is basically related to the debt and equity proportions used in funding the business. Studies have shown that businesses that depend mostly on debt to fund their activities are preferable to equity dominated business. The reason is that huge sums of taxes are paid on earnings from the business operations before dividends are paid to owners; this is not same with funding a business with debt. When debt is used to fund a business, interest on debt and loan payments are paid before taxes are deducted. In turn the amount of funds that leaves the organization is reduced.

Kakani (2001) said in their study that leverage has its good side as it boosts the shareholders' return on their investment and secure tax advantages associated with borrowing. Other studies also show that improved management incentives can generate enough motivation for optimal investment to be achieved; this helps highly leveraged firms to withstand aggressive strategies by low leveraged firms by expanding their market share through an oligopoly product market. Neri (2001) stated that an increase in leverage improves performance.

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Lessons learnt

The various studies reviewed adopted the use of the quantitative research methods. Listed companies formed the samples drawn for the study. It could be inferred from literature that, inflation impacts on companies' net asset growth as well as their net profit which forms the basis for measuring their performance. The direction as well as the magnitude of the impact however varies. It is therefore a necessity for investors to consider inflation adjusted net assets growth in making investment decisions. The study of the available literature empirically has revealed that studies on the impact of inflation on companies' performance have not received much attention from researchers.

Conceptual framework

Figure 2 shows the conceptual framework of the study. It shows the effect of inflation on firm performance measured by net asset, cost of production and gross profit. The control variables; firm leverage and return on asset, were chosen in line of existing literature (Agyapong & Appiah, 2015). Leverage is used as control variable as it describes a firm's financial structure, and its related gearing and long term risks implications (Mensah, 2020).

Prior studies have indicated that there exists no perfect measure o firm performance (Dalton, Daily, Ellstrand, & Johnson, 1998). However, previous studies evaluating the impact of firm performance have used various measures of firm performance. This study employs the use of net assets growth, cost of production and gross profit as performance measures.

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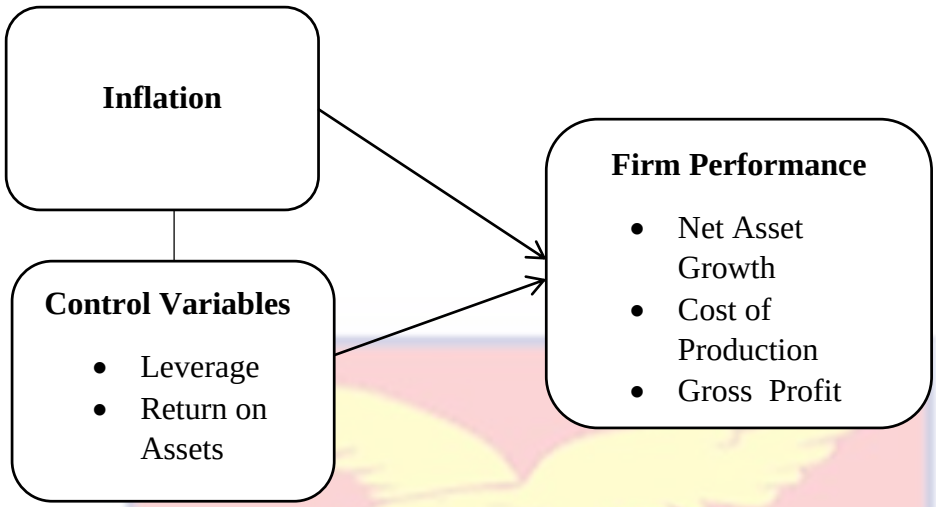

Figure 2: Conceptual Framework

Source: Author's construct (2022)

Chapter summary

The chapter began by reviewing various theories related to the study. It highlighted on the various theories of inflation namely the Classical, Neo-classical of thought, demand push, cost push and structural theories of inflation. Irvin Fisher's equation was also discussed as well as the various theories under the structural theory of inflation. It then proceeded to review existing literature related to the study. Finally, the conceptual framework was tackled.

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CHAPTER THREE

RESEARCH METHODS

Introduction

This chapter presents the research methods and techniques that were used for the study. It consists of the research design and the population for the study. It further covers discussions on the sample and sampling design, data source, data collection and analysis. The chapter highlights the test of reliability for the data collected for the study before its analysis. It then concludes with the chapter summary.

Research Design

Research design is the framework of research methods and techniques chosen by a researcher. This study followed the positivism paradigm. Positivism is an epistemological position that advocates the application of the methods of the natural sciences to the study of social reality and beyond (Fauzi & Locke, 2012). It entails the principle of deductivism whose purpose is to generate hypotheses that can be tested and that will thereby allow explanations of laws to be assessed.

The positivist philosophy favours the use of quantitative approach to research (Hopkins, 2008). This study therefore adopts quantitative approach to examine the effects of inflation on the growth of listed companies' net assets, cost of production and gross profit. Quantitative research entails the collection of numerical data and exhibits a view of the relationship between theory and research (Creswell, 2014). It is suitable for studies where statistical conclusions to collect actionable insights are essential. The choice of quantitative design to assess the performance of listed firms in Ghana is

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because insights drawn from hard numerical data and analysis prove to be highly effective when making decisions related to the future of the business.

An empirical review of related literature reveals the frequent use of causal research design. This finding is consistent with the research designs used in studies on corporate governance (Hennigs, Wiedmann, Behrens, & Klarmann, 2014; Gray, Ryan, Hotchkiss, & Crofton, 2010). A causal research design is mostly conducted to identify a causal relationship or demonstrate the dependence of a dependent variable on an independent variable.

There exist three criteria for establishing cause and effect in a given research work (Istijanto, 2009). The first step is demonstrating association. The others entail time ordering or temporal precedence and finally, non-spuriousness. This study uses causal or explanatory research to determine the effect of inflation on the performance of listed firms in Ghana using net assets as the basis of comparison. It further aims to establish an association and direction between inflation and gross profit of listed manufacturing firms in Ghana. It then concludes with a regression analysis in assessing the relationship between inflation and firm performance.

The choice of explanatory research design is due to its greater levels of internal validity as a result of the systematic selection of subjects and its replication when necessary (Kitchenham & Pfleeger. 2002). For the purposes of this study, the independent variable was inflation while the dependent variables included net assets, gross profit and cost of production of listed manufacturing firms on the GSE.

The study employed the use of panel data for a period of five (5) years spanning, 2016 to 2020. Panel data is a data set which the behaviors of entities

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are observed across time. It is a data that contains observations about different cross sections across times. The year 2020 reflects the most current available data at the time of the study. Panel data was used for the study because it can minimize estimation biases that may arise from aggregating groups into a single time series. It also contains more information, more variability, and more efficiency than pure time series data or cross-sectional data.

Population

The target population is the group of individuals the researcher intends to conduct a research and draw conclusions from. In relation to this study, listed companies on the GSE formed the population. The GSE currently lists forty two equities from thirty seven (37) companies and two corporate bonds. The use of listed companies was because listed companies are mandated to comply with mandatory requirements in the preparation of their annual reports. Table 1 below summarizes the total number of firms listed on the GSE under various sectors.

Table 1: Summary of Listed Firms on the Ghana Stock Exchange Sectors

Sector	Number of listed firms
Finance	11
Insurance	3
Information and communication technology	2
Manufacturing	14
Distribution	3
Mining	4
Total	37

Source: Ghana Stock Exchange (2017)

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Sampling Procedure

Sampling is a technique of selecting individual members or a subset of the population to make statistical inferences and to estimate characteristics of the whole population (Palinkas *et al*., 2013). Sampling in research is necessary because it is a time-convenient and a cost-effective method. Different sampling methods are widely used by researchers as an alternative to using the entire population to collect actionable insights. These include simple random sampling, systematic sampling, stratified sampling, clustered sampling, criterion based sampling, etc.

The study employed the criterion based sampling technique. Criterion sampling involves the selection of sample based on some pre-established criteria which is of importance to the research in most significant way. Criterion sampling involves selecting cases that meet some predetermined criterion of importance (Patton, 2001). This kind of sampling helps researchers study a very specific or narrow criterion and understand the implications of it. Criterion sampling can be useful for identifying and understanding cases that are information rich.

For the purposes of the study, twenty four (24) out of the thirty seven (37) listed firms were used in determining the impact of inflation on companies' performance on the basis of net assets. In terms of gross profit and cost of production, eight companies (8) out of the fourteen (14) listed manufacturing companies were used for the study.

The choice of criterion-based sampling technique was imperative to enable the researcher include firms with full data for the period. The study employed two criteria in sampling companies used for the study. These criteria

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include listed companies from 2016 to 2020 and the availability of the annual reports of these companies from 2016 to 2020.

Data Source and Collection Procedure

Research data is any information that has been collected, observed, generated or created to validate original research findings. It can either be primary data or secondary data. The study used secondary data source. A secondary data refers to data collected, compiled or written by other researchers. They include but not limited to journals, newspapers, books and censuses.

The secondary data for the study was evaluated to assess it suitability for this study. This was done with particular attention to measuring validity. The data was further evaluated to determine its precise suitability for the analyses needed to answer the research questions and to meet the research objectives. Finally, cost and benefit analysis associated with the use of the secondary data in relation to alternative sources was done.

Audited financial reports of listed firms particularly statement of financial position and statement of comprehensive income were the main data used for the study. The data was sourced from the official website of the firms and the GSE. Data on the prevailing inflation rates at the reporting date of the sampled listed firms which forms part of the data used for the study was obtained. The choice of financial reports for this study was as a result of the high credibility of the information reported therein and their use by a number of stakeholders as the sole source of certain information (Unerman, 2000).

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Model Specification

The objectives of the study is to examine the effect of inflation on the performance of listed firms using the growth in their net asset as a criterion and also the effect of inflation on the cost of production and gross profit of listed manufacturing firms. The study used models showing the relationship between the dependent variables represented by net asset growth, cost of production and gross profit. It also included control variables in order to limit potential omitted variable bias. In this study, firm leverage and return on assets were used as control variables in line with the literature by Agyapong and Appiah (2015).

Models 1 to 3 are the regression equations for the objectives of the study after controlling for firm leverage and return on asset. It is worthy to note that the lagged dependent variables were included as their formal levels affect current levels. The models below show the relationship between inflation and net assets as well as cost of production and gross profit

$$NAG_{it} = \beta_0 + \beta_1 NAG_{it-1} + \beta_2 INF_{it} + \beta_3 LEV_{it} + \beta_4 ROA_{it} + \varepsilon_{it} \quad (1)$$

$$COP_{it} = \beta_0 + \beta_1 COP_{it-1} + \beta_2 INF_{it} + \beta_3 LEV_{it} + \beta_4 ROA_{it} + \varepsilon_{it} \quad (2)$$

$$GP_{it} = \beta_0 + \beta_1 GP_{it-1} + \beta_2 INF_{it} + \beta_3 LEV_{it} + \beta_4 ROA_{it} + \varepsilon_{i\varepsilon t} \quad (3)$$

Where:

- NAG represents Net Asset Growth
- NAG_{it-1} represents the lag of Net Asset Growth
- COP represents Cost of Production
- COP_{it-1} represents the lag of Cost of Production
- GP represents Gross Profit

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- GP_{it-1} represents the lag of Gross Profit
- INF represents Inflation
- LEV represents Firms Leverage
- ROA represents Return on Assets
- β represents coefficients
- ε is the error term

Data Analysis

Audited financial statements of listed companies sampled for the study were analyzed to achieve the objectives of the study. To analyze the impact of inflation on the growth rate of net assets, a comparison of net assets of twenty four listed companies were made. The study used the most recent financial statements of these listed firms and their comparatives in calculating the growth rate in the net asset.

The growth rate was first calculated without considering the prevailing inflation rate. This was done by comparing the ending net assets of each listed company with their beginning net assets. After calculating the growth rate of each company, the inflation adjusted growth rate was calculated by adjusting each company's net assets with the reporting date's applicable inflation rate.

The inflation adjusted growth rate was calculated based on the Fischer's equation by converting the nominal growth rate into real growth rate. These two growth rates are compared to test the hypothesis of the study, which is, the effects inflation has on the growth of net assets reported by listed firms in their financial reports.

In order to test the impact of inflation on the performance of manufacturing firms indicated by gross profit and cost of production, a panel

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estimation analysis between the inflation of Ghana and cost of sales, cost of production and gross profit, as well as inflation and gross profit of the sampled manufacturing firms on the GSE from 2016 to 2020 were done.

The data on the financial statements obtained from the website of the Ghana Stock Exchange and from individual company's website were compiled to suit the objective and purpose of the study. Reliability test was conducted on the data to determine the choice of inferential statistics to be used for the study. The study employed the use of Cronbach's Alpha in testing for the reliability of the data. Table 2 shows the results on the test of reliability of the data used for the study.

Table 2: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.924	.976	10

Source: Field data (2022)

The reliability test on both data sets shows a value of 0.924. This indicates a high reliability value and a good measure of consistency.

The data were analyzed by Stata version 13.0 and the study employed the use of dynamic panel estimation technique to estimate the models. The analysis was done according to the objectives of the study. The study employed both descriptive and inferential analysis. The descriptive statistics was used to describe the significant features of the variables using mean, standard deviation, minimum and maximum. A regression analyses was also conducted in line of the objectives of the study. Table 3 shows the number of

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listed companies, their reporting dates and the applicable inflation rate used for the study.

Table 3: Applicable Inflation Rates

Number of Companies	Reporting Date	Applicable Inflation rate
17	31/12/2020	9.95%
5	12/31/2019	7.18%
1	06/30/2019	7.14%
1	07/31/2020	9.70%
Total:	**24**	

Source: Author's construct (2022)

Definition and Measurement of Variables

For the purposes of this study, the following are how the variables of the models; net asset growth, cost of production, gross profit and inflation would be measured. The definition as well as measurement is done in Table 4.

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Table 4: Definition and Measurement of Variables

Variable	Definition	Measurement
NAG	Net Assets Growth	The percentage change of net assets over the financial year as indicated in the annual report (Mohammed, 2016).
COP	Cost of Production	The total cost incurred in production as indicated in the annual report (Maimunah & Patmawati, 2018).
GP	Gross Profit	Gross profit was measured as the excess of total revenue over cost of goods sold (Maimunah & Patmawati, 2018).
INF	Inflation	Prevailing inflation rate at the end of the reporting period.
LEV	Leverage	Financial leverage was measured as the ratio of the company's total liabilities to the total assets for the respective years (Watson, Shrives & Marston, 2002).
ROA	Return on Asset	Net profit before tax divided by total assets (Osei, 2016)

Source: Author's construct (2022)

Chapter Summary

The chapter began with the research design employed for this study. It further highlighted the source of data that was used for the study and how they were obtained. The population for the study, sample used for the study, as well as the sampling technique used was also discussed. The data for the study was then tested for normality to determine the choice of statistical technique to be used for the study. The chapter concludes with the statistical packaged that will be employed for the study and how results will be presented in the next chapter for discussion.

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CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

This chapter presents and discusses results from the study. The results were presented to conform to the objectives of the study. A descriptive statistics on all variables were discussed first. The chapter further examines the effect of inflation on the performance of listed manufacturing firms in Ghana on the basis of their net assets, gross profit and cost of production using dynamic panel estimation technique.

Descriptive statistics

The descriptive statistics is presented on the sampled listed firms on the Ghana Stock Exchange. This was done using their most recent financial statement at the time of the study. That is 2020 to 2016 financial statements. The descriptive statistics presented in Table 5 include the number of observations, mean, standard deviation, as well as the minimum and maximum values for each variable. The results of the descriptive analyses are represented in Table 5 below.

Table 5: Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
NAG	40	929955.22	1423923.9	34799	4668959
GP	40	86696503	99451803	-15394000	3.489e+08
COP	40	3.922e+08	6.251e+08	1930204	2.346e+09
INF	40	10.932	3.783	7.14	17.45
LEV	40	3.704	4.904	1.063	29.642
ROA	40	.128	.245	.001	1.571

Source: Field data (2022)

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From the descriptive statistics, average net asset growth was GH¢929,955.22 within the ranges of GH¢34,799 and GH¢4668959. However, average inflation was 10.93% within the limits of 7.14% and 17.45%. This depicts that that most of the listed firms engaged in the study experienced a positive growth in their net assets in nominal terms. Regarding gross profit, the sampled listed firms used for the study had an average of GH¢86,696,503 within the limits of a loss of GH¢15,394,000 and a profit of GH¢348 million. This suggests a significant disparity in the performance of listed firms because while some recorded gross profit as high as GH¢348 million other experienced a loss of GH¢ 15,394,000.

Cost of production recorded an average GH¢3.92 million with a minimum value of GH¢1930204 and a maximum value of GH¢234 million. Leverage recorded an average 3.704 within the limits of 1.063 and 29.642. Finally, return on assets recorded an average of 0.128 with a minimum of 0.001and a maximum of 1.571

Regression results of the effect of inflation on Growth in Net Assets, Cost of Production and Gross profit

This subsection presents and discusses the empirical results of the study. The results from the regression analysis are presented in Table 6, Table 7 and Table 8. Table 6 presents the results of the effect of inflation on growth in net assets. Table 7 presents the effect of inflation on the cost of production of listed firms while Table 8 presents the effect of inflation on gross profit. Table 6 below shows the effect of inflation on growth in net assets of listed firms, which is in line with the first objective of this study.

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Table 6: Effect of Inflation on Net Assets Growth

Dependent Variable: Net Assets Growth

	Model 1
L.Net Assets Growth	0.679***
	(0.190)
Inflation	2002045.5*
	(8592200.9)
Leverage	-2510200.6
	(4018671.2)
Return on assets	13324212.6
	(68466284.9)
Constant	51865369.5*
	(202134337.9)
Observations	32
No. of instruments	12
AR1 (p-value)	0.753
AR2 (p-value)	0.306
Hansen-J (p-value)	0.957

Source: Field data (2022)

The results from Table 6 above depicts that at 10% significance level, inflation has a significant positive impact on the growth in the reported net assets of listed firms in Ghana. The results further shows a coefficient of 2002045.5 indicating that a percentage increase in inflation will lead to an increase of GH¢2,002,045.50 in the reported growth in the net assets of listed firms.

This result imply that the prevailing inflation affects all companies reported growth in net assets, in that most companies' growth in net assets may rise as a result of inflation and not necessarily an improvement in performance as a result of improved corporate practices.

This result confirms the study of Mohammed (2016) who argued that the reported growth in net assets represents the nominal growth which does not necessarily depicts the actual improvement in company performance. He

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explained that adjusting for inflation by calculating the real growth in net assets will be a better representation of company performance.

Results of Control Variables for assessing the effect of Inflation on Net Asset Growth

The control variables used for this study were firm leverage and return on assets. Table 7 shows that firm leverage has an insignificant inverse effect on the performance of listed firms measured by growth in net assets. The results indicate a coefficient of -2510200.6 which imply that an increase in firm's leverage reduces its growth in net asset. In addition, results show that return on asset has no significant effect on net assets growth.

Table 7: Effects of inflation on Cost of Production

Dependent Variable: Cost of Production

	Model 2
L.Cost of Production	0.661**
	(0.217)
Inflation	4276384.7*
	(9747838.1)
Leverage	-3587649.4
	(2817196.9)
Return on assets	-109662592.9*
	(157356597.9)
Constant	79983347.5
	(160785815.7)
Observations	32
No. of instruments	12
AR1 (p-value)	0.758
AR2 (p-value)	0.332
Hansen-J (p-value)	0.947

Source: Field data (2022)

Table 7 above shows the results of the effect of inflation on cost of production of listed firms. The results from the model reveal that at 10% significance level, inflation has a significant positive effect on the cost of

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production of listed firms in Ghana. The coefficient of 4276384.7 implies that a percentage increase in inflation will result in an increase of GH¢4276384.70 in the cost of production of listed firms in Ghana.

It can then be concluded that there is a significant positive relationship between the inflation rate and the cost of production and thus a rise in the prevailing inflation rate increases the production cost of manufacturing firms. This finding is in line with the findings of Maimunah and Patmawati (2018) who found a positive relation between inflation and cost of production of listed manufacturing firms in Malaysia. The result is also consistent with the findings of Ali and Ibrahim (2019) who opined that persistent increases in cost of goods and services results in increase in production cost.

Results of Control Variables for assessing the effect of Inflation on Cost of Production

Firm leverage and return on assets were again used as control variables for determining the effect of inflation the performance of listed manufacturing firms using cost of production and gross profit as the basis of measurement. Table 9 shows an insignificant coefficient of -3587649.4 for firm leverage which means that firm leverage has no significant effect on the performance of listed manufacturing firms measured by cost of production. In addition, the results reveal that return on assets has a significant inverse impact on cost of production. This finding is however contrary to Duca (2019) who found that high debt levels have significant positive impact on firm profitability.

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Regression results on the effect of Inflation on Gross Profit

The study further examined the relationship between inflation and the profit levels of manufacturing firms. The results from the analysis are presented in the Table 8 below.

Table 8: Effect of Inflation on Gross Profit

Dependent Variable: Gross Profit

	Model 3
L.Gross Profit	-0.440*
	(0.222)
Inflation	-4888930.4
	(2917994.9)
Leverage	20546701.0**
	(7945876.3)
Return on assets	101543064.2**
	(31845400.5)
Constant	92325982.2*
	(46608602.0)
Observations	32
No. of instruments	8
AR1 (p-value)	0.281
AR2 (p-value)	0.773
Hansen-J (p-value)	0.831

Source: Field data (2022)

Table 8 above presents the results on the effect of inflation on gross profit of listed firms in Ghana. The results depicts that, at 10% significance level, inflation has an insignificant inverse effect on gross profit of listed firms. The coefficient of -4888930.4 implies that a percentage increase in inflation will lead to a reduction of GH¢4,888,930.40 in the gross profit of listed firms. Thus, the results show that inflation does not have a significant effect on manufacturing companies' gross profit.

However, the impact of inflation on the cost of production of manufacturing companies indirectly affect their gross profit as gross profit is

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measured by the excess of their revenue over their cost of production. This finding is consistent with that of Zuhaib and Nizam (2015) who found that as inflation rate increases, the cost of production also increases and subsequently gross profit falls.

This finding is however, inconsistent with that of Bloch and Olive (2001) which reveals that inflation has a positive influence on profit. A study by Maimunah and Patmawati (2018) also shows a significant relationship between inflation rate and gross profit of manufacturing companies.

Results of Control Variables for assessing the effect of Inflation on Gross Profit

Again, the model in Table 8 controlled for firm leverage and return on assets. According to the results, firm leverage had a coefficient of 20,546,701.0 at 5% significance level. This means that a percentage increase in firm leverage will lead to GH¢20,546.70 increases in gross profit.

Chapter Summary

This chapter presented the descriptive statistics and the correlation of net asset growth and inflation for listed firms and cost of production and gross profit for listed manufacturing firms. The study then proceeded to analyse the effect of inflation on performance of listed firms measured by net assets growth and manufacturing firms with cost of production and gross profit as proxies. It proceeded to explain the results of the control variables against firm performance used for the study.

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CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

The chapter begins with the presentation of the summary of findings for the study. It further offers recommendations and suggestions for future research study. The study was to determine the effect of inflation on the performance of listed companies on the GSE on the basis of net assets growth. The study was also to investigate how inflation affects the cost of production and gross profit of listed firms in Ghana.

Summary of findings

The study seeks to examine the impact of inflation on the performance of listed firms in Ghana. The specific issues tackled include; the impact of inflation on performance of listed firms measured by net asset growth and the impact of inflation on performance of listed manufacturing firms measured by cost of production and gross profit.

For the purposes of achieving these objectives, a dynamic panel estimation technique was used to analyze data of the listed firms sampled for the study using criterion sampling technique. Three models were formulated in line with the objectives of the study. The results of study were analyzed and discussed within the context of the stated objectives.

The first research objective seeks to examine the effect of inflation on the performance of firms listed on the Ghana Stock Exchnage using net asset as the basis. The study found that most companies' net assets grow on yearly basis. However, when these growth in net assets are adjusted for inflation, the

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growth declines and in some situations, results in a negative growth which is undesirable by shareholders.

This means that an increase in the net asset of listed companies cannot be attributed only to the investment by owners and positive growth of operational performance. Hence, existing and prospective shareholders in relying on the growth of net assets to make investment decisions must take into consideration prevailing inflation as it can also cause an increase in growth of net asset.

The second objective of the study seeks to ascertain the effect of inflation on the cost of production of listed manufacturing firms. The study revealed that inflation has a significant effect on the cost of production of listed manufacturing firms. This means that as the rate of inflation rises, cost of production also increases. In most instances, the rises in cost would be absorbed into production cost which is then transferred to consumers based on the elasticity of the good or services involved.

The third research objective evaluates the effect of inflation on gross profit of listed manufacturing firms in Ghana. The study revealed an insignificant relationship between inflation and the profit level of manufacturing firms. However, the positive impact of inflation on the cost of production indirectly affects gross profit. Thus, an increase in inflation rate will lead to an increase in the cost of production of manufacturing firms and subsequently a decrease in their profit level.

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Conclusions

Inflation has a significant impact on the growth of net assets as well as other relative measures of firm performance. Growth of net assets is a key indicator of analyzing company performance as an increase in net asset without the contribution from shareholders indicates a positive growth of income of the company. Various studies have used other measures of firm performance and have given different conclusions on the relationship between inflation and firm performance. These studies either revealed a positive, negative or no relationship between these variables.

This study analyzed the impact of inflation on the performance of listed firms using net asset growth as the basis. It also examined the impact of inflation the performance of listed manufacturing firms in Ghana using gross profit and cost of production as the basis.

The study revealed that inflation has a significant impact on the growth of net asset of listed firms as well as cost of production and gross profit of manufacturing firms. The study concludes that an increase in net asset without shareholder's contribution should not only be seen as a positive growth in the income of company. However, it must be analyzed to determine whether the increase in the net assets was as a result of adding value to the society through improvement in their performance or inflation resulting in decreasing the purchasing power of money. If increase in income emanates from adding value to society, it ensures real growth of net assets.

However, if income increases because of inflation, it reduces the real financial positions of the shareholders. As a result, inflation adjusted net asset growth rate is a very useful tool to analyze actual equity growth of the

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company and must therefore be used in measuring the growth in net assets reported by companies.

Furthermore, the findings of this study reveal that there is a positive relationship between gross profit and inflation. This can either be a direct or indirect relationship between the two variables and or inflation initially increases the cost of production which in turn affects the profit level of companies. This concludes that although the effects of inflation are not recognized in nominal financial statements, they have economic consequences on the performance of firms.

Recommendations

The following recommendations are offered to consent to the findings of this research work; The researcher recommends that investors in using the growth in net assets as a basis for measuring the performance of a company in order to make investment decisions must consider the real growth in net asset measured by the inflation adjusted growth in net asset as this gives true measure of a companies' performance and is most desired by its shareholders.

Other stakeholders of the financial statements including financial analysts must also take into consideration the real growth in the net assets of companies in their analyses. Both local and foreign investors must also apply this principle in order to know the possible returns due them and whether investing in these listed companies is worthwhile. This research will also help listed companies adopt proactive business measures to mitigate the possible effects of inflation on their organization.

It is also evident from the findings that inflation affects firms' gross profit either directly or indirectly. Hence, manufacturing companies' in

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making price related decisions must consider the effect of the prevailing inflation rate on their cost of production. This must however be done taking into consideration the elasticity of the product in question. The government together with other state institutions should also gain insight on how listed firms are performing and where to subsidize taxes and issue incentives where the need be.

Suggestions for Future Research

The following areas have been identified as potential areas for future research. Further studies should include other variables that influence performance and other definitions of performance like leadership, motivation and company policy.

The second part of this research focused on the effect of inflation on the cost of production and gross profit of listed manufacturing firms on the Ghana Stock Exchange. It however focused or used the most recent five years data in its analysis. Future research can however focus on a broader perspective in terms of time frame or the categories of companies to be included in the study in order to enhance representativeness.

Also, other performance indicators aside gross profit growth in net assets can be used to measure companies' performance. Furthermore, other sources of information or literature should be used in order to obtain deeper information on previous research work while improving current and future studies on the topic.

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APPENDICES

Appendix A: Net Asset Growth of Listed Firms

	COMPANY NAME	NET ASSAETS		Net Asset Growth(%)	Inflation Adjusted Net Asset Growth(%)	Reporting Date
		BEGINNING BALANCE	ENDING BALANCE			
1	ACCESS BANK GHANA	803,800	1,052,119	30.89%	19.05%	31/12/2020
2	ADB BANK	793,384	850,623	7.21%	-2.49%	31/12/2020
3	ALUWORKS LIMITED	173,685	144,852	-16.60%	-22.19%	31/12/2019
4	BENSO OIL PALM	76,851	99,634	29.65%	17.92%	31/12/2020
5	CAL BANK	974,787	1,132,772	16.21%	5.69%	31/12/2020
6	CAMELOT GHANA	2,433,898	2,441,360	0.31%	-8.77%	31/12/2020
7	CLYDESTONE GHANA	889,790	1,243,641	39.77%	30.41%	31/12/2019
8	ECOBANK	10,443,055	11,532,095	10.43%	0.44%	31/12/2020
9	ENTERPRISE GROUP	666,895	764,386	14.62%	4.25%	31/12/2020
10	FAN MILK PLC	259,591	260,105	0.20%	-8.87%	31/12/2020
11	GCB BANK	1,780,362	2,185,998	22.78%	11.67%	31/12/2020
12	GOLDEN STAR	(32123)	25,774	-180.24%	-172.98%	31/12/2020
13	GUINNESS GHANA	294,641	301,159	2.21%	-4.60%	30/06/2019
14	HORDS PLC	4,499,662	4,668,959	3.76%	-5.63%	31/12/2020
15	MEGA AFRICAN CAPITAL	66,264,712	71,356,743	7.68%	-2.06%	31/12/2020
16	MERIDIAN MARSHALL	2,695,720	2,030,431	-24.68%	-31.34%	31/07/2020
17	MTN GHANA	2,803,826	3,339,187	19.09%	8.31%	31/12/2020
18	REPUBLIC BANK	579,677	636,212	9.75%	-0.18%	31/12/2020
19	SAM WOODE LTD	356,793	-908,289	-354.57%	-337.52%	31/12/2019
20	SIC INSURANCE PLC	269,909,150	273,137,182	1.20%	-7.96%	31/12/2020
21	SOCIETE GENERALE	701,784,900	801,961,431	14.27%	6.62%	31/12/2019
22	TOTAL PETROLEUM PLC	252,033	344,165	36.56%	24.20%	31/12/2020
23	UNILEVER	84,952	34,799	-59.04%	-62.75%	31/12/2020
24	TRUST BANK PLC	732,534	808,348	10.35%	2.96%	31/12/2019

Source: Field data (2022)

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Appendix B: Gross Profit of Listed Manufacturing Firms

S/N	COMPANY NAME	GROSS PROFIT				
		2020	2019	2018	2017	2016
1	ALUWORKS	1,088,000	1,197,000	-5,780,000	1,631,000	8,253,000
2	BENSO	38,961,000	20,134,000	14,352,000	19,716,000	16,845,000
3	CAMELOT	2,992,317	2,743,415	2,625,749	2,781,070	2,514,982
4	FAN MILK	119,971,000	170,276,000	148,776,000	208,618,000	197,057,000
5	GUINNESS GHANA	215,074,000	173,956,000	158,321,000	150,336,000	176,824,000
6	HORDS	987,098	1,083,289	959,408	876,588	928,113
7	TOTAL	348,918,000	282,434,000	224,469,000	181,242,000	162,532,000
8	UNILEVER	75,695,000	-15,394,000	191,161,000	174,053,000	150,197,000

Source: Field data (2022)

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Appendix C: Cost of Production of Listed Manufacturing Firms

S/N	COMPANY NAME	COST OF PRODUCTION				
		2020	2019	2018	2017	2016
1	ALUWORKS	82,643,000	75,797,000	68,275,000	82,839,000	61,217,000
2	BENSO	84,940,000	76,240,000	65,161,000	71,341,000	57,733,000
3	CAMELOT	4,323,611	3,441,338	3,839,122	3,639,423	3,445,387
4	FAN MILK	253,604,000	254,210,000	240,731,000	237,345,000	189,345,000
5	GUINNESS GHANA	311,753,000	511,023,000	464,781,000	437,111,000	389,484,000
6	HORDS	1,930,204	2,041,136	2,467,859	2,284,665	2,006,867
7	TOTAL	2,045,084,000	2,346,176,000	2,156,637,000	1,677,236,000	1,499,083,000
8	UNILEVER	380,584,000	348,684,000	440,991,000	401,712,000	346,109,000

Source: Field data (2022)

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