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Towards Economic Variables and Firm Characteristics: An Examination of the Impact on Profitability of Ghanaian Production Firms

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Abstract
This study examines the combined effects of firm characteristics and economic factors on the profitability of Ghanaian production firms. The goal of the study therefore is to ascertain how firm-specific characteristics and economic factors interact to influence the profitability of production firms in Ghana. Ghana's production companies are vital to the country's economy, but these production companies face intense competition from imported goods, and high taxes and levies, which the study links to unfavorable economic conditions, policies, and regulations resulting in lower firm profitability. In Sub-Saharan Africa, there hasn't been much empirical research on how firm characteristics and economic factors interact to affect corporate profitability. Therefore, in harnessing the potentials of African intellectuals for rapid economic growth, the examination becomes crucial amidst the fluctuations of economic growth, especially in Ghana. The study looks at the relationship between profitability metrics like Profit Margin (PM) and Return on Assets (ROA), and Gross Domestic Product (GDP), Inflation (I), and Firm Age (FA). Between 2017 and 2022, data from five listed production companies were extracted. Quantile and OLS regression models were used for analysis. The results revealed that, none of the economic factors as well as firm age affect profitability of production firms in Ghana. It shows therefore that certain internal factors in firms, as well as opportunities from the external environment among others, can make firms increase profitability irrespective of economic factors.
Keywords: economic factors, firm profitability, firm characteristics, gross domestic product, inflation.
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1. INTRODUCTION

1.1. Background of the study

Production firms in Ghana encounter various obstacles such as high taxes, levies, and fees, energy crisis and utility pricing, funding and interest rates, and inadequate government support. It goes without saying that it's critical to comprehend economic factors, specific firm characteristics, cost effectiveness, and the profitability of the industry. Many businesses have realized the value of financial performance in the face of globalization and competition, as this will support their sustainability in the industries they follow. Without a doubt, both internal and external factors have an impact on a company's profitability. Internal factors primarily relate to the company's capacity for cost- and productivity-cutting, while external factors include the state of the economy, governmental regulations, exchange rates, GDP, unemployment rate, and other factors that are always regarded as critical elements that impact the business. Many researchers are very interested in the crucial question of whether performance is influenced by factors within the firm or by factors from the external environment. Two approaches are typically used in research on the factors influencing firm performance: The theory of resources and the theory of systems. According to the resource-based theory, a firm's internal dynamics and assets determine its level of competitiveness and, consequently, its profitability. However, the system theory contends that a firm's performance is influenced by outside variables arising from the macroeconomic environment. Porters (1997) believes that external factors are more significant in the field of strategy than firm-specific factors. Because of this, choices about internal resources ought to be based on the outcomes of the examination of outside influences (Porters, 1997). Nonetheless, data from the literature appears to indicate that when it comes to explaining firm performance, firm-specific factors are more important than external factors (Hawawini et al., 2003; Makhija, 2003).

Researchers are still interested in external factors despite the empirical studies' conclusions. This is mainly because managers are unable to effectively anticipate and control how economic factors will affect the firm's performance. In addition to increasing a company's exposure to outside influences, globalization has already made managing more difficult for managers. After the Asian and global financial crises, the relationship between economic factors and firm performance garnered even more attention. One of the worst financial crises ever, the Global Financial Crisis (GFC) had a profound effect on global economies and equities markets after starting in the United States of America. Most macroeconomic variables and business profitability were also impacted by the COVID-19 and post-COVID eras. Numerous economies went through recessions, and both the Great Financial Crisis and the Covid-19 pandemic saw a decrease in the value of many businesses. About 50% of the world Gross Domestic Product (GDP) for 2007 was lost to shareholders because of the sharp decline in equity values (Bartram & Bodnar, 2009). Another reason given for the potential cause of low company profitability is the recession (Richardson et al., 1998). According to Chow et al. (2018), the firm's decisions about resource allocation are significantly hampered by macroeconomic uncertainty, such as the current global financial crisis. Shakina and Barajas (2014) observed, however, that some businesses have emerged stronger from the global financial crisis. Consequently, the precise nature and degree to which firm-specific and economic factors influence firm profitability remain unknown. This paper aims to investigate the impact of firm-specific and economic factors on the performance of firms in Ghana.

1.2. Research Problem

The implementation of the One District One Factory (1D1F) plan by the Ghanaian government presents encouraging prospects for the nation's industrialization. However, Nti (2015) pointed out that the production sector in Ghana faces several serious issues and challenges, including: (1) high taxes, levies, and fees; (2) the energy crisis and utility pricing; (3) competition from imported goods; (4) funding and interest rates; and (5) a lack of engagement from the government. Therefore, it is believed that the adoption of successful macroeconomic policies will lead to the development and execution of successful strategies, improving the operational efficiency of Ghanaian production companies and reducing their reliance on the government.

Particularly in Sub-Saharan Ghana, there hasn't been much empirical research on how firm characteristics and economic factors interact to affect corporate profitability. Therefore, a critical need exists amidst the macroeconomic ups and downs, especially in Ghana, a country in Sub-Saharan Africa in harnessing the potentials of African intellectuals for rapid economic growth. The purpose of this study is to further our understanding of how firm-specific and economic factors interact to affect firm profitability. There is a deficiency in the literature regarding the empirical evaluation of the joint variables.

The effect of economic factors and firm specific characteristics combined on the financial performance of production companies, especially in Ghana, Sub-Saharan Africa, is still unclear due to the conflicting results in the literature. When making strategic financial decisions, the Board of Directors would focus more on the firm characteristics of production enterprises. Additionally, production companies can optimize their financial performance through efficient strategic formulation and implementation by employing best practices and policies in macroeconomies.

Concerns about the growing necessity of implementing sound economic policies in developing countries are shared by both government and corporate entities. Therefore, the goal of the study is to ascertain how firm-specific characteristics and economic factors interact to influence the profitability of production firms in Ghana.

1.3. Objectives of the study

1.3.1. General objective

The study's overarching goal is to advance knowledge by offering an empirical evaluation of the relationship between macroeconomics and financial performance, with a focus on the extent of the impact of the joint economic factors and firm characteristics on the profitability of production companies. To establish the impact of economic factors and firm characteristics on firm performance, the work aims to integrate major theories that have examined the relationship between economic factors and firm performance within a conceptual framework that takes into account firm characteristics. There are four specific objectives that must be met in order to accomplish the overall goal.

1.3.2. Specific objective

The study aims at addressing the following specific objectives:

- To explore the influence of inflation on profitability
- To determine the nature of the influence of GDP per capita on profitability
- To examine the nature of the influence of firm age on profitability
- To determine the nature of the influence of economic factors on profitability

1.4. Research question

- To what extent is the relationship between inflation on profitability?
- To what extent does the GDP per capita affect profitability?
- To what extent does the firm age control the other variables?
- What is the relationship between firm liquidity and profitability?

1.5. Significance of the study

Few or no studies in the literature found a relationship between firm-specific characteristics and macroeconomic variables on the profitability of production firms in Sub-Saharan Africa and on the set variables. There are currently no findings of this kind in developing nations like Ghana when considering the set variables for the joint macroeconomics and firm specific characteristic on financial performance. The impact of economic factors alone on profitability has produced conflicting results in the literature. The financial decisions made by the board of directors of banking companies would be made with greater consideration for the unique firm characteristics of production firms. Government officials and business leaders are increasingly concerned about the need for sound economic management and how it affects developing nations' production sectors, as it has a cascading effect that makes it easier to implement sound strategic management techniques. The research would be important from a theoretical and policy perspective. By including the characteristics of the firms, the study will contribute to the body of knowledge regarding the theories put forth to help explain how macroeconomic variables affect the performance of firms. The study is expected to be highly beneficial to shareholders, the board of directors, strategists, and other stakeholders who are determined to restructure corporate Ghana, including policy makers, investors, and researchers.

1.6. Limitations of the study

The companies that were quoted on the Ghana Stock Exchange were the focus of the inquiry. Convenience and accessibility of data were considered when choosing this stock exchange. The study is also aware that the underlying behavior of these stock markets may have an impact on the performance factors, which could skew the regression's findings. Therefore, one hopes that the analysis of the control variables took many of these impacts into account. Due to legal requirements, listed firms must publish annual reports and accounts; therefore, data reliability played a significant role in their selection. It is understandable that sample size would be an issue in a study of this type on a subject as recent as macroeconomics. Most Ghanaian production companies are not listed on stock exchanges, though a larger sample size would have been ideal.

2. FRAMEWORK OF THE STUDY

2.1. Theoretical framework

2.1.1. The resource-based theory

According to this theory, a firm's internal resources and factors determine its competitiveness and, consequently, its profitability. According to the theory, businesses should diversify into ventures whose resource needs align with the characteristics of their current resources—which are valuable, rare, unique, and non-replaceable—(Barney, 1991). In general, research has attempted to integrate the RBV with other theories of vertical integration, such as transaction cost economics theory and property rights theory (Kaul, 2013; Mahoney & Qian, 2013; Mayer & Salomon, 2006), and has further shed light on the relationship between integration decisions and the development of resources and capabilities (Argyres & Zenger, 2012; Wan & Wu, 2017). The RBV, evolutionary economics, and modularity literatures have all been connected by the literature, which has also included intermediate governance modes like partial integration (Makadok & Coff, 2009; Parmigiani, 2007; Parmigiani & Mitchell, 2009). (Helfat, 2015; Helfat & CampoRembado, 2016; Jacobides & Winter, 2005). The main takeaway from these RBV additions to the theory of the firm is basically this: A company will integrate into an activity in a value chain (or ecosystem) of complementary activities if its resources are more productive there than they are in comparison to those of possible outsourcing partners.

2.1.2. The system theory

Many people refer to Ludwig von Bertalanffy (1901–1972) as the founder of general system theory (GST). When applied to businesses, system theory contends that a firm's performance is influenced by outside variables arising from the macroeconomic environment. A theoretical framework for comprehending how organizations function is provided by systems theory. Although there are many ways to define a system, it is best described as an entity that possesses every component required for it to perform its tasks. It began to get a sense of organizations from the outside in, but it has since evolved into a way to learn about the day-to-day activities that take place inside an organization. An organization can start working to create a product or service from them once it obtains the required inputs. This is the process of transformation, and it frequently serves as the organizational system's main function. Additionally, it's usually the part of the organization's operations that depends on the outside world the least. When a business transforms, it means that in order to produce the intended output, it combines the labor of its workforce with other inputs, such as some economic factors from the environment.

2.1.3. Firm financial performance

The study's dependent variable is firm performance. In general, a company's financial performance indicates its capacity to raise its worth. A company's ability to turn a profit indicates excellent performance and is the key to its success (Puni & Anlesinya, 2020). The corporation's annual report is frequently an informational source that can be used to evaluate the financial performance of the organization. For those who rely heavily on financial statements to make decisions, the purpose of financial statement valuation is to gather information about a company's balance sheet and any changes in its financial status (Sofia & Januarti, 2022). The literature employs a variety of performance metrics (see, for instance, Ahmed & Muhammed, 2018; Budur & Poturak, 2021; Zaim et al., 2021). To gauge a company's performance, academics typically use accounting metrics like profitability indicators (Abdullah et al., 2021; Ibhagui & Olokoyo, 2018; Jouida, 2018; Lins et al., 2017). The three metrics of profit margin, return on equity, and return on assets are applied in this investigation. Profit margin is the ratio of revenue less cost and revenue, while return on equity is the ratio of earnings before interest and tax to total shareholder equity. The return on assets is calculated as earnings before interest and tax divided by total assets.

2.1.4. Firm specific characteristics

According to Suhaily et al. (2021), in addition to the firm's macroeconomics, the primary factors for the occurrence of financial restatement are the firm-specific features. Company features consist of various elements, such as monitoring characteristics, performance characteristics, structural characteristics, and demographic variables (Al-Dmour et al., 2018). Ohkowire and colleagues (2016). According to Olowokure et al. (2016), structural characteristics are what set a company apart, like its capital structure, which is also referred to as firm size and firm leverage. In addition to business size, Al-Dmour et al. (2018) state that firm age may also have an impact on the caliber of financial reporting. This is because a number of factors, such as the structure of the internal control system, the type of audit service engagement, and the managers' incentives to manage earnings, are influenced by the size of the company. The quality of the financial reports is expected to be impacted by these factors. As a firm gets older and more experienced, it is more likely to have a better system that can improve internal control and reporting quality, which boosts the bottom line. According to Fountaine and Phillips (2016), the company's debt load may make managers more inclined to skew results. This study suggests that there is a relationship between firm-specific characteristics and financial performance. Thus, the purpose of this study is to assess, within the framework of Ghanaian production firms, the impact of firm-specific characteristics on profitability.

2.2. Conceptual framework

2.2.1. Economic factors that affect profitability

2.2.1.1. Inflation

A shift in the consumer price index is used to calculate inflation. One way to gauge an economy's macroeconomic stability is to look at its inflation rate. A widespread and persistent increase in the cost of goods and services throughout the economy is referred to as inflation. A decline in the real value of the currency and unit of account within the economy, as well as a decrease in the purchasing power per unit of money, are all indicators of inflation (Gbadebo and Mohammed, 2015). Khan (2014) concluded that a rise in inflation rates would cause a firm's profitability to decline. Similarly, Owoputi et al. (2014) discovered that when profitability is gauged by both ROA and ROE, the inflation rate is negative and significant. In a similar vein, Hailegebreal (2016) discovered that inflation significantly and negatively affects the insurance industry's profitability. Furthermore, Alomari and Azzam (2017) discovered that Jordan's insurance industry's profitability is significantly impacted negatively by inflation. Moreover, Siddik et al. (2022) discovered that inflation significantly harms the profitability of non-life insurance companies.

2.2.1.2. GDP

The monetary value of finished goods and services produced in a nation during a specific time period that are purchased by end users is measured by the gross domestic product, or GDP. It is one of the main metrics used to assess how well the economy of a nation is doing. The entire value of all goods produced in the nation is known as the gross domestic product. Kozak (2011) discovered that the GDP growth rate positively affects insurance companies' performance. Similarly, Berhe and Kaur (2017) discovered that the money supply and GDP growth rate were the primary variables that had a significant and favorable impact on insurance companies' profitability. In a similar vein, Hasan et al. (2018) concluded that the money supply and GDP growth rate, two macroeconomic variables, significantly and statistically positively affect the performance of non-life insurance companies. Additionally, Shawar and Siddiqui (2019) discovered a small but positive correlation between the insurance industry's profitability and the GDP. Furthermore, Meher and Zewudu (2020) discovered a significant correlation between the insurance company's profitability and the gross domestic product.

2.2.2. Firm characteristic factors that affect profitability

2.2.2.1. Firm age

A firm's age can be calculated using the natural logarithm of its years (Kibiya et al., 2016). Firm age has been found to be a factor influencing the accuracy of financial statements in earlier research. Suhaily et al. (2020) assert that prior research indicates that firms become more experienced over time and are more likely to enhance their governance and internal control procedures. These benefits are believed to automatically guarantee the accuracy and integrity of the financial reports, as well as lower the risk of a financial restatement. Kibiya et al. (2016) found that the non-financial companies listed on the Nigerian Stock Exchange's financial reporting quality was significantly impacted by the firm age and size of the control variables in their study. Waluyo (2017) found that business size, firm age, and firm development all had a significant simultaneous impact on corporate social responsibility (CSR) disclosure. Because CSR disclosure also had an impact on the quality of the financial reports, it can be concluded that there is a strong correlation between the business age and the financial statements' quality. Debnath (2017) came to the same conclusion: company age has a positive and significant relationship with discretionary accruals. This implies that older businesses engage in more revenue management than younger ones. However, other studies claim that financial statements from older companies are more accurate. Numerous studies have shown a correlation between improved control and financial reporting quality and business age. For example, Echobu et al. (2017) found a positive relationship between the age of the company and the quality of financial reporting.

2.3. Empirical Framework

This section summarizes related research that has been done by other academics. In a study on the performance of rural banks in Ghana, Owusu-Antwi et al. (2014) concluded that the primary drivers of rural banks' profitability in Ghana were investment to total assets, total overhead costs to total assets, loans to total assets, and inflation. However, it was discovered that liquidity had no bearing on profitability. In research on the evaluation of the effectiveness and financial success of Ghanaian listed banks, Mawutor and Awah (2014) used ROA as a stand-in for profitability and size, liquidity, credit risk, productivity, and leverage as independent variables. Their regression analysis's findings showed that bank size and liquidity had no bearing on a bank's profitability. It was discovered that productivity, leverage, and credit risk all had a negative and significant relationship with profitability. Chen and Lu (2021) also looked at how economic factors affected China's commercial city banks' productivity between 2005 and 2014. The efficiency of Chinese city commercial banks positively correlates with per capita GDP growth, according to results from the stochastic frontier analysis. Also, according to Daniel Taylor (2021), amid the Covid-19 induced economic crises and tightened credit conditions and deteriorating asset quality due to the pandemic-induced economic and financial hardships, income diversification offers alternative means of fostering bank performance.

3. METHODOLOGY

3.1. Introduction

This chapter covers the study's research design as well as data considerations and analysis techniques. The regression model that will be employed to address the research questions is also covered in this chapter. This chapter covers population and sample selection, data collection methods, and procedures. Production companies listed in Ghana from 2017 to 2022 were the subject of the study. The regression model was utilized in this study to test the hypothesis regarding the combined impact of specific firm characteristics and economic factors on the financial performance of listed companies.

3.2. Research Type

This study's format and content are empirical. The fundamental philosophy guiding the nature and character of this research is positivism. Positivism because it is grounded in empirical data rather than the views of specific people or social groups. To comprehend the research problem, document analysis was a necessary part of the research work. Thus, a combination of qualitative and quantitative research techniques was employed.

3.3. Design of the Research

A research design is the "researcher's overall for answering the research question or testing the research hypothesis," according to Polit et al. (2001). Employed in this study is explanatory research design. The goal of explanatory research is to elucidate the relationship between two or more aspects of a situation or phenomenon and explain why and how it exists.

3.4. Population Sampling

Out of the eleven production companies listed on the Ghana Stock Exchange (GSE), a sample of five were chosen. For a period of six years, five production firms listed on the Ghana Stock Exchange (GSE) comprised the population, resulting in thirty firm year observations. The five production companies made their annual financial reports from the Ghana Stock Exchange easier to access, reliable, and available for the duration of 2017–2022.

3.5. Data Collection

Secondary data sources provided the macroeconomic variables with the information. A content analysis of corporate annual reports was used to extract secondary data on financial profitability metrics (such as PM and ROA) and corporate firm characteristics (such as Firm Size). In compliance with Suhaily et al. (2019), DataStream was utilized to gather the sampled firm's financial data for the years 2017 through 2022. However, the firm age was taken from the corporate websites' histories.

3.6. Data Analysis and Instrumentation

Stata version 17 was used to analyze the data collected regarding the variables. The researcher's familiarity with and access to the Stata software is the reason. With Stata, users can analyze data through regression coefficients, correlation analysis, and descriptive statistics.

3.7. Model Analysis and Hypothesis Testing

The following hypotheses were tested to analyse the relationship between the independent and dependent variables.

H_1. *There is a significant negative relationship between inflation and profitability.*

H_2. *There is a significant negative relationship between GDP and profitability.*

H_3. *There is a negative relationship between firm age and profitability.*

The ordinary least squares (OLS) regression model, which is essential to providing the most precise linear estimates between profitability (as the dependent variable) and the numerous independent variables (inflation and GDP), was used as the cornerstone of the current study's analytical strategy. Using the appropriate statistical tests, the significance of the estimated coefficients was carefully evaluated to determine whether any meaningful relationships existed. In cases where the normality assumption test was not satisfied, quantile regression was also employed. The model can estimate the conditional quantiles, which allows for a more nuanced interpretation than the mean effects that are captured by ordinary least squares. It is also robust against outliers. The application of these models is in line with recent research on the direct relationships between dependent and independent variables carried out by Shafie and Zainal (2016), Hasnan & Marzuki (2017), and Mohammad et al. (2018). The effects of economic factors and particular FC internal mechanisms (GDP and I) on financial performance (ROA and PM) are represented by the following model:

$$ROA_{it}=\beta 0+\beta 1\mathrm{GDP}_{it}+\beta 2\mathrm{I}_{it}+\beta 3FS_{it}+\varepsilon_{it}$$

$$PM_{it}=\beta 0+\beta 1\mathrm{GDP}_{it}+\beta 2\mathrm{I}_{it}+\beta 3BFS_{it}+\varepsilon it$$

where,

ROA = return on assets of firm *i* at time *t;*

PM = profitability margin of firm *i* at time *t;*

GDP = gross domestic product of economy *i* at time *t;*

I = inflation of economy *i* at time *t;*

FA = age of firm *i* at time *t;*

$\beta 1$ *to* $\beta 3$ = coefficients, slope or parameter estimates for the independent and control variables;

$\beta 0$ = constant coefficient;

ε_{it} = error term.

4. RESULTS AND DISCUSSION

4.1. Test of assumptions

Table 1. Test of normality of the dependent variables

Variable	N	W	*p*-value
Profit margin	30	0.705	<0.001
Return on assets		0.939	0.085

Within a dataset of 30 observations, the results of the Shapiro-Wilk test for the normality of the dependent variables (profit margin and return on assets) show different distributional characteristics for these two financial metrics. The analysis unmistakably shows a significant departure from a normal distribution for the profit margin, with a Shapiro-Wilk statistic of 0.705 and a highly significant p-value of less than 0.001 based on 30 observations. The profit margin variable may not meet the assumptions needed for parametric statistical analyses, as indicated by this significant departure from normalcy. As a result, non-parametric techniques or data transformations may be necessary to properly analyze and interpret the data.

On the other hand, the Shapiro-Wilk statistic for the return on assets is 0.939, which is substantially nearer to the optimal value of 1, suggesting a distribution that is closer to normality. The conclusion that the return on assets distribution does not significantly deviate from normality is further supported by the associated p-value of 0.085, which is higher than the traditional threshold of 0.05. This result suggests that parametric statistical methods can be used to analyze return on assets without requiring data transformation or non-parametric techniques, which can make subsequent analyses easier to understand.

Table 2. Multicollinearity test

Variable	VIF	1/VIF
GDP	1.05	0.955
Inflation	1.04	0.960
Firm Age	1.02	0.985
Mean VIF	1.03	

The variables GDP, Inflation, and Firm Age show low Variance Inflation Factor (VIF) scores of 1.05, 1.04, and 1.02, respectively, with corresponding 1/VIF values indicating minimal multicollinearity among these predictors. These results are shown in Table 2 above, which presents the results of the multicollinearity test. Furthermore, demonstrating that multicollinearity is not a concern in this analysis is the model's Mean VIF of 1.03. The predictors' relative independence from one another is indicated by these VIF scores, which makes it possible to interpret regression coefficients more reliably when determining how these variables affect the dependent variable. It is beneficial when there is no significant multicollinearity because it guarantees that the explanatory information provided by GDP, Inflation, and Firm Age predictors does not overlap and affect the estimated effects of these variables on the outcome variable.

Quantile Regression on Profit Margin

Table 3. Profit margin

Variable	Quantile = 0.25		Quantile = 0.5		Quantile = 0.75	
	Estimate (se)	p-value	Estimate (se)	p-value	Estimate (se)	p-value
GDP	-1.10 (2.18)	0.618	-0.99 (1.08)	0.368	-0.83 (3.54)	0.817
Inflation	-0.43 (0.98)	0.665	-0.30 (0.48)	0.546	-0.31 (1.59)	0.846
Firm Age	3.15 (8.98)	0.729	2.14 (4.44)	0.635	1.58 (14.58)	0.915
Firm (ALWKS)						
BNSO	22.80 (21.69)	0.305	61.96 (10.73)	<0.001	57.65 (35.24)	0.116
CMLT	54.51 (21.69)	0.020	52.48 (10.73)	<0.001	45.92 (35.24)	0.206
GNS	-23.96 (162.07)	0.884	-6.19 (80.19)	0.939	-1.91 (263.26)	0.994
UNLV	99.54 (215.83)	0.649	84.0 (106.78)	0.440	69.21 (350.58)	0.845
Constant	-58.22 (222.46)	0.796	-24.70 (110.06)	0.825	-5.83 (361.35)	0.987
N	30		30		30	
R-squared (%)	49.39		38.98		39.03	

Nearly half of the variation in profit margin is explained at the 25th percentile, according to the overall R-squared values for each quantile (49.39% at the 25th percentile, 38.98% at the 50th percentile, and 39.03% at the 75th percentile). These values suggest that the model has a moderate explanatory power. Even though they are not significant, the constant terms across quantiles provide a baseline profit margin if the predictors are not present. The large standard errors in these estimates indicate the uncertainty of the model.

Quantile regression has been used in this analysis, as shown in Table 3, to evaluate the influence of the different predictor variables on profit margin at the 25th, 50th, and 75th percentiles of its distribution. GDP, inflation, firm age, and a categorical variable that represents the firm are the variables that are considered; ALWKS is used as the baseline company to compare with the other companies. The normality test's findings regarding the quantile regression method's resilience to the profit margin variable's non-normal distribution led to this choice. This approach is especially useful for analyzing data with skewness or outliers because it does not require the dependent variable to have a normal distribution. Furthermore, by analyzing the impacts of variables such as GDP, inflation, and firm age at various points in the profit margin distribution, quantile regression provides a comprehensive picture. This methodology enables the differentiation of distinct effects throughout the profitability range, furnishing a more comprehensive and intricate comprehension of the ways in which these variables impact profit margin in a range of economic scenarios.

All quantiles have consistently negative GDP estimates (-1.10 at the 25th, -0.99 at the 50th, and -0.83 at the 75th), but none of them are statistically significant (p-values: 0.618, 0.368, and 0.817, respectively). This supports the null hypothesis H2, which states that there may be a negative relationship between GDP and profit margin. It also implies that profit margin may decline as GDP rises, even though this trend is not statistically significant across the distribution. The null hypothesis H1 is accepted since the impact of inflation on profit margin also seems to be negative overall. However, like GDP, these effects are not statistically significant at any quantile (p-values range from 0.546 to 0.846).

The consistent, albeit non-significant, negative coefficients for both GDP and inflation might indicate economic conditions' nuanced impact on firm profitability, warranting further investigation.

Although, like the other variables, firm age does not reach statistical significance, it does show positive coefficients across the three quantiles, suggesting an increase in profit margin with firm age. The absence of significance (p-values: 0.729, 0.635, and 0.915) suggests that the relationship between firm age and profitability is complex and may be impacted by variables that this model does not account for.

When compared to ALWKS, the analysis of the categorical variable (firm) shows some intriguing differences in profit margin between various firms. At the 50th percentile, BNSO and CMLT's profit margins were statistically significantly higher, with p-values for both companies being less than 0.001. This suggests that these companies' median profit margins have increased significantly when compared to ALWKS. Conversely, no significant differences were observed at the upper quantile for GNS or UNLV, nor did any of the firms show any differences

at the median. These results demonstrate the variation in the ways firm-specific factors—apart from firm age and macroeconomic conditions—contribute to profitability.

OLS Regression Analysis

Table 4. Return on Assets (ROA)

Variable	Estimate (se)	p-value
GDP	<-0.001 (0.015)	0.973
Inflation	-0.001 (0.007)	0.864
Firm Age	<-0.001 (0.060)	0.998
Firm (base = ALWKS)		
BNSO	0.469 (0.145)	0.004
CMLT	0.204 (0.145)	0.172
GNS	0.240 (1.081)	0.827
UNLV	0.344 (1.439)	0.813
Constant	-0.133 (1.483)	0.929
N	30	
F-Statistics	5.33	
p-value	0.001	
R-squared (%)	62.91	

The analysis of return on assets (ROA) is presented in Table 4 with the results. Due to their near-zero coefficients and high p-values, the estimates for GDP, inflation, and firm age all showed small, non-significant effects on ROA (p=0.973, p=0.864, and p=0.998, respectively). These results imply that, for the purposes of this analysis, the age of the firm and the macroeconomic variables represented by GDP and inflation have no discernible effects on the return on assets of the firms that are the subject of the analysis, which supports the null hypotheses.

With ALWKS serving as the baseline for comparison, a significant effect is seen for BNSO when looking at the categorical variable representing various firms; an estimate of 0.469 and a p-value of 0.004 indicate a strong and statistically significant positive impact on ROA when compared to ALWKS. Although their effects were not statistically significant based on their individual p-values, the other companies, CMLT, GNS, and UNLV, also demonstrated positive effects. This inter-firm variation emphasizes how important company-specific factors—aside from firm age and macroeconomic indicators—have an impact on ROA.

All things considered, the model's performance, as seen by the overall statistics, showed a strong explanatory power in relation to the ROA for all the firms studied. Attaining an R^2 of 62.91% with a sample size of 30 observations, the model effectively accounted for roughly 63% of the variation in ROA across the firms. The model's statistical significance is further highlighted by the p-value of 0.001 and the F-statistic of 5.33. The model's relevance and dependability in capturing the dynamics influencing ROA in the dataset are confirmed by the low p-value, which indicates that the observed relationships between the independent variables and ROA are very unlikely to have happened by accident.

5. SUMMARY AND CONCLUSION

In conclusion, taking into consideration of the quantile regression on PM, the model suggests a potential negative relationship between GDP and profit margin thereby accepting the null hypothesis $H_{2.}$ Also, the influence of inflation on PM appears to be negative across the board, thereby accepting the null hypothesis $H_{1.}$ Firm age presents positive coefficients across the three quantiles, suggesting an increase in profit margin with firm age, although, like the other variables, these results do not achieve statistical significance. The lack of significance (p-values: 0.729, 0.635, and 0.915) may point to a complex relationship between firm age and profitability, possibly influenced by factors not captured in this model. Considering the OLS Regression Analysis, GDP and inflation, as well as the age of the firm, do not significantly impact the return on assets of the firms under consideration, thereby accepting the null hypotheses.

The study therefore suggests per the models used that none of the economic factors as well as firm age affect profitability of production firms in Ghana. Srinok, R., & Zandi, G. 2021 studied Covid-19 Recession and Firm Performance, the findings of the study indicated that for both Malaysia and Thailand, amid economic recession,

strategic flexibility, organizational slack resources, and proactive marketing has a significant and positive effect on firm performance.

It shows therefore that certain internal factors in firms can make firms increase performances irrespective of economic factors.

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