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ARTICLE

Navigating Inflation in Indonesia's Agricultural Sector from 2016 to 2024: Insights into Profit Margins, Asset Turnover, and Earnings Per Share

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ABSTRACT

This study aims to examine the influence of inflation rate on the financial performance of the agricultural sector by using the Structural Equation Modeling (SEM) using Smart PLS 4.0 software. The study examined the relationship between inflation and financial performance as measured through indicators such as profit margin and price-to-income ratio. The results of the study show that inflation has a significant negative effect on the financial performance of the agricultural sector. High inflation not only increases claims and operational costs, but also complicates the risk assessment process, impacting resource allocation and overall economic activity. In addition, the study emphasizes the importance of explicitly taking claims inflation into account in the calculation of loss reserves, especially for long-term liabilities that are vulnerable to price changes. Inflation and interest rates were also found to affect the price of production inputs, which in turn affected cost efficiency and corporate governance relationships. These findings make an important contribution to understanding the dynamics of the agricultural sector amid volatile inflationary conditions and provide policy implications that can help improve financial stability and efficiency in the sector. This research is expected to serve as a reference for policymakers and industry play-

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ers in managing inflation risks effectively, as well as encouraging the development of strategies that are adaptive to macroeconomic changes. Thus, this study provides comprehensive insights into the impact of inflation on the financial performance of the agricultural sector and the importance of a structured analytical approach in the current economic context.

Keywords: Inflation; Agricultural Sector; Financial Performance

1. Introduction

The agricultural sector plays a pivotal role in the economies of numerous countries, including Indonesia's economic development[1]. Indonesia is an agrarian country, with 40% of the population deriving their livelihood from farming. Indonesia is an agrarian country, with the majority of the population engaged in agricultural activities. Additionally, the significance of the sector is demonstrated by its 12.62% contribution to Gross Domestic Product (GDP) in 2021[2], which further contributes to its status as a major agricultural producer. A total of 11 Indonesian agricultural products has been identified as ranking highly in global markets. The strategic importance is also seen from the contribution of agricultural commodities exports to Indonesia's total exports which reached 4.62% in 2021[3]. Even though the export contribution is relatively small, the export value of Indonesian agricultural commodities has increased significantly in the last few decades[4]. In 2015, Indonesia imported 2.2 million tons of rice, with an estimated value of approximately USD 1 billion[2]. Dependence on imports not only undermines national food independence but also demonstrates the existence of significant challenges in the governance of the agricultural sector. These challenges range from low farmer productivity and inadequate infrastructure to an imbalance between domestic production and consumption.

The uniqueness of agriculture in Indonesia that other countries do not have can be seen from the strategic role of the agricultural sector, which is very broad and multifunctional. Agriculture in Indonesia not only plays a role as a provider of food and industrial raw materials, but also as a contributor to GDP, a producer of foreign exchange for the country, a source of labor, the main source of income for rural households, a provider of feed and bioenergy, and plays a role in efforts to reduce greenhouse gas emissions. This shows that the agricultural sector in Indonesia has a very integral role in various economic and social aspects that other countries may not have in the same way. The determination and policy of government subsidies that affect cost transmission, which is a prerequisite for achieving soybean self-sufficiency, such as the government's purchase price policy, the setting of a minimum import tariff of 10%, market price guarantee through the active role of Bulog, and incentives from the government for farmers implementing soybean cultivation. There are also export restrictions such as export duties for CPO products and their derivatives to meet domestic needs. These policies serve to control prices at the farmer and consumer levels, which ultimately affects farmers' purchasing power and the transmission of agricultural production costs. Generally, the policy implication of our analysis is that the agricultural sector plays a macroeconomics key role in the Indonesian economy, as evidenced by the role of the agricultural sector in the short and long term can still encourage other sectors to grow, especially the industrial sector. While, the industrial sector is closely related to all economic activities, and in turn with the environment of other macroeconomic policies. The industrial policy may be necessary, although in general, it is not optimal yet, the agricultural sector is far more critical, because Indonesia is a country that has great potential in the agricultural sector. Inflation has a detrimental impact on the economy. This is because it disrupts the function of money, particularly the savings function (saving value), the prepayment function, and the function of the unit of account. As a result of the burden of inflation, individuals are compelled to divest themselves of money and financial assets. Furthermore, inflation has resulted in a phenomenon known as "re-inflation," or self-feeding inflation. This has led to a weakening of the spirit of sav-

ing and the attitude towards saving within the community, as evidenced by a decline in the marginal propensity to save. Additionally, inflation has increased the tendency to spend, particularly on non-primary and luxury goods, leading to an increase in the marginal propensity to consume. Finally, investment in non-productive things, namely the accumulation of wealth, has also been directed as a result of inflation, a phenomenon known as "hoarding."

In their role as a leader in an agricultural company, it is crucial to assess the impact of inflation on the company's principal financial indicators. The impact of uncontrolled inflation on a company's profitability can be direct, manifesting in increased operating costs and decreased market demand. It is therefore essential to undertake careful measurement of financial indicators such as return on equity (ROE), return on assets (ROA), profit margin (PM), asset turnover (ATO), earnings per share (EPS), and price-earnings ratio (PER) in order to maintain the company's performance in the context of dynamic macroeconomic challenges (**Table A1**). Macroeconomic fundamental factors are defined as those related to policies outside the company. One of the principal factors is that inflation has a direct impact on people's purchasing power, causing an increase in the price of goods and services. A high inflation rate may result in a reduction in purchasing power for consumers, as the purchasing power of money is diminished. Consequently, a high inflation rate has an adverse effect on people's purchasing power. Conversely, elevated inflation rates result in a reduction in corporate profitability due to the rise in production costs and the decline in the purchasing power of the currency.

Empirical studies have focused on identifying the effects of macroeconomic factors on the financial performance of the agricultural sector. These studies demonstrate that sector-specific factors such as capital adequacy, asset quality, interest income, non-interest income, personnel expenses, bank size, liquidity, and credit risk as well as macroeconomic or external factors such as national income, exchange rates, interest rates, unemployment rates, and inflation impact the financial performance of the sector [1–9].

"Other macroeconomic factors, such as inflation and real interest rates, show mixed influences on profitability. For example, studies in Jordan and Vietnam showed a significant relationship between these variables and profitability [10, 11], but studies on banks in the UK found no significant impact [12]. This indicates that internal factors such as operational efficiency and risk management have a more important role than external conditions in determining profitability in some markets [12]. In addition, some studies have also found no significant association between inflation and bank profitability [13, 14]. Inflation had a negative effect on the ROAA and ROAE of European banks after the 2008 financial crisis [15], and similar negative trends were also reported in the eurozone in the period 2015–2020 and in Central and Eastern European countries during 2009–2018 [16, 17]. However, several other studies report a positive relationship between inflation and bank profitability in Europe [18]. Few studies have analyzed the relationship between bank profitability and long-term interest rates; one study reported that long-term interest rates were positively associated with NIM, but not significantly on ROA and ROE" [19].

The aim of this study is to examine the impact of inflation on key financial indicators—namely ROE, ROA, profit margin, asset turnover, EPS, and PER—within Indonesia's agricultural sector. By analyzing empirical data and existing literature, this research seeks to provide a deeper understanding of how inflation influences profitability. Based on the findings, it can be concluded that the study successfully achieved its objective, as it identified significant relationships between inflation and several financial performance metrics, offering valuable insights for agricultural companies and policymakers navigating macroeconomic challenges. Theoretically, this study contributes to the existing body of knowledge by expanding the understanding of how macroeconomic variables, specifically inflation, affect sector-specific financial performance, particularly in emerging economies. Practically, the findings provide actionable insights for agricultural business leaders and policymakers in designing strategies to mitigate the adverse effects of inflation, optimize financial outcomes, and enhance sector resilience amid economic fluctuations.

2. Materials and Methods

In accordance with the research model image presented in **Figure 1**, profitability can be defined as the expertise of a business to obtain a number of profits derived from the normal business activities of the company during a certain period. As outlined by Kimmel et al. (2016), profitability ratios encompass the following key metrics: (a) return on common stockholder's equity (ROE), (b) return on assets (ROA), (c) profit margin, (d) asset turnover, (e) earnings per-share (EPS), (f) price-earnings ratio, and (g) payout ratio. The term "inflation" is used to describe the rate at which the general level of prices of goods and services rises, resulting in a decline in purchasing power.

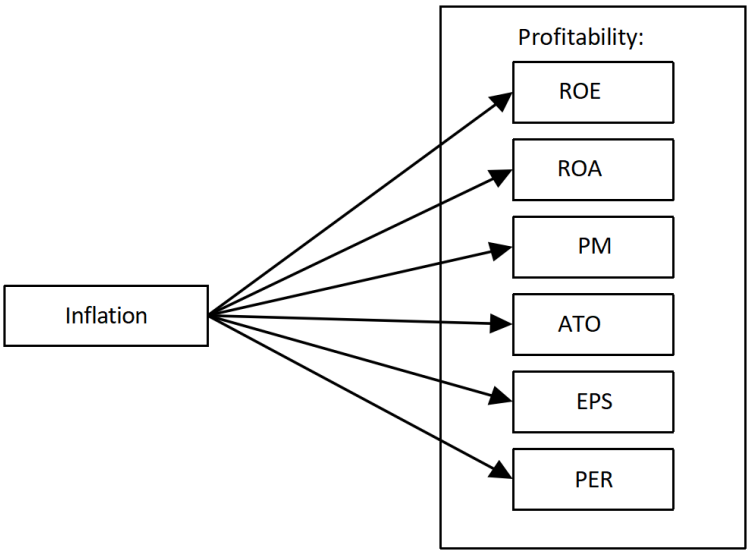

Figure 1. Research Model.

Source: Data processed by the authors, 2024.

The phenomenon of inflation serves to elevate the prices of raw materials, labor, and other operating costs [20]. Significant academic and policy debates have emerged regarding the relationship between supply- and demand-side issues with inflation. Natural resources such as oil and forests are important supply-side factors that affect a country's economic progress [21]. Both demand and supply variables can affect the overall price level in a country, and these two forces often interact in determining the direction of inflation [22]. Some researchers argue that the economic pressures that cause inflation come mainly from supply-side factors [23], while others consider that demand-side factors are more dominant in generating inflationary pressures [24, 25]. In addition, few studies have found a significant relationship between inflation and bank profitability [13, 14]. Inflation is also reported to have a negative effect on ROE [15], with similar negative trends recorded in the eurozone in the period 2015–2020 and in Central and Eastern European countries during 2009–2018 [16, 17].

H1: *There is a negative and significant effect of inflation on ROE.*

It is a common practice among central banks to implement interest rate hikes as a means of curbing inflationary pressures. An increase in interest rates raises the cost of borrowing for companies, leading to a corresponding increase in interest expenses [26]. Credit risk, management efficiency, and excessive size have a negative effect on all studied profitability measures. Macroeconomic conditions, in particular, GDP growth and inflation, also have a significant impact on profitability. The findings offer valuable insights for policymakers, regulators, and financial institutions aiming to enhance profitability while maintaining the stability of the European banking sector.

H2: *There is a negative and significant effect of inflation on ROA.*

Inflation rate (INF_RATE): Many studies show that the effects of macroeconomic cycles such as inflation and changes in interest rates affect profitability. Inflation that crosses a certain threshold can lead to a decrease in the value of money and an increase in claims [27]. In addition, inflation and interest rates tend to affect input prices such as labor and capital, thus potentially having a significant impact on cost efficiency and corporate governance relationships [28]. Therefore, it is estimated that the inflation rate has a negative effect on financial performance, such as profit margins.

H3: *There is a negative and significant effect of inflation on profit margin.*

Economic factors are variables borne by national economic conditions, including monetary and fiscal policies, the state of the global economy, and inflation [29]. The inflation rate is a macro indicator that is often used to view economic conditions, because it can provide information about the economic stability of a region [30]. A high level of inflation can cause an increase in the price of raw materials and various other operational costs, so that the net profit obtained becomes smaller [31]. Based on the results of previous research [32–34], they all state that inflation has a significant negative effect on profitability. This can happen when there is an increase in inflation, as production costs also increase. This is in line with [35], who explains that inflation is a condition characterized by an increase in the price of goods, or a decrease in the value of the currency in circulation. For construction companies, rising inflation can cause material prices and production costs to increase, which can lead to a decrease in their asset turnover [36].

H4: *There is a negative and significant effect of inflation on asset turnover.*

There is a negative and significant effect of inflation on earnings per share, where an increase in the inflation rate leads to a decrease in the company's earnings per share. Empirical studies, such as those by [37], have shown that inflation negatively impacts corporate profitability, which is reflected in lower earnings per share, as rising costs and reduced consumer purchasing power affect company performance [38, 39].

H5: *There is a negative and significant effect of inflation on earnings per share.*

Inflation does not have a separate impact on the financial performance of insurance companies [40]. While high inflation can increase insurance claims, interactions with other economic variables can complicate the risk assessment process. As a result, global financial performance may decline with a negative impact on resource allocation and economic activity. Regarding loss reserves, D'Arcy and Gustafsson emphasize the importance of explicitly taking claims inflation into account when calculating reserves [41], as rising inflation will lead to higher-than-expected costs, especially on long-term liabilities. In addition, inflation and interest rates tend to affect input prices such as labor and capital, potentially affecting cost efficiency and corporate governance relationships [28]. Therefore, it is estimated that the inflation rate has a negative effect on financial performance such as the price-to-income ratio.

H6: *There is a negative and significant effect of inflation on price-earning ratio.*

This study employs a quantitative methodology utilizing secondary data from financial statements, annual reports, stock prices, trading volume, and other pertinent variables from agricultural companies that have reported their financial statements during the period spanning 2016 to 2024, as shown in **Table 1**. The data sources include quarterly company financial reports, data from the Indonesia Stock Exchange (IDX), and data from the Central Statistics Agency (BPS). The research variables encompass Return on Common Stockholder's Equity (ROE), Return on Assets (ROA), Profit Margin, Asset Turnover, Earning Per Share (EPS), Price-Earning Ratio (PER) and Payout Ratio. The data was subjected to descriptive and inferential statistical analysis with a view to identifying the relationship between the research variables and inflation in Indonesia. The objective of this analysis is to ascertain the impact of inflation on the profitability of agricultural companies as shown in **Table 2** [42].

Table 1. Population of Agricultural Companies That Have Reported Financial Results on idx.com.

No.	Code	Stock Name
1	AALI	Astra Agro Lestari Tbk.
2	ANDI	Andira Agro Tbk.
3	ANJT	Austindo Nusantara Jaya Tbk.
4	BISI	BISI International Tbk.
5	BTEK	Bumi Teknokultura Unggul Tbk.
6	BWPT	Eagle High Plantations Tbk.
7	CPRO	Central Proteina Prima Tbk.
8	DSFI	Dharma Samudera Fishing Industries Tbk.
9	DSNG	Dharma Satya Nusantara Tbk.
10	GOLL	Golden Plantation Tbk.
11	GZCO	Gozco Plantations Tbk.
12	IIKP	Inti Agri Resources Tbk.
13	JA	Jaya Agra Wattie Tbk.
14	LSIP	PP London Sumatra Indonesia Tbk.
15	MGRO	Mahkota Group Tbk.
16	PCAR	Prima Cakrawala Abadi Tbk.
17	SGRO	Sampoerna Agro Tbk.
18	SIMP	Salim Ivomas Pratama Tbk.
19	SMAR	Smart Tbk.
20	SSMS	Sawit Sumbermas Sarana Tbk.
21	UNSP	Bakrie Sumatera Plantations Tbk.

Source: Data processed by the authors, 2024.

Table 2. Research Variables.

No	Variable Type	Variables	Hypothesis	Definition	Proxy	Source
1	Endogeneus	Return on Common Stockholder's Equity (ROE)	negative	Return on ordinary shareholders' equity (ROE) measures profitability from the ordinary shareholders' viewpoint	$\text{ROE} = \frac{Netincome - Preference\ \text{Dividends}}{\text{Average Ordinary Shareholders' Equity}}$	Financial report (www.idx.co.id)
2		Return on asset (ROA)	negative	Measures overall profitability of assets	$\text{ROA} = \frac{\text{Net Income}}{\text{Average Asset}}$	Financial report (www.idx.co.id)
3		Profit margin (PM)	negative	*Measures net income generated by each currency unit of sales*	$\text{PM} = \frac{\text{Net Income}}{\text{Net Sales}}$	Financial report (www.idx.co.id)
4		Asset turnover (ATO)	negative	Asset turnover measures how efficiently a company uses its assets to generate sales	$\text{ATO} = \frac{Net\ Sales}{\text{Average Assets}}$	Financial report (www.idx.co.id)
5		Earning per share (EPS)	negative	Earnings per share (EPS) is a measure of the net income earned on each ordinary share.	$\text{EPS} = \frac{\text{Net income} - \text{Preference Dividends}}{\text{Weight-Average Ordinary Shares Outstanding}}$	Financial report (www.idx.co.id)
6		Price-earning ratio (PER)	negative	The price-earnings (P-E) ratio reflects investors' assessments of a company's future earnings	$\text{PER} = \frac{\text{Market Price per Share}}{\text{Earning per Share}}$	Financial report (www.idx.co.id)
7	Exogeneus	Inflation Rate (INF)		The increase of the overall level of prices of goods and services.	Inflation, Producer Price Index (quarterly %) [42]	Inflation statistics (Central Statistics Agency of Indonesia)

Source: Data processed by the authors, 2024.

The sample technique employed was purposive sampling, with the following criteria serving as the basis for selection:

1. The company is engaged in the agricultural sector.
2. The company is a publicly traded entity on the Indonesia Stock Exchange (IDX).
3. In the period spanning 2016 to 2024, the company presented its quarterly financial statements.
4. The company's financial data is comprehensive and precise.

In this study, the researchers used Structural Equation Modeling (SEM) with the help of Partial Least Square (PLS) through Smart PLS 4.0 software. Multiple linear regression analysis is used as the main tool to examine the relationship and influence between independent variables on dependent variables. This structured methodological approach ensures a thorough analysis of the dynamics of the agricultural sector, particularly in the context of economic inflation.

3. Results

The study identified six principal relationships between the variables under examination. Firstly, Inflation has a positive but insignificant effect on return on equity (ROE). The argument posits that organisations with robust market bargaining power are able to modify product pricing in order to offset the impact of rising input costs, thereby maintaining their net profit margins. In the agricultural sector, the maintenance of stable demand despite price increases serves to sustain company revenues. Furthermore, Indonesia's flourishing AgTech ecosystem, bolstered by initiatives such as the IMACE application and platforms like TaniHub and Aruna, has bolstered the sector's resilience by transforming traditional agriculture through innovations in production, supply chain, market access, and financing. The effect of inflation on return on assets (ROA) is statistically significant and positive. This suggests that an increase in inflation results in a rise in the value of key agricultural commodities in Indonesia, including palm oil, coffee, and rubber[43]. As a significant global producer, Indonesian agricultural companies benefit from increased revenues without a corresponding increase in asset value or operating costs. Furthermore, stable demand in export markets, particularly in India and China, serves to reinforce this positive impact. A depreciation of 8% in 2022 has boosted the competitiveness of Indonesia's export products, including key agricultural commodities such as palm oil, coffee, and rubber. Since export prices are mostly determined in USD, the depreciation of the Rupiah means that the revenue received in Rupiah becomes larger, which improves the ROA**.** The impact of inflation on profit margins (PM) is found to be positive but statistically insignificant. This suggests that agricultural companies can effectively manage inflation through the implementation of efficient production processes, the establishment of long-term raw material contracts, and the pursuit of productivity improvements[1, 4, 8, 9]. Furthermore, meticulous cost planning and advancements in agricultural technology assist in mitigating the impact of escalating input prices, including those of fertilizers and fuel.

3.1. The Impact of Inflation on ROE

Based on **Table 3**, data analysis using Partial Least Squares Structural Equation Modeling (PLS-SEM) reveals that inflation exhibits a positive relationship with Return on Equity (ROE), demonstrated by a path coefficient of 0.028. This indicates that a 1% increase in inflation contributes to a 0.028% rise in ROE. However, statistical testing shows this relationship to be non-significant (t-statistic = 0.861, p-value = 0.385), providing insufficient evidence to reject the null hypothesis[44]. This finding aligns with previous studies suggesting that inflation does not necessarily exert significant influence on corporate financial performance, particularly in the agricultural sector. Several theoretical perspectives explain this non-significant relationship. First, drawing on the inelastic nature of agricultural products, Nugroho argues that the relatively inelastic demand for agricultural commodities ensures stable revenues despite inflationary pressures[45]. Furthermore, producers typically pass increased production costs to consumers through price adjustments, thereby maintaining financial margins (ROE). This mechanism operates through the price transmission channel, where input cost increases are offset by proportional output price increases. Second,

the price adjustment theory proposed by Siregar suggests that domestic inflation has limited impact on corporate performance due to international price mechanisms[46]. This phenomenon is particularly evident in palm oil, soybean, and other internationally traded agricultural commodities. For instance, Astra Agro Lestari's crude palm oil (CPO) prices are primarily determined by global demand rather than domestic inflation, insulating ROE from local inflationary effects. Additionally, Oliveira demonstrates how export-oriented agricultural firms can benefit from inflationary conditions[47]. Domestic currency depreciation resulting from inflation may enhance export competitiveness, ultimately increasing corporate revenues and ROE. This phenomenon explains why inflation shows no significant negative impact on agricultural firms' profitability.

Table 3. Hypothesis Test.

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	*p* Values
INF $->$ ROE	0.028	0.034	0.035	0.861	0.385
INF $->$ ROA	0.122	0.152	0.028	2.922	0.003
INF $->$ PM	0.039	0.042	0.025	1.565	0.118
INF $->$ ATO	−0.154	−0.154	0.048	2.481	0.030
INF $->$ EPS	0.101	0.130	0.069	2.056	0.028
INF $->$ PER	−0.031	−0.031	0.016	1.634	0.064

Source: Data processed by the authors, 2025.

3.2. The Impact of Inflation on ROA

The data analysis reveals that inflation has a positive effect, with a path coefficient of 0.122. This positive coefficient indicates that inflation benefits asset efficiency in the agricultural sector, suggesting that a 1% increase in inflation contributes to a 0.122% rise in ROA. Palm oil companies in Indonesia experienced a 0.15% increase in ROA for every 1% rise in inflation. Statistical testing shows a t-statistic of 2.922 and a p-value of 0.003, confirming that inflation has a positive and significant effect on ROA. These empirical findings suggest that inflation does not always harm businesses, a notable result, as it contradicts the conventional assumption that inflation negatively impacts profitability.

The agricultural sector exhibits unique characteristics that enhance its resilience and even profitability during inflationary periods. Theoretically, the positive relationship between inflation and ROA in agriculture can be explained through several economic mechanisms: First, Asset Valuation Theory: Inflation increases the nominal value of real assets, such as agricultural land. Wijaya et al. found that a 1% increase in domestic inflation in Indonesia led to a 1.2–1.8% rise in land prices, with a stronger effect observed for agricultural firms in high-productivity regions[48]. Second, Price Transmission Mechanism: The Central Bureau of Statistics reported that 78% of large plantation companies adjust export prices quarterly based on inflation in destination markets[49]. Additionally, Wijaya et al. demonstrated that domestic inflation accompanied by currency depreciation enhances export competitiveness—a 10% depreciation due to inflation increases the export margin of Indonesian crude palm oil (CPO) by 2.3–2.8%, ultimately boosting corporate ROA[48].

3.3. The Effect of Inflation on Profit Margin (PM)

Based on the results of data processing using the Structural Equation Modeling Partial Least Squares (SEM-PLS) method, the original sample value was obtained at 0.039, the t-statistic was 1.565, and the p-value was 0.118. Because the p-value is greater than the general significance threshold (0.05), it can be concluded that inflation does not have a statistically significant effect on profit margin (PM) in the Indonesian agricultural sector. Although the direction of the relationship is positive, the strength of the relationship is not strong enough to be considered to have a significant effect. Theoretically, inflation can affect profit margins through increased production input costs such as fertil-

izers, seeds, fuel, and labor. However, in the context of Indonesian agriculture, this impact can be mitigated by the mechanism for adjusting commodity selling prices. A study shows that macroeconomic volatility, including inflation, has an effect on the profit margin of the agricultural sector in Southeast Asia [50], but its effect is highly dependent on distribution efficiency and pricing policies. Meanwhile, Khan emphasized that inflation can reduce agricultural productivity and profitability if not balanced with increased efficiency and policy support [51]. Practically, these results provide several important implications for the Indonesian agricultural sector. Farmers need to increase production efficiency through the adoption of cost-effective agricultural technologies and commodity diversification in order to maintain healthy profit margins despite inflation. The government can strengthen input price stabilization policies and expand access to targeted subsidies. In addition, agribusiness actors need to implement adaptive pricing strategies and pay attention to the supply chain in order to remain competitive and maintain profit margins.

3.4. The Effect of Inflation on Asset Turnover

Based on the results of the analysis using the Structural Equation Modeling Partial Least Squares (SEM-PLS) method, the path coefficient value was obtained at −0.154, the t-statistic was 2.481, and the p-value was 0.030. Because the p-value is smaller than the general significance limit (0.05), it can be concluded that inflation has a significant negative effect on asset turnover in the Indonesian agricultural sector. This means that the higher the inflation rate, the lower the efficiency of the use of agricultural assets in generating income. Theoretically, this finding is in line with the cost-push inflation theory, which states that increases in input prices such as fuel, fertilizers, and agricultural equipment can reduce the intensity of asset use. In practice, fixed assets such as land, tractors, irrigation systems, and agricultural production equipment are less optimally used due to increased operational costs. Research by Zhang et al. shows that macroeconomic volatility, including inflation, significantly affects profit margins and the efficiency of agricultural assets in the Southeast Asian region [50]. Furthermore, a study by Khan revealed that inflation reduces agricultural productivity by increasing capital costs and inhibiting investment in production assets [51], especially in developing countries. Practically, these results provide a number of important implications for the Indonesian agricultural sector. Farmers need to implement a collective approach in the use of assets such as a tool sharing system and the use of precision agricultural technology to reduce operational costs. The government can consider a policy of subsidizing tool maintenance costs, inflation-based credit assistance, and infrastructure investment that is resistant to inflationary pressures. For agribusiness companies, an adaptive asset management strategy is needed to address inflation projections, including the use of a leasing model or efficiency-based investment patterns.

3.5. The Effect of Inflation on Earnings Per Share

Based on the results of data processing using the Structural Equation Modeling Partial Least Squares (SEM-PLS) method, the original sample value was obtained at 0.101, the t-statistic was 2.056, and the p-value was 0.028. Because the p-value is smaller than the general significance threshold (0.05), it can be concluded that inflation has a statistically significant effect on earnings per share (EPS) in the Indonesian agricultural sector. A 1% increase in inflation will increase EPS by 0.101%. These results indicate that companies in the agricultural sector may be able to pass on the increase in costs due to inflation to consumers through increased product prices, so that earnings per share (EPS) remain boosted. However, the relatively small coefficient indicates that the impact of inflation is not too dominant. Theoretically, an increase in EPS can be a positive signal to investors that the company is able to adapt to inflationary pressures [52]. This is in line with previous research showing that moderate inflation in developing countries like Indonesia actually drives the profitability of the export-based agricultural sector [53]. High inflation can increase the cost of agricultural inputs (fertilizer, seeds, energy), but if companies are highly competitive, the cost increases can be offset by efficiency or selling prices [54]. Practically, the implications for the agri-

cultural sector include the need for the government to mitigate inflation of agricultural inputs (e.g., fertilizer) through subsidies or price stabilization [55]. For example, the increase in the price of subsidized fertilizer in 2023 reduced the margins of small farmers, but large agro-industrial companies continued to grow [56].

3.6. The Effect of Inflation on Price Earning Ratio

Based on the results of data processing using the Structural Equation Modeling Partial Least Squares (SEM-PLS) method, the original sample value was obtained at −0.031, the t-statistic was 1.634, and the p-value was 0.064. Because the p-value is greater than the general significance threshold (0.05), it can be concluded that inflation does not have a statistically significant effect on the price earning ratio in the Indonesian agricultural sector. Increasing inflation tends to lower PER, although the effect is small. This suggests that investors may view companies in the agricultural sector as less attractive when inflation is high due to the risk of declining long-term profitability or economic uncertainty.

Theoretically, PER reflects investor expectations of future profit growth. High inflation can reduce investor confidence in the stability of the company's income, thereby suppressing stock valuations [57]. In line with this, other studies have found that in the agricultural sector, uncontrolled inflation can increase the risk of discounted cash flow, so investors set a lower PER [58]. In practice, the implications for the Indonesian agricultural sector are that agricultural sector companies need to optimize hedging against commodity price fluctuations and diversify supply to reduce dependence on inflation-prone inputs [59]. And policies such as fertilizer subsidies or logistics incentives can reduce inflationary pressures on production costs, thereby maintaining the company's competitiveness [60].

4. Discussion

This study sought to elucidate the impact of inflation on pivotal financial metrics within the Indonesian agricultural sector. Through a comprehensive examination of the pertinent variables, six principal relationships were discerned. The analysis revealed that inflation exerted a positive but statistically insignificant influence on return on equity (ROE). This is because agricultural companies with robust market bargaining power could offset rising input costs through price adjustments, thereby maintaining stable revenues. The advancement of Indonesia's AgTech ecosystem, bolstered by initiatives such as the IMACE application and platforms like Tani-Hub and Aruna, has bolstered sector resilience and innovation. Additionally, inflation demonstrated a statistically significant positive impact on return on assets (ROA). This was due to the fact that rising prices for essential agricultural commodities, including palm oil, coffee, and rubber, resulted in increased revenues, particularly with stable demand from export markets in India and China. Since the majority of Indonesia's agricultural export commodities are priced in USD (such as palm oil, coffee, and rubber), revenues in Rupiah increase nominally even though prices in USD remain the same. This increases export revenues, while the value of fixed assets such as land and equipment in the financial statements remains recorded in Rupiah with normal depreciation. This is consistent with the finding that inflation has a positive impact on ROA due to the increase in the value of leading commodities such as palm oil and coffee. The impact of inflation on profit margins (PM) was found to be positive but statistically insignificant. This indicates that agricultural companies have the potential to effectively manage inflation through enhanced production processes, long-term contracts, and advancements in agricultural technology. Consequently, they can mitigate rising input costs, such as those associated with fertilizers and fuel. Conversely, inflation had a significant negative effect on asset turnover (ATO), as rising input costs did not always lead to proportional increases in sales. This resulted in higher production costs without a corresponding revenue increase, which in turn lowered the income-to-asset ratio. The study also revealed a positive correlation between inflation and earnings per share (EPS). The government through the Ministry of Agriculture has set the HET for subsidized fertilizers such as urea (Rp 2,250/kg) and NPK (Rp 2,300/kg) in 2024. This supports companies to reduce input costs, which is relevant to the finding that

cost efficiency can keep EPS positive despite high inflation. This was observed as a result of companies implementing cost-reduction strategies, including efficiency improvements and waste minimization, which enabled them to maintain profit margins, particularly in the context of increased selling prices. However, the impact of inflation on the price-earnings ratio (PER) was found to be insignificant. This was attributed to the influence of market perceptions of future earnings and risks on stock prices. The findings of this study illustrate the intricate relationship between inflation and financial performance metrics in the agricultural sector, with varying effects across different indicators.

Research shows that inflation increases input costs (fertilizer, seeds, fuel). Thus, controlling production costs and increasing supply chain efficiency through price transparency and flow of goods. With blockchain, actors and business actors can trace the origin, quality, price, and distribution of agricultural inputs in real time. This system prevents unreasonable mark-ups, minimizes distribution deviations, and increases trust in data input. The benefits of input cost efficiency are to reduce inflationary pressures on profit margins and asset turnover. Meanwhile, price transparency will make it easier for the government to intervene if input prices exceed a reasonable threshold.

5. Conclusions

While the study offers valuable insights, it is important to consider the limitations of the research design. Firstly, it should be noted that the analysis is primarily focused on the Indonesian agricultural sector. As a result, the findings may not be directly applicable to other industries or countries with different economic conditions. Secondly, the study is based on secondary data, which may restrict the range of variables included and may not fully reflect the complexities of inflation's impact on agricultural companies in real-time. Furthermore, while the study examines key financial metrics such as ROE, ROA, and EPS, it does not explore other factors that could also influence the performance of agricultural companies, including market competition, government policies, and global trade dynamics. Lastly, the study focuses on aggregate data, and a more detailed, micro-level analysis of individual companies could provide further insights into the specific effects of inflation on different types of agricultural businesses. Future research could address these limitations by expanding the scope of analysis to include a broader range of industries, using real-time data, and considering additional external factors.

Author Contributions

H.S. was responsible for conceptualizing the research framework, modeling, and analysis. His contributions included formulating the main ideas and methodological approach of the article. S.S.R. contributed to the theoretical background and analysis. Her role involved developing the theoretical foundation supporting the research and interpreting the results. A.R. focused on methodology and analysis. His contributions included designing the research methods and evaluating data to ensure accurate findings. P.A. was involved in data collection and analysis. Her role encompassed providing relevant data and participating in the analysis process to support the research conclusions. C.W.W. also contributed to data collection and analysis.

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Data Availability Statement

The data used in this study are publicly available. Financial data were obtained from the Indonesia Stock Exchange (IDX) website (www.idx.co.id) and inflation statistics were sourced from Bank Indonesia and the Central Statistics Agency (BPS). No new data were generated during this study.

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Conflicts of Interest

The authors declare no conflict of interest.

Appendix A

Table A1. Definitions and Full Forms of Variables.

Variables	Definition
Return on Common Stockholder's Equity (ROE)	Measures profitability from the perspective of ordinary shareholders by indicating how effectively their equity is being utilized to generate profits.
Return on Assets (ROA)	Measures overall profitability by indicating how efficiently a company is using its assets to generate net income.
Profit Margin (PM)	Measures the percentage of revenue that has turned into profit, indicating operational efficiency.
Asset Turnover (ATO)	Indicates how efficiently a company uses its assets to generate sales revenue.
Earnings Per Share (EPS)	Measures the net income earned on each outstanding ordinary share, indicating profitability available to shareholders.
Price-Earnings Ratio (PER)	Reflects investors' expectations regarding a company's future earnings growth and risk, indicating the market valuation relative to earnings.
Inflation Rate (INF)	Represents the annual percentage increase in the general price level of goods and services, influencing purchasing power and operational costs.

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