

Analysis of Financial Performance for Rice Producing Companies Listed on the IDX to the Volatility Increase in Rice Prices

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Abstract. The volatility increase in rice prices has already started since August 2022 where this condition continues until 2023. This increase in rice prices brought a negative sentiments to rice producing companies such as HOKI and NASI in their Net Profit Margin. Therefore this research focuses to provide insights for investors and companies on the impact of volatilities increase in rice prices to financial performances of rice producing companies that listed in IDX. By using quantitative research methods and analyzing various financial ratios, the research investigates how rising rice prices affect the profitability, efficiency, and market performance of these companies. The results indicate that the volatility in rice prices negatively impacted the financial performance of rice-producing companies listed on the IDX in terms of profitability. However, it had a mixed impact on marketability and efficiency with the data showing positive differences. Benchmarking with companies from other countries also suggests areas for improvement for the companies studied.

Keywords: Increase in Rice Price, Financial Perfromance, Profitability Ratio, Marketability Ratio, Efficiency Ratio.

1. BACKGROUND

Indonesia is an agriculture country, that is why the agricultural sector has an important role for Indonesia. This is shown by the fact that most of Indonesian people occupation is related to agricultural sector. According to the Central Bureau of Statistics or BPS, in 2022, the number of workers in the agricultural sector in Indonesia will reach 53,558,819 people. One of the biggest agriculture commodities in Indonesia is rice. From all the total of Indonesia's workers in agriculture sector, the rice farming subsector absorbs around 38.23 million workers or around 71.3% of the total workforce in the agricultural sector.

According to the Central Bureau of Statistics (BPS), in 2023, the rice harvest area in Indonesia in 2023 is estimated to be 10.20 million hectares with rice production of around 53.63 million tons of milled dry grain (GKG). If converted into rice for food consumption by the population, rice production in 2023 is estimated at 30.90 million tonnes. The rice harvest area in 2023 will decrease by 255.79 thousand hectares or 2.45% compared to the rice harvest area in 2022 which was 10.45 million hectares. Rice production in 2023 will decrease by 1.12 million tons of GKG or 2.05% compared to rice production in 2022 which was 54.75 million tons of GKG. Rice production in 2023 for food consumption by the population will decrease

by 645.09 thousand tons or 2.05% compared to rice production in 2022 which was 31.54 million tons. The decline in production output that occurred in 2023 was caused by the impact of the prolonged El Nino phenomenon. This is one of the reasons that rice prices in Indonesia experienced a high increase in 2023.

Volatility increase in rice prices has already started since August 2022 where this condition continues until 2023. This increases in rice price is caused by the prolonged El Nino phenomenon. Apart from prolonged El Nino phenomenon, policy of limiting rice exports from major producers such as India and any other similar rice exporting countries and the increase in fertilizer prices due to the Russia-Ukraine War were the main triggers for the increase in rice prices.

There are two rice producing companies in Indonesia that are listed in IDX. There are PT Buyung Poetra Sembada Tbk and PT Wahana Inti Makmur Tbk. Both rice producing companies have experienced a significant impact and negative sentiments on the volatility increase in rice prices. The same sentiment and response to the phenomenon of rising rice prices makes this interesting to examine more deeply related to the financial performance of the two rice producing companies. This is required to see the details on how the volatility in rice prices affects the company's financial performance by doing a comparison in before and after the problem.

2. LITERATURE REVIEW

Fundamental Analysis

According to Jogiyanto (2003), Fundamental analysis or company analysis is an analysis to calculate the intrinsic value of shares using the company's financial data. Fundamental analysis is very important for investors who intend to invest in a company. With fundamental analysis, investors can assess the quality of the shares issued by the company and see the potential profits and losses that may occur. This theory focuses on financial ratios and events that directly or indirectly affect the company's financial performance. Therefore, the goals of fundamental theory are to compare a company's financial performance again are the performance of competing companies in one industry sector and the company's own past financial performance.

Financial Statement

Financial reports, are records that establish conclusions about a company's financial condition. In general, this report is used to assess the overall performance of the associated

company. Meanwhile Hery (2018), stated that financial statements are the end result of an accounting procedure and can be used to communicate financial information or corporate activity to interested parties. In other words, financial statements serve as an information tool that links the company with interested parties by displaying the financial health and performance of the company.

Financial Performance

Based on Sutrisno (2013), financial performance is a statement of a company's achievement over specific period of time that shows company's health condition. Company's financial performance could demonstrate its ability to manage and utilize its resource. The advantages of financial performance include determining the firm's degree of achievement in a given time, assessing a part's contribution to the alignment of company goals, using it as a reference in making decisions both in general and specifically, and using it as a basis for planning.

Profitability Ratio

Profitability, according to Riyanto (2001), is a company's ability to create profits over a specific time period. The profitability ratio must be calculated when determining a company's profitability. The profitability ratio, according to James & Wachowicz (2005), is a ratio that can be used to analyse a firm's ability to produce profits; eventually, this ratio will correlate company profits derived from income activities with company investment. Profitability ratios demonstrate the impact of liquidity, activity, and leverage on operating outcomes.

Market Ratio

Market ratios is one of the most important ratios that is commonly used on determining the market value of the companies. According to Irham (2013), Market ratio is a ratio that describes the condition that occur in market. Investors can use this market ratios to forecast the real value of stocks or companies. Market ratios is always been favourable way for investors to examine the present value and future value of a stocks or companies. As in results, market ratios are important for investors to help them on their own investment decisions.

Efficiency Ratio

According to Kasmir (2019), Efficiency ratios is a ratio that aims to evaluate company's efficiency in the use of company resources. Not only that, Efficiency ratios is one of the most

important ratios to help on assessing how effectively companies on utilizing their resources, such as capital and assets to generate profit. This efficiency ratios is important for both companies and investors on achieving their own goals. Companies can use this ratio help on getting insight of their own current situation which can be used to make an improvement for he companies themselves. For investors, this ratio can be used to help them on investment decisions by comparing at which companies that can utilize their own resources to gain profit which could add extra value for their own companies.

3. RESEARCH METHODOLOGY

The researchers used a quantitative research approach in this investigation. According to Djaali (2020), quantitative research is inferential research in the sense of deriving conclusions based on the outcomes of statistical hypothesis testing, employing empirical data from data gathering through measurement. Information gathered or acquired by researchers from pre-existing sources is referred to as secondary data. Secondary data sources are those, like other people or documents, that don't directly provide data to data collectors Sugiyono (2014). The data population for this study includes all two firms, or all rice-producing companies, that were listed on the Indonesia Stock Exchange between 2022 and 2023 such as HOKI and NASI.

Data in this research would be analysed through profitability ratios, market ratios, and efficiency ratios in both before and after the volatility increases in rice prices. After that, analysis through descriptive statistics will be conducted using SPSS version 26 which will be followed by hypothesis test using wilcon signed rank test.

4. RESULTS AND DISCUSSION

The objects of this research are rice producing companies that listed in IDX. All the data used in this research gathered from the company's website and IDX website. Two companies were chosen through purposive sampling method which are; PT Buyung Putra Sembada Tbk (HOKI.JK) and PT Wahana Inti Makmur Tbk (NASI.JK).

Descriptive Statistics

Descriptive Statistics was performed using SPSS software version 26 where the results are as follows;

a. Net Profit Margin

The net profit margin of HOKI in 4 quarters of 2022 and 4 quarters of 2023 was recorded to be the lowest was on 0.0000479. Meanwhile the highest or the maximum net

profit margin recorded for HOKI was 0.0247. In additions, the mean net profit margin recorded during the 8 period of quarters in 2022 to 2023 is 0.008318. In other hand, the net profit margin of NASI in 4 quarters of 2022 and 4 quarters of 2023 was recorded to be the lowest was on 0.0046. Meanwhile the highest or the maximum net profit margin recorded for NASI was 0.0380. In additions, the mean net profit margin recorded during the 8 period of quarters in 2022 to 2023 was 0.01696.

b. Return on Assets

The return on assets of HOKI in 4 quarters of 2022 and 4 quarters of 2023 was recorded to be the lowest was on 0.000023. Meanwhile the highest or the maximum return on assets recorded for HOKI was 0.0158. In additions, the mean return on assets recorded during the 8 period of quarters in 2022 to 2023 is 0.004775. In other hand, the return on assets of NASI in 4 quarters of 2022 and 4 quarters of 2023 was recorded to be the lowest was on 0.0031. Meanwhile the highest or the maximum return on assets recorded for NASI was 0.0147. In additions, the mean return on assets recorded during the 8 period of quarters in 2022 to 2023 was recorded during the 8 period for NASI in 4 quarters of 2022 and 4 quarters of 2023 was recorded for NASI was 0.0147. In additions, the mean return on assets recorded during the 8 period of quarters in 2022 to 2023 was 0.00729.

c. Return on Equity

The return on equity of HOKI in 4 quarters of 2022 and 4 quarters of 2023 was recorded to be the lowest was on 0.000031. Meanwhile the highest or the maximum return on equity recorded for HOKI was 0.0213. In additions, the mean return on equity recorded during the 8 period of quarters in 2022 to 2023 is 0.006663. In other hand, the return on equity of NASI in 4 quarters of 2022 and 4 quarters of 2023 was recorded to be the lowest was on 0.0036. Meanwhile the highest or the maximum return on equity recorded for NASI was 0.0173. In additions, the mean return on equity recorded for NASI was 0.0173. In additions, the mean return on equity recorded for NASI was 0.0173. In additions, the mean return on equity recorded during the 8 period of quarters in 2022 to 2023 was 0.008556.

d. Earning per Share

The EPS of HOKI in 4 quarters of 2022 and 4 quarters of 2023 was recorded to be the lowest was on 0.15. Meanwhile the highest or the maximum EPS recorded for HOKI was 1.30. In additions, the mean EPS recorded during the 8 period of quarters in 2022 to 2023 is 0.5187.

In other hand, the EPS of NASI in 4 quarters of 2022 and 4 quarters of 2023 was recorded to be the lowest was on 0.26. Meanwhile the highest or the maximum EPS recorded for NASI was 1.79. In additions, the mean EPS recorded during the 8 period of quarters in 2022 to 2023 was 0.9138.

e. Price to Book Value

The PBV of HOKI in 4 quarters of 2022 and 4 quarters of 2023 was recorded to be the lowest was on 1.21. Meanwhile the highest or the maximum PBV recorded for HOKI was 2.38. In additions, the mean PBV recorded during the 8 period of quarters in 2022 to 2023 is 1.79.

In other hand, the PBV of NASI in 4 quarters of 2022 and 4 quarters of 2023 was recorded to be the lowest was on 1. Meanwhile the highest or the maximum PBV recorded for NASI was 4.82. In additions, the mean PBV recorded during the 8 period of quarters in 2022 to 2023 was 2.01.

f. Price to Earning Ratio

The PER of HOKI in 4 quarters of 2022 and 4 quarters of 2023 was recorded to be the lowest was on 88. Meanwhile the highest or the maximum PER recorded for HOKI was 1087. In additions, the mean PER recorded during the 8 period of quarters in 2022 to 2023 is 410.27. In other hand, the PER of NASI in 4 quarters of 2022 and 4 quarters of 2023 was recorded to be the lowest was on 80. Meanwhile the highest or the maximum PER recorded for NASI was 312. In additions, the mean PER recorded during the 8 period of quarters in 2022 to 2023 was 184.71.

g. Asset Turnover

The asset turnover of HOKI in 4 quarters of 2022 and 4 quarters of 2023 was recorded to be the lowest was on 0.24. Meanwhile the highest or the maximum asset turnover recorded for HOKI was 1.23. In additions, the mean asset turnover recorded during the 8 period of quarters in 2022 to 2023 is 0.755. In other hand, the asset turnover of NASI in 4 quarters of 2022 and 4 quarters of 2023 was recorded to be the lowest was on 0.18. Meanwhile the highest or the maximum asset turnover recorded for NASI was 1.07. In additions, the mean asset turnover recorded during the 8 period of quarters in 2022 to 2023 was recorded to be the lowest was on 0.18. Meanwhile the highest or the maximum asset turnover recorded for NASI was 1.07. In additions, the mean asset turnover recorded during the 8 period of quarters in 2022 to 2023 was 0.56

h. Inventory Turnover

The inventory turnover of HOKI in 4 quarters of 2022 and 4 quarters of 2023 was recorded to be the lowest was on 2.45. Meanwhile the highest or the maximum inventory turnover recorded for HOKI was 18.06. In additions, the mean inventory turnover recorded during the 8 period of quarters in 2022 to 2023 is 9.695. In other hand, the inventory turnover of NASI in 4 quarters of 2022 and 4 quarters of 2023 was recorded to be the lowest was on 0.18. Meanwhile the highest or the maximum inventory turnover recorded

for NASI was 1.07. In additions, the mean inventory turnover recorded during the 8 period of quarters in 2022 to 2023 was 0.56.

Hypothesis Test and Discussion

Based on the hypothesis test results calculated using Wilcon Signed Rank Test using SPSS Software version 26. The decision making behind these hypothesis are "If the significance value is less than 0.05 it can be stated that the two data samples are different or hypothesis is accepted and if the difference is more than 0.05, there is no difference between the two data samples or hypothesis is rejected". Therefore the hypothesis test results are as follows:

	Variables											
	NPM	ROA	ROE	EPS	PBV	PER	Asset Turnover	er Inventory Turnover				
Volatility Increases in Rice Prices	Negative	Negative	Negative	Negative	Negative	Positive	Positive	Positive				
Asymp. Sig (2-Tailed)	0.123	0.263	0.484	0.123	0.05	0.484	0.012	0.575				
Verdict	H1.1 Rejected	H1.2 Rejected	H1.3 Rejected	H1.4 Rejected	H2.1 Accepted	H2.2 Rejected	H3.1 Accepted	H3.2 Rejected				

a. Impact of Volatility Increase in Rice Prices on Net Profit Margin

The NPM of NASI decreased each quarter from 2022 to 2023 due to rising rice prices, which increased the cost of sales by 30% and affected net profit despite higher revenue. The rising rice prices also increased storage and packaging costs, further reducing efficiency in optimizing revenue. Conversely, HOKI's NPM was neutrally affected overall, with a decline in Q1 and Q2 2023 due to higher raw material costs and sector transformation to FMCG, but improved in Q3 and Q4 through better resource management and additional profits from converting waste into fuel.

b. Impact of Volatility Increase in Rice Prices on Return on Assets

The ROA of NASI decreased each quarter due to rising rice prices, which led to higher costs of sales and less efficient revenue optimization, resulting in low net profits despite increased assets. The highest ROA in 2023 was 0.49%, significantly lower than in 2022. For HOKI, the impact on NPM was neutral overall, but the company faced challenges in Q1 and Q2 2023 in optimizing sales and assets. However, improved efficiency in Q3 and Q4 led to a better ROA, increasing from 0.07% and 0.01% in 2022 to 1.58% and 0.32% in 2023. The lower performance was due to high raw material and operating expenses, exacerbated by increased fertilizer prices due to the Ukraine-Russia war.

c. Impact of Volatility Increase in Rice Prices on Return on Equity

NASI's equity gradually increased before and after the rise in rice prices, but net profit dropped by 50% compared to 2022 due to higher raw material costs, leading to low

profitability and ROE. Conversely, HOKI's equity slowly decreased from Q1 to Q4 in 2022 and 2023. Despite significant ROE declines in Q1 and Q2 2023 due to low net profit and increased rice price volatility, HOKI showed improved efficiency and performance in Q3 and Q4, better utilizing net profit and equity compared to 2022.

d. Impact of Volatility Increase in Rice Prices on Earning per Share

NASI's EPS significantly declined from Q1 to Q4 2023 compared to 2022, with the highest at 0.53 and the lowest at 0.26, due to decreased net profit and higher costs of sales from rising raw rice prices. The company's inefficiency in resource optimization contributed to this decline. Similarly, HOKI's EPS decreased but not as drastically as NASI's, reflecting better profit and sales optimization. Notably, HOKI's EPS in Q3 2023 reached 1.3, the highest for the year, due to higher net profit and lower interest expenses.

e. Impact of Volatility Increase in Rice Prices on Price Earning Ratio

In 2023, NASI's price-earnings ratio (PER) increased significantly due to decreased EPS, with the highest at 311.53 and the lowest at 150.94, compared to 2022's highest of 303.45 and lowest of 80.46. This rise was influenced by negative market sentiment towards rice-producing companies during price hikes, reflecting NASI's low performance and market price per share. Conversely, HOKI's PER fluctuated, with decreases from 256.67 to 192 in Q1 and a significant drop from 711.11 to 87.7 in Q3, driven by changes in EPS and market price volatility amid negative sentiment toward rising rice prices.

f. Impact of Volatility Increase in Rice Prices on Price to Book Value

During the volatility increase in rice prices from 2022 to 2023, NASI's price-tobook value (PBV) decreased significantly due to negative market sentiment and a lower market price per share, with the highest PBV dropping from 4.8 in 2022 to 1.09 in 2023, and the lowest from 1.39 to 0.99. Conversely, HOKI experienced several decreases in PBV from Q1 to Q3 2023 but saw an increase in Q4. In 2023, HOKI's highest PBV was 2.38 and the lowest was 1.21, compared to 2.21 and 1.59 in 2022. These fluctuations were driven by negative sentiment towards rice-producing companies and the impact of rising rice prices on the market price per share.

g. Impact of Volatility Increase in Rice Prices on Asset Turnover

During the volatility increase in rice prices, NASI's asset turnover improved from Q1 to Q4 2023 compared to 2022, driven by higher sales and increased asset utilization, with the highest turnover at 1.06 in Q4 and the lowest at 0.22 in Q1. The rise in sales was attributed to increased demand from hotels, restaurants, and other sectors. Similarly,

HOKI's asset turnover also increased in 2023 despite reducing its number of factories from three to two. The highest turnover for HOKI was 1.22, and the lowest was 0.48, demonstrating effective asset utilization to generate sales during the period of increased rice price volatility.

h. Impact of Volatility Increase in Rice Prices on Inventory Turnover

During the increase in rice prices, NASI's inventory turnover improved in 2023 compared to 2022, despite a 23.29% decrease in inventory levels. The highest turnover was 3.72 in Q4, and the lowest was 0.55 in Q1. This increase indicated more effective inventory management, selling products quickly and reducing storage costs and risks. NASI managed fluctuations in raw rice material prices by pre-arranging inventory and adjusting stock levels as needed. However, their turnover remained below the ideal range of 5-10. HOKI also saw improved inventory turnover in 2023, with a high production capacity of 55 tonnes per hour and effective inventory management. The highest turnover was 13.03 in Q1, and the lowest was 5.84 in Q4, reflecting efficient selling and inventory practices.

Benchmarking

In this benchmarking, two companies were used which are PRG Corporation or PRG from Thailand and PAN Group Company from Vietnam. These two companies are rice producing companies similar to NASI and HOKI. Therefore, the benchmarking of these 4 companies were listed in table below:

Year	Company	NPM	ROA	ROE	EPS	Asset Turnover	Inventory Turnover	PER	PBV
2023 (Volatility Increase in Rice Prices)	NASI (Indonesia)	0.46%	0.49%	0.60%	0.45	1.07	3.72	173.33	1.05
	HOKI (Indonesia)	0.26%	0.32%	0.51%	0.15	1.23	5.85	1086.67	2.38
	PRG (SET)(Thailand)	19.03%	3.00%	4.30%	0.5	1.17	6.52	21.2	0.92
	PAN (Vietnam)	5.96%	4.05%	9.79%	1943	0.68	3.42	9.83	0.74

prices in 2023, PRG stands out with the highest net profit margin (NPM) of 19.03%, driven by Thailand's supportive agricultural policies and robust export market. PAN also performed well with strong profitability metrics, benefiting from Vietnam's extensive rice farming capabilities and efficient production. In contrast, NASI and HOKI from Indonesia struggled with lower NPM, return on assets (ROA), and return on equity (ROE), attributed to reduced rice production and increased reliance on imports due to domestic demand exceeding supply.

Despite this, HOKI led in asset turnover efficiency at 1.23, indicating effective asset utilization, while PRG excelled in inventory turnover with 6.52, showcasing superior inventory management. Market ratios showed NASI and HOKI had higher price-to-earnings ratios (PE) at 173.33 and 1086.67, reflecting optimistic market expectations amidst lower earnings. PRG and PAN, on the other hand, displayed moderate PE ratios and low price-to-book value (PBV), indicating potential undervaluation due to external factors like weather impacts on rice production.

Overall, PRG demonstrated the strongest financial performance across profitability, efficiency, and marketability, followed closely by PAN, with NASI and HOKI showing potential for future growth despite current challenges.

5. CONCLUSIONS AND RECOMMENDATIONS

This study investigates the impact of rice price volatility on the financial performance of two rice-producing companies, HOKI and NASI, using metrics such as net profit margin (NPM), return on assets (ROA), return on equity (ROE), earnings per share (EPS), price-toearnings ratio (PER), price-to-book value (PBV), asset turnover, and inventory turnover. Wilcoxon's signed-rank test and benchmarking against other countries' rice-producing companies were employed. The study found negative impacts on NPM, ROA, ROE, EPS, and PBV for rice-producing companies listed on IDX, while PER, asset turnover, and inventory turnover showed positive differences. Among the companies analyzed, PRG demonstrated the highest overall performance, followed by PAN, with NASI and HOKI showing lower current metrics but high market expectations for future growth.

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