

Chapter 1: Introduction

In recent years, agricultural commodities in the financial markets have gained popularity due to their dual function as essential goods and speculative assets. Commodities like coffee, rice, and orange juice represent unique agricultural commodities with significant relevance for the Indonesian economy. Coffee and rice represent regularly exported commodities, while orange juice represent a unique and untapped export opportunity. These agricultural commodities not only meet vital global food demands but also attract traders and investors who speculate on their future prices. This dual role causes volatility in commodity markets, which can have far-reaching effects on economies that rely heavily on agricultural exports. For Indonesia, coffee, rice, and orange juice are integral components of the agricultural sector. The first two commodities are cornerstones of Indonesia's agricultural production, and the latter, a new commodity to explore on the global market. This study aims to investigate the impact of financial speculation on the price volatility of these commodities, with a particular focus on how speculation can influence the stability and profitability of these markets. By exploring the intersection of agricultural economics and financial speculation, this research seeks to provide insights that could inform policymakers and stakeholders in the Indonesian agricultural sector on managing market risks and enhancing resilience against price fluctuations.

1.1 Background of Study

For many economies around the world, agriculture is an incredibly important industry. Agriculture is closely tied to driving economic growth, providing food security for certain countries, and is even used as a financial instrument. This industry contributes significantly to a country's GDP, export earnings, as well as the urban and rural landscape. For those in agriculture, productivity is key to meeting the growing demand for food for a rapidly growing global population (Staugaitis & Vaznonis, 2022).

Three agricultural commodities analyzed in this paper include coffee, rice, and orange juice. Coffee and rice are considered significant contributors to Indonesia's agricultural sector but also plays a substantial role in the global market, positioning the country as a key player in international trade. Orange juice is a popular commodity in the US that comes from squeezing orange fruit. It's popularity in the US acts as a potential opportunity for Indonesian growers to explore the export market.

Coffee is one of Indonesia's primary export commodities, providing substantial income to local farmers and supporting rural livelihoods. Indonesia ranks as the world's fourth-largest coffee producer, with most of its production destined for export markets (Fitriani et al., 2021). The country's diverse geography allows for various coffee varieties, such as robusta and arabica, which cater to different market demands. Indonesian coffee is well-regarded globally for its

unique flavors, making it a sought-after commodity and contributing positively to the country's trade balance (Fitriani et al., 2021).

Rice is the foundation of billions of people's diets, and its production and trade are extremely valuable to agrarian economies and rice producing countries (Rosner & McCulloch, 2008). Culturally, rice is the staple food for many Indonesians households. While it is primarily produced for domestic consumption, rice production in Indonesia has significant implications for national food security. Efforts to boost rice production have focused on achieving self-sufficiency through government policies that support local farmers, improve irrigation systems, and implement modern farming techniques (Santoso et al., 2023). However, Indonesia still faces challenges such as climate variability and high production costs, which can impact rice yields and necessitate occasional imports to meet domestic demand (Yuniarti, 2011).

Despite being less produced than other tropical fruits, orange juice is an important commodity with growth potential for both domestic and international markets. Indonesia, with its tropical climate conditions, creates a conducive environment for citrus cultivation and thus has the capability to produce different types of oranges that can be processed into juice for local consumption and export. This has been influenced by the health trend that demands vitamin C-rich products. The orange juice industry presents new opportunities for farmers in Indonesia to diversify their products and thus may have the potential to export to high-value markets such as those in America and Europe (Budiarto & Pratita, 2022). On the

other hand, this market also faces various price volatilities, often resulting from extreme weather changes, outbreaks of diseases, and changed consumer preferences (Ampountolas, 2024). This might be a huge problem; for instance, price shocks of orange juice would hit Indonesian farmers very hard because they couldn't afford to buffer such variability in their income.

Together, coffee, rice, and orange juice showcase Indonesia's agricultural diversity and highlight the sector's potential to boost economic growth and improve rural livelihoods. As demand for these commodities continues globally, supporting sustainable practices and improving market access could enhance Indonesia's position in the global agricultural market while providing economic resilience for its farmers.

Coffee, rice, and orange juice can also be traded as financial instruments, atypical to its trading method in the traditional marketplace. These commodities are traded on commodity exchanges through speculation of the performance of futures contracts. Commodity futures are financial contracts where a predetermined price, quantity, and quality have been set to be transacted on a future date, with an obligation for buyers and sellers to purchase and sell the contract respectively (Commodity Futures, 2024). Coffee, rice, and orange juice futures are actively traded on various commodity exchanges, one example being the Intercontinental Exchange (ICE) or the Chicago Board of Trade (CBOT) (Li et al., 2022). To manage risks, futures are used to hedge against volatile commodity prices in commodity markets. Commodity futures allow producers, consumers, and

speculators in the form of arbitrage investors, to manage their exposure to price fluctuations while ensuring liquidity. Speculators provide liquidity, distribute risk in the commodity market, and provide new information. However, it is also presumed that speculators can cause price bubbles, as the value of the futures is taken further away from its fundamentals (Ekeland et al., 2018).

Previous studies have analyzed the impact of financial speculation towards the return volatility of certain commodities. These studies have indicated an unstable and volatile market due to geopolitical tension, extreme weather due to climate change, wars, economic sanctions, and an increasing demand of agricultural products in certain countries which rose with higher income (Staugaitis & Vaznonis, 2022). Researchers have also noted that the gain in popularity of financial speculation grew alongside commodity prices. This trend resulted in a growing interest from researchers to identify whether speculation makes commodity prices more volatile (Staugaitis & Vaznonis, 2022).

1.2 Problem Statement

This research aims to explore the impact of financial speculation on the return volatility of coffee, rice, and orange juice futures. The author hopes that this research can be used by the state and the private sector for better decision making in the Indonesian agricultural industry. The following research questions will guide the study:

1. Does financial speculation influence the price volatility of coffee futures?

2. Does financial speculation influence the price volatility of rice futures?
3. Does financial speculation influence the price volatility of orange juice futures?

1.3 Research Objectives

From the research statements above, the objective of this research is to:

1. Identify if speculation affects the price volatility of coffee futures, and if so, identify the relationship between the two.
2. Identify if speculation affects the price volatility of rice futures, and if so, identify the relationship between the two.
3. Identify if speculation affects the price volatility of orange juice futures, and if so, identify the relationship between the two.

1.4 Use of the Study

This research can be used by:

- Indonesian Farmers and Agricultural Cooperatives:

Understanding the drivers of price volatility can help farmers make informed decisions about risk management, crop planning, and seasonality of the commodity. It could also guide cooperatives in supporting farmers during periods of extreme price fluctuations to receive a more stable income.

- Policymakers and Government Agencies:

Indonesia's Ministry of Agriculture and Ministry of Trade can utilize the insights from this paper to stabilize the markets and provide subsidies and other means of support for farmers to mitigate price volatility.

- Investors:

Investors involved in commodity trading can get a better understanding of factors influencing volatility in coffee, rice, and orange juice futures. This research can provide valuable information to mitigate risk and maximize returns.

- Academics and Researchers:

Scholars can utilize this research as a foundation in studying the relationship between agricultural commodities and the financial markets. The hope is this research can propagate more studies to be done between agricultural commodities and the financial markets.

1.5 Overview of the Study

The following provides a logical flow and overview of this thesis for the reader to more easily understand the ideas and results generated from this research paper. Furthermore, this thesis utilizes an APA 7th edition citation style. The flow of the thesis is as follows:

- **Chapter 1: Introduction**

This chapter provides the background of the study, the problem statement, and the objective of the study. Chapter 1 also includes potential uses and overview of this study.

- **Chapter 2: Literature Review**

This chapter analyzes the literature used in this study, most of which acts as support and reference for this thesis. Similar research done on different commodities acts as supporting theories for this thesis.

- **Chapter 3: Data and Methods**

This chapter discusses the dataset used, the theoretical concept of our econometric model, and the different tests used to process the data. It also discusses the potential effect of seasonality on return volatility.

- **Chapter 4: Results**

This chapter presents the findings and results of this study. A detailed analysis is provided for each of the results.

- **Chapter 5: Conclusion**

This chapter contains the key findings, recommendations for the industry, and provides suggestions for improvements made on future research. The final chapter also discusses the limitations of this study.