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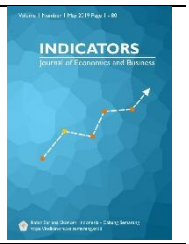

RICE PRICE VOLATILITY IN INDONESIA: DOMESTIC PRODUCTION AND LARGE-SCALE IMPORTS DYNAMICS

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Abstrak

Meskipun sejak awal kemerdekaannya Indonesia menetapkan tujuan untuk mencapai swasembada di sektor pertanian, pada kenyataannya Indonesia masih bergantung pada impor beras untuk memenuhi kebutuhan domestik. Seiring dengan semakin meningkatnya volatilitas pasar beras internasional dalam beberapa tahun terakhir, menjadi penting untuk menganalisis secara mendasar dinamika antara kebijakan perdagangan dan keseimbangan pasar domestik. Dengan menggunakan pendekatan kualitatif-deskriptif, penelitian ini bertujuan untuk memberikan gambaran yang spesifik mengenai kondisi, fenomena, dan gejala sosial terkait peran kebijakan impor beras oleh pemerintah dalam aktivitas pasar beras domestik, termasuk transmisi harga dan produksi masyarakat. Hasil penelitian menunjukkan bahwa peningkatan impor pada saat harga tinggi tidak selalu tercermin pada harga di tingkat konsumen, melainkan cenderung menekan harga di tingkat petani. Pergerakan harga justru lebih berkorelasi dengan peningkatan pasokan selama periode panen. Berdasarkan temuan tersebut, penelitian ini merekomendasikan perlunya peninjauan kembali kebijakan perdagangan, penguatan kebijakan yang berpihak pada petani, perbaikan infrastruktur logistik, serta penguatan mekanisme dukungan terhadap produksi domestik dan pengelolaan impor.

Abstract

In spite of its stated objectives in agriculture towards self-sufficiency drive ever since becoming independent, Indonesia remains reliant to importing rice for domestic needs. As the international rice market becoming more volatile in recent years, it is imperative to fundamentally analyse the dynamics between trade policies and domestic market equilibrium. By employing a qualitative-descriptive approach, this study aims to provide a specific picture of the situation, phenomenon, or social symptoms of the role of government rice importation in domestic rice market activities, including price transmission and community production. We find that the increase of import in times of high prices are not necessarily reflected on consumer prices, instead they tend to depresses prices on farmers level. Price movements correlate more strongly with a surge in supply during harvest periods. Through the findings, we suggest reassessment of trade policies, farmer-oriented policies, logistical infrastructures, and support mechanisms for domestic production and import management.

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INTRODUCTION

In the last decades, concerns have been raised regarding the challenges of realising a world with zero hunger as part of the sustainable development goal 2030. The plan to eradicate undernourishment and hunger is still far from achieving, with nearly 670 million people estimated to remain undernourished in 2030 (FAO, 2022). However, greater urgencies have arisen recently, especially with the increasing threat from climate change and its detrimental effects on global food security. Unpredictable weather events and disruptions to global food supply chains have affected the production and distribution of food worldwide, especially for the most vulnerable people (Mbow et al., 2019; Sutton & Weng, 2019). As challenges mount, the policy mix to sustain rice and the wider agriculture production would remain at the forefront of public debate in ensuring social and economic stability of nation across the globe, including Indonesia.

One of the commodities of paramount importance, which cannot be understated, particularly in Asia, is rice. More than 3 billion people, with a significant share of those living in low-to-middle-income countries, are relying on rice as their staples (Goli et al., 2023; Fukugawa & Ziska, 2019). Indonesia is one of the largest consumers of rice in the world. On average, it consumed and produced at least 30 million tonnes of rice ranking fourth globally on both measures (USDA, 2023). The significance of rice as a main staple commodity cannot be understated. Rice has been at the forefront of Indonesia's agricultural policies. The discourse surrounding rice and the wider agriculture policy remain its pivotal role in the nation's survival remains the primary narrative for agriculture and economic policy (Nicholson, 2018).

The Indonesian government itself already has guidelines and visions for achieving food security accompanied by various policy instruments. According to Law 18/2012 on Food, food security is a condition of food fulfilment for the state up to individuals, which is reflected in the availability of sufficient food, both in quantity and quality, safe, diverse, nutritious, equitable, and affordable and does not conflict with religion, beliefs, and culture of the community, to be able to live healthy, active, and productive lives sustainably. Then, this latest food reference regulation talks about resilience and clarifies the realisation of food sovereignty, independence, and security. The focus and the implementation of government interventions are further encapsulated on various ministrial regulations, such as the NFA Regulations No. 7/2023 on Reference Prices for Rice, Ministry of Trade Regulation No.1/2018 on the Provisions for the Impor and Export of Rice, NFA Regulations No. 15/2022 on Stabilisations for the Supply and Prices of Rice, Maize, and Soybeans, and NFA Regulations No. 6/2023 on Government's Procurement Price for Rice, and other regulations.

Indonesia is positioned as a net rice importer combined with strict approach through handling the rice trade, government rice stock, and public procurement policies. In 2022 alone, Indonesia imported a total of 429 thousand tonnes of rice (Trademap, 2023). BULOG, a semi-commercial body of the government is tasked primarily to deal with matters relating to government's role in rice trade. Its main tasks are to ensure price stability and the sufficiency of rice stocks for domestic consumption through domestic procurements and/or import (FAO, 2018). In 2021, a new body was formed to centralise authorities regulating Indonesia's food policy, the National Food Agency (NFA/Bapanas). It amalgamates the previously dispersed authorities in various ministries and agencies. These include but not limited to the the authority to determine rice import quota, domestic reference prices, and BULOG's intervention price band (Government of Indonesia, 2021). For BULOG in particular, its role are tightly controlled under the provisions for rice procurement price (HPP) and import mandate, both of which are now placed under the NFA.

Only a few major rice-producing countries can be counted as net exporters: India, Thailand, Vietnam, Pakistan, and the United States (Savage, Singh, Parkin, & Adeoyem 2023). Rice trade is more concentrated and amounted to only 10 percent of agricultural commodities exported in 2018 compared to maise and wheat at 36% and 40%, respectively (FAO, 2020). The number of rice traded only represents less than 10 percent of rice produced globally, or as Timmer (2010) argues, it is consumed where it is produced (Mohanty, 2015). Despite the growing openness of world economies, rice, along with many other staple commodities, is still tightly controlled by the governments, often resorting to restrictions on imports and

exports when domestic conditions necessitate so, inadvertently illustrating the fragile nature of international rice production and trade. Trade of food commodities, in general, has always been mired with beggar-thy-neighbour policies in response to domestic or even international factors, stemming from natural disasters and geopolitical conflicts which affect access to foods globally (Anderson & Neglen, 2012). Global food prices, especially for rice, have stabilised since the late 1990s as production peaked and population growth slowed, stabilising the international rice market. International markets, therefore, became a reliable source of stability for importers and exporters alike as they became more integrated (Dawe, 2002; Chen & Saghaian, 2016).

Large-scale disruption during the 2000s food crisis and the COVID-19 pandemic precipitated large rice producers such as India to turn to protectionist measures by restricting rice exports, limiting global food supply and causing disruptions to global food trade (Jadhav, 2022). Protectionist turns and the unwillingness of the governments to liberalise the markets during disruptions compounded the effects of supply shocks strongly correlated with rapid and significant increases in price (figure 1). It is noted that while weather events and structural changes in demands caused price shocks for wheat and maise, respectively, in the late 2000s, government responses further inflamed rice markets and induced unprecedented price rises (The Economist, 2015).

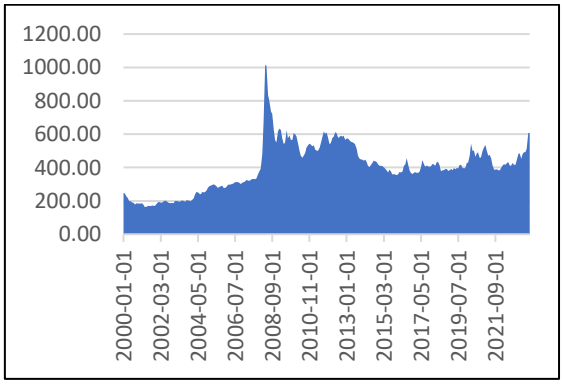

Figure 1. Global Price of Rice Index, Thailand (1990 = 100)
Source: International Monetary Fund Primary Commodity Prices. 2023

Discussions regarding the international rice market are crucial in understanding the state of Indonesia's rice market. Rice import remains one of the main policy options threaded by the government each year in response to high domestic prices. In the recent 2023 year, import of rice amounted to record high of more than 3 million tonnes. An increase of more than 600% from the previous year (Nugroho, 2024). The need to import a substantial amount of rice to meet domestic demand comes as the international price for rice were on increasing trend, relative to the decline in wheat and maize which stabilised (World Bank, 2023).The mid-2023 decision by Indian government to restrict the export of broken rice, which is cheap and widely consumed globally, further added to the pressures on the already tight rice market, contributing to price increases in the latter half of the year (The Economist, 2023).

The government's repeated efforts to import rice and the current state of the international market reflect the country's fragility in food affairs. Indonesia must depend on other countries to meet its domestic needs amid many countries' tightening restrictions on rice exports. In addition, imports sometimes become polemic so far as they often fail to address the imbalances and prevent fluctuations. Therefore, this study examines the role of rice imports in the rice price mechanism in the domestic market. We aim to investigate how import affects consumers level prices, producer level prices, and domestic rice production. The hope is that this study can contribute to the addition of literature discussing the relevance of imports as a country policy and its role in national rice production and prices. For this reason, a comprehensive review and reassessment of Indonesia's public policy regarding the rice trade and its associated costs and benefits should prove beneficial to a better understanding of rice market dynamics.

This study contributes to the literature in three ways. First, it provides a structured descriptive assessment of how rice imports, domestic production, and price transmission interact in Indonesia during recent episodes of heightened volatility. Second, unlike many existing studies that focus solely on consumer prices or aggregate welfare, this paper explicitly contrasts producer-level (GKP) and consumer-level price responses, highlighting distributional asymmetries. Third, by situating Indonesia's experience within the broader international rice trade context, the study offers policy-relevant insights on the limits of import-based stabilization strategies in structurally fragile food systems.

LITERATURE REVIEW

Government Interventions, Trade Measures, and the Agriculture Market

Governments worldwide have, to a certain extent, exercised their rights in managing the flow of goods and services through their border. Trade interventions can be through restrictions, tariffs, quotas, or government subsidies (Krugman, Obstfeld, & Melitz, 2018). The various measures offer a diverse mechanism for delivering the expected benefits and costs market players bear in achieving policy goals. In times of rising prices, the government tends to subsidise imports. This lowers domestic prices for consumers and reduces producers' welfare. Meanwhile, when prices are low, tariffs or equivalent measures are implemented to ensure that domestic prices are high and producers are protected, thereby lowering the demand at the international level (Anderson & Nielgen, 2012; Krugman, Obstfeld, & Melitz, 2018). The mechanisms of export subsidies (A) and import tariff (B) and their effects on world market equilibrium are illustrated in figure 2:

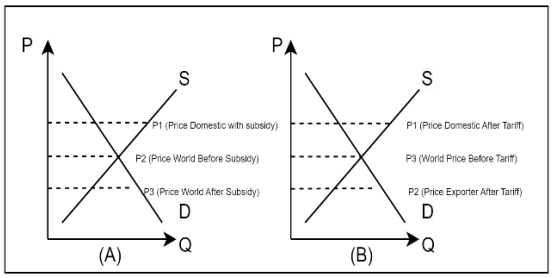

Figure 2. International Market and Trade Instruments of Export Subsidies (A) and Import Tariffs (B)

Sources: Krugman, Obstfeld, and Melistz (2018) (Modified)

Agriculture trade is among the most restrictive compared to other types of goods. At the global level, the average MFN tariffs are almost 20% for non-preferential access (UNCTAD, 2023). That is not considering that agrifood products fall under the broadest coverage for non-tariff measures (NTMs), with at least 80% of imported goods covered, especially in developed countries (UNCTAD & World Bank, 2018). On both global and regional trade agreements, food commodities are often included in the sensitive lists with different (higher) rates of tariffs applied. In the ASEAN Free Trade Area (AFTA) agreement, for instance, the implementation of Common Effective Preferential Tariffs (CEPT) relating to unprocessed agriculture commodities, especially rice, are delayed compared to other goods under inclusion lists (Feridhanusetyawan, 2005). The WTO exempted agriculture products through tariff quota provisions, which allowed for applying a higher tariff rate after a certain amount of import quotas, known as the out-of-quota tariff rate. Japan has one of the highest out-of-quota tariffs at USD 3 per Kg in 2020 (OECD, 2020)—a tariff that is more than 300% higher than the average prices for the period.[1]

The prevalence of trade protectionist measures primarily stems from the distrust of the international market as a source of stability (Warr & Kohpaiboon, 2009). Trade measures do not solve the imbalances in the domestic or international market. It worsened everyone's condition as government interventions led to increased volatility in times of shortage (Clarette, 2012; Martin & Anderson, 2011). Martin and Anderson (2011) specifically find that market insulation measures (i.e., export restrictions and imports during the 2008 rice price crisis) can be attributed as the driver for roughly 45% increases in price at the time. The deficit countries could not utilise stocks from the international market to stabilise domestic prices, and the collective self-interest through subsidies and export restrictions served as a classic example of coordination problems. The predicament is not an isolated cases, as similar cases had been empirically documented in some other countries (Götz, Glauben, & Brümmer, 2013; Shama, 2011; Fellman, Helaine, & Nekhay, 2014)

In essence, trade barriers cause imbalances through their impacts on price. For the rice market in particular, despite its relative size, Chen and Saghaian (2016) find that the international rice market is relatively competitive. They expanded the framework further by applying threshold VECM to account for transaction prices between international and domestic prices. The findings confirmed the price competition between

significant rice exporters and high-price transmissions, showing high integration between producers. However, Jamora and Cramon-Taubadell (2016) showed that price transmission slowed as transaction costs increased after the peak 2007/2008 period for international prices. The increased interventions contributed to lowered volatility and expenses among the countries examined.

In contrast to developing countries, relatively wealthier countries tend to be more protectionist through subsidies to maintain the competitiveness and support of their agriculture sector (Anderson, 2009). Among the most prominent beneficiaries are farmers in the EU through their Common Agricultural Protection Scheme, which channelled funds to subsidise the export of excess production and to maintain EU-wide commitment to pre-determined prices in member countries (Peters, 2006; Koo & Kennedy, 2006). While it benefits those needing cheap imported foods, the measures depress international prices and are, in effect, uncompetitive behaviour (Bhagwati, 2004; Hoakman & Messerlin, 2006).

Export subsidies from wealthy agricultural countries reduce opportunities for small producers to compete in their home market and, by extension, damage developing countries' agriculture sector. They are forced to compete at a highly competitive price, leading to dependence on cheaper foreign products (European Union, 2019). Despite the drawbacks of an open and liberalised agriculture market, developing countries are more concerned with the possibilities of unrest, especially among those dependent on agriculture and vulnerable to food insecurity (Johnstone & Majo, 2011; Wischnath & Buhaugh, 2014). Criticisms led to its gradual phasing out by 2015 (Strubenhoff, 2016).

One consideration in choosing between policy goals of market intervention is to examine the distributional effects. To whom do the additional rents accrue, and how are the losers (i.e., consumers) compensated. Raising domestic prices of food commodities means that the producers obtain a larger share of rent to the detriment of consumers and vice versa (Krugman, Obstfeld, & Melitz, 2018; Anderson & Nelgen, 2012). Chen, McCarl, and Chang (2006) explored the removal of price distortion mechanisms in the rice market and estimated positive net gain, with importing countries benefiting the most per capita. Tanaka and Hosoe (2011) find minimum negative impacts on the domestic rice market in Japan following liberalisations through a reduction in import tariffs. The benefits include increased consumption due to lowered prices and increased welfare from opening a foreign market for domestic surplus. On aggregate, Beckman (2021) estimated that a full tariff liberalisation could lead to a gain of roughly 2% of agriculture value for consumers. The impact, however, will not be equal for all countries. Some major exporting countries, such as the EU and Brazil, are to benefit the most.

Indonesia's Trade and Agriculture Policies

Policies supporting rice and agriculture production remain the focus of successive administrations. Since the advent of the independence era, rice policy has been a contentious balancing act between meeting domestic consumption—affordability—and guaranteeing the welfare of farmers, who form a sizable share of the population.

In his 2014 campaign, the question of rice import became one of the campaign promises of Indonesian then-presidential hopeful Joko Widodo (Anisah, 2023). During his administration, a sizable share government spending were poured into supporting rice farmers through input subsidy and other measures of budgetary support (OECD, 2022). The authority and responsibility of BULOG have also been expanded as liberalising measures were rolled back in the mid-2000s after the end of IMF commitments, with rice among the first commodities to be heavily regulated (Basri & Patunru, 2012). The relative success of government stabilisation policies during the New Order era left a legacy for the current administration to follow. The self-sufficiency drive which was achieved in 1985 required extensive support from the governments through massive infrastructure spending, input subsidies, government procurements and stockholding through BULOG and was coupled with the introduction of new high-yielding varieties (HYV), which drastically improved productivity (Timmer, 2002).

While domestic market insulation prevented the steep increase in prices and managed domestic volatility, it is paid in the form of higher domestic rice prices relative to the international market (Warr & Yusuf, 2013). Even for Indonesia, despite its stubbornly high prices, domestic appetite for rice imports

remained low. For most of the population, long-term reliance on imports to fulfil domestic demand is a source of dependency, the opposite of the self-sufficiency concept espoused as the primary goal of food and agriculture policy (Neilson, 2018). The prices, however, picture a different reality. Despite its protectionist rhetoric and public disapproval, rice is imported in large quantities, and Indonesia's rice prices remained higher than the international average, especially compared to previous decades (Basri & Patunru, 2012; Mark, 2015; Dawe & Timmer, 2012). The need to ensure access to food resonates more strongly, considering that Indonesia has one of the highest rates of stunting and malnourishment, which correlates with food affordability, especially for those on the bottom half of income distribution (Arif et al., 2020). An increase in rice prices would inadvertently lead to increases in poverty as the poor (including many farmers) consume more rice than they produce (Hill, 2008; Yusuf & Sumner, 2015; World Bank, 2006; World Bank, 2007).

Taken together, the literature suggests that the effectiveness of rice imports as a price stabilization tool depends not only on trade volumes but also on timing, market structure, and domestic supply cycles. In thin and politically managed markets such as rice, imports may dampen price volatility at the consumer level while simultaneously transmitting negative shocks to producers, particularly during harvest periods. This asymmetric transmission reflects both policy-induced market insulation and structural weaknesses in storage, logistics, and farmer bargaining power. These insights provide the analytical lens through which Indonesia's recent experience is examined in the following sections.

RESEARCH METHOD

This study adopts a qualitative-descriptive approach to analyze the role of rice imports and domestic production in shaping rice price dynamics in Indonesia. The use of this approach is motivated by the structural characteristics of the Indonesian rice market, which is heavily influenced by government interventions, timing of imports, and institutional discretion. These factors create complex dynamics that are not always adequately captured by standard econometric models. Therefore, a qualitative-descriptive framework is employed to identify patterns, price transmission behavior, and the interaction between policy actions and market outcomes.

Then, seen from the benefits, this research is genuine since the results are used for the help of science alone, are considered material for the government, and do not have direct implications for solving a problem for those affected by the policy. Meanwhile, based on the time dimension, this study is classified as cross-sectional because the study was carried out in a certain period and only once took an approach to social phenomena that occurred in that one time period (Raimundo et al., 2018).

Data collection techniques in this study use qualitative methods in the form of literature studies, documentation, and literature studies. The literature study seeks secondary data from various sources, especially peer-reviewed publications, electronic databases (internet), and relevant analyses related to the research object, such as Indonesian Statistics, Trademap, and IMF.

While this study does not employ econometric estimation, the descriptive approach is intentionally chosen to uncover stylized facts and policy-relevant patterns that are often overlooked in reduced-form models. In particular, this approach enables the identification of temporal dynamics, such as price movements during harvest periods and the timing of import policies. Given the strong role of administrative interventions in Indonesia's rice market, descriptive analysis provides a suitable first-order assessment of how policy actions align with market outcomes. This approach is consistent with policy-oriented studies in food economics that emphasize narrative and pattern-based analysis (Raimundo et al., 2018).

RESULTS AND DISCUSSION

1.1. Domestic Production and Price Changes

Regarding domestic paddy production, the increase in output directly indicates the transmission of significant market price declines that coincide. It can be seen from Figure 3 that during every harvest period, the price trend of GKP (millers or unhusked rice) and medium prices decreases. What is noted is that the decline in GKP price will be much more profound than in a relatively stable

medium. The chart shows the percentage changes of the medium and GKP price overtime on the left axis, while the amount of domestic paddy production (kg) is on the right axis. This chart helps us to understand the domestic production trend parallel to the consumer price change.

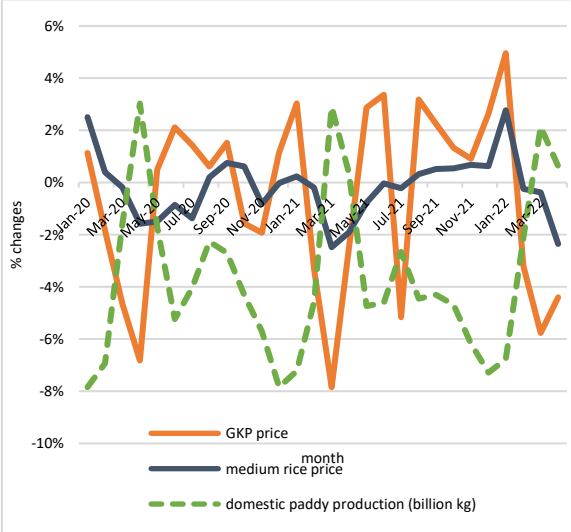

Figure 3. Total domestic paddy production (kg) and market price rice changes (%), 2020 – 2023

Source: BPS-Indonesian Statistics, 2023

This shows the trends between domestic production and price transitions. Increasing production will quickly decrease the price while decreasing production will trigger the price increase directly. This aligns with a study (Fitrawaty et al., 2023), which revealed that a regular rise in rice production decreases rice prices. However, that study only mentioned that the increase would likely be in the long run, while we can also clearly see that it also showed in the shorter run, more likely similar to (Ruspayandi et al., 2022; Setiawati et al., 2018) study.

The intricate relationship between domestic rice production and price changes in Indonesia unfolds through agricultural, economic, and policy dynamics. One of the central factors influencing this correlation is the principle of supply and demand. Domestic rice production, as the country's primary source of rice supply, plays a pivotal role in shaping market dynamics. Fluctuations in production levels can directly impact the overall availability of rice in the domestic market. In periods of robust production, where the supply surpasses demand, there is a tendency for downward pressure on rice prices. Conversely, a decline in domestic production, leading to a reduction in supply, may contribute to upward pressure on prices.

However, the correlation is not solely determined by production levels. External factors such as weather conditions, human capital, labour wages, technological advancements, and agricultural policies also exert influence. Unfavourable weather patterns, for example, can adversely affect crop yields, leading to decreased production and potential price increases (Bashir & Yuliana, 2019; Candradijaya, 2014; Ikhwali et al., 2022). Conversely, adopting advanced agricultural technologies and supportive government policies can enhance productivity, increase production, and stabilise prices (Adam et al., 2021).

Government intervention through policies such as subsidies, price controls, and strategic reserves further shapes the correlation between domestic production and price changes. Subsidies and support programs can mitigate the impact of production fluctuations on prices by stabilising farmers' income and ensuring a consistent rice supply (Gupta & Huang, 1998; Setiawan et al., 2021). On the other hand, price controls and strategic reserves can be employed to manage market price volatility, particularly during production shortfall periods.

The sharper decline in GKP prices relative to consumer prices suggests that domestic supply shocks are absorbed disproportionately by farmers rather than consumers. This pattern indicates incomplete price transmission downstream, likely reflecting rigidities in retail pricing, market power within distribution chains, and the role of government reference prices. As a result, production surges intended to improve food security may paradoxically weaken farmer incentives.

1.2. Rice Import and Price Changes

Rice imports have significantly reduced market price fluctuations through additional supply. This can be seen in Figure 4, which shows that the increase in rice imports is followed by a downward trend in rice prices at the milling level and medium price. This price transmission is relatively reasonable, where an increase in imports occurs when consumer prices increase and will be followed by a price decline months later. The chart shows the

percentage changes of the medium and GKP price over time on the left axis, while the amount of rice imported (kg) is on the right axis. This chart shows the pattern of rice imports parallel with the consumer price change over time.

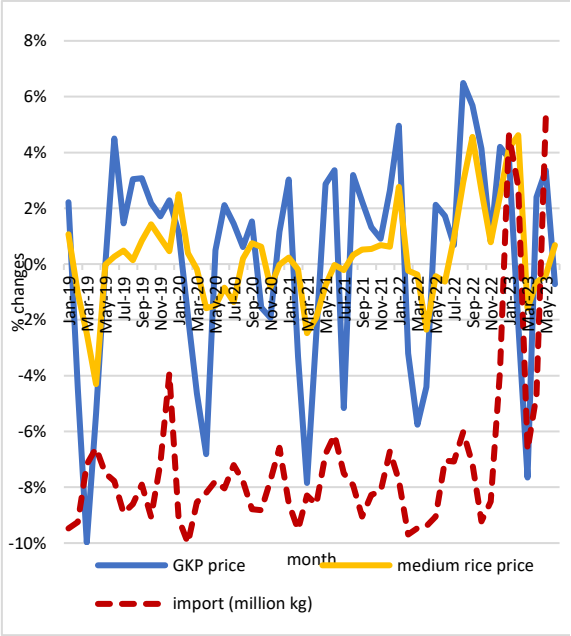

Figure 4. Total rice import (kg) and market price changes (%), 2019 – 2023
Source: BPS- Indonesian Statistics, 2023

The correlation between rice imports and price changes in Indonesia is a multifaceted interplay of economic dynamics. One key factor contributing to this relationship is the principle of supply and demand. Aligning (Rai & Wibowo, 2020) study that there is a two-way correlation between those two variables, a notable increase in rice imports amplifies the overall rice supply and price in the domestic market. Under the ceteris paribus assumption of constant demand, the resultant surge in supply tends to exert downward pressure on medium rice consumer prices.

This downward pressure is intensified by the heightened competition introduced by the influx of imported rice. Now facing increased competition from imported varieties, local rice farmers as producers may have their prices compelled and depressed uncontrollably by the market mechanism. This sequel impact once seemed like a strategy to recalibrate their pricing, maintaining competitiveness, while it looks more like a predatory price.

Rice farmers face difficulties since their production prices fall worse than consumer prices. They have the least authority to control the whole price determined by the free market. This result points to something missing from Indonesian literature but is commonly understood by the community. Similar results were only found in the salt commodity when the consumer's price decreased by 13% compared to 130% for the producer (InterCAFE, 2018).

Market forces do not solely dictate this correlation. Government policies play a pivotal role in shaping this relationship. Import tariffs, trade regulations, and other policy interventions can amplify or mitigate the impact of increased imports on domestic prices (Arianto Patunru et al., 2019; Sayaka et al., 2007). For instance, a government imposing stringent restrictions on imports may cushion the domestic market from the full force of external supply, thereby influencing price changes to a lesser extent. Conversely, a more liberal trade policy may allow for a more direct pass-through of international price fluctuations to the domestic market.

Moreover, the exchange rate between the Indonesian Rupiah and the exporting countries' currencies is also a critical variable in the relationship. Fluctuations in exchange rates can significantly alter the cost of imported rice (Fitrawaty et al., 2023; Hermawan et al., 2017). A local currency depreciation vis-a-vis the exporting countries' currencies may result in higher import costs, potentially contributing to upward pressure on domestic prices.

However, the correlation between rice imports and price changes in Indonesia is a nuanced interplay of market forces, competition dynamics, government policies, and currency fluctuations. A comprehensive understanding of these factors is crucial for policymakers and market participants seeking to navigate the complexities of the Indonesian rice market and formulate strategies that balance the interests of consumers and producers in the face of changing global and domestic economic landscapes

This anomaly reflects a broader policy paradox in Indonesia's rice market: imports are politically justified as consumer protection instruments but operationally function as supply shocks that primarily discipline producers. When imports arrive outside peak scarcity periods or face distribution bottlenecks, their price-stabilizing effect dissipates, while

their depressive impact on farmgate prices remains. This disconnect helps explain why repeated import interventions coexist with persistently high consumer prices.

1.3. Rice Import, Domestic Production, and Medium Price Changes

Compared to two variables at once, rice import and domestic rice production tend to have different trends. In Figure 5, domestic rice production does not graphically affect the number of imports. However, every time rice production increases (harvest), the price of medium rice drops significantly simultaneously. This is the case with imports, where the increase tends to be followed by a decrease in the price of medium rice at the consumer level. Although this did not happen from November 2021 to April 2022, the trend seems somewhat different. The chart shows the percentage changes of the medium consumer price overtime on the left axis, while the amount of rice production and imported (kg) are on the right axis. This chart explains the pattern of rice production and imports parallel with the medium consumer price change.

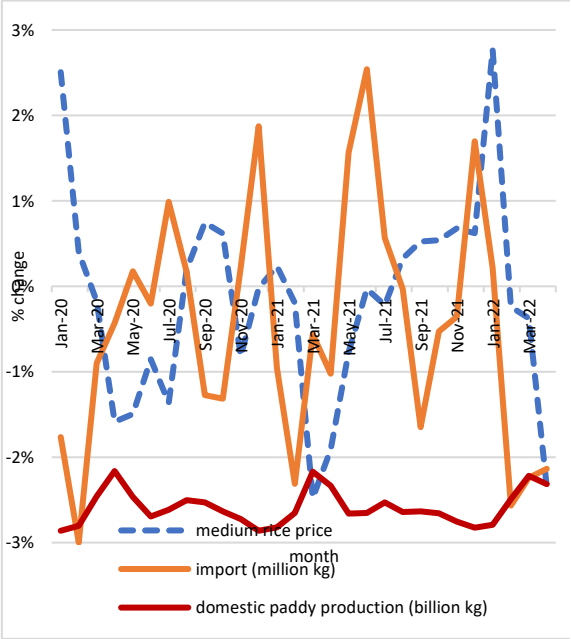

Figure 5. Rice Import (kg), total domestic paddy production (kg), and market price changes (%), 2020 – 2023
Source: Indonesian Statistics, 2023

This shows a slight anomaly in the rice market in Indonesia. When imports increase, medium-market rice prices (consumer prices) do not decrease and even tend to increase in the following months. However, the relationship between a significant increase in rice imports and the persistence or potential increase in medium rice prices in Indonesia's domestic market can be attributed to intricate economic, logistical, and policy-related factors. While conventional economic theory suggests that an influx of imports should lead to more excellent market supply, subsequently driving prices down, the actual dynamics can deviate from this expectation. This finding again aligns with (Arianto Patunru et al., 2019) study that mentioned that although production has consistently exceeded consumption, the price keeps increasing. The decision about whether or not to import rice then is almost always contentious.

Firstly, the quality and types of rice imported may differ from the local varieties, leading to variations in consumer preferences. Major rice consumers need to gain more knowledge of the different varieties available in the markets, while (Antriyandarti et al., 2023) mentioned that they tend to be more resistant. Suppose the imported rice is perceived as superior or meets specific demands not fulfilled by domestic varieties, especially urban consumers, just as (Bulambo et al., 2023) study stated. In that case, it may command premium prices, thereby influencing the overall price trend in the market. Moreover, logistical challenges, including transportation costs, storage facilities, and distribution networks, can contribute to maintaining or increasing the overall cost of imported rice, mitigating the anticipated downward pressure on prices.

Government policies and trade regulations also play a critical role. A study (Sayaka et al., 2007) explained that the imposition of tariffs, quotas, or restrictions on imports, despite an apparent increase in volume, can limit the direct impact of imports on the domestic market. Additionally, if the government implements subsidies or support programs for local farmers, the domestic price may be insulated from the full effects of increased imports. Conversely, a weakened local currency relative to the exporting countries can elevate the cost of imports, potentially counteracting the expected price decrease.

Market dynamics and competition further complicate the scenario. Local rice producers, facing increased competition from imported varieties, might resist lowering their prices. This competitive pressure could drive local producers to enhance their perceived products,

maintaining or growing prices despite the import surge. This was reinforced by a clarification from the Minister of Trade (MoT) that consumer rice prices have not decreased because the chain of distribution in the supply chain remained too high, thereby increasing margins (Idris, 2023). Apart from that, the MoT also stated that there was a mafia and misuse of imported rice.

The deviation from the conventional economic expectation of decreased prices with increased imports in Indonesia's rice market can be attributed to various factors, including consumer preferences, logistical challenges, government policies, currency fluctuations, and competitive dynamics. A comprehensive analysis of these multifaceted elements is essential to understanding the complexities shaping the domestic rice market under heightened import volumes.

CONCLUSIONS AND IMPLICATIONS

The economic analysis of the impact of large-scale rice imports and domestic production on rice prices in Indonesia uncovers unique anomalies within the domestic market dynamics. Recognising Indonesia's rice commodity market as an anomaly highlights distinct factors influencing price trends, deviating from conventional economic expectations. Notably, the study reveals that rice imports do not consistently lead to a proportional decrease in consumer rice prices and indicate the most severe suffering for farmers instead, challenging traditional assumptions about the relationship between import volumes and consumer-orientation affordability. Another exceptional finding is that imported rice was relatively followed by increasing consumer prices in the following months instead since there are some persistent gaps in the market.

The findings highlight a fundamental trade-off in Indonesia’s rice policy. Import-based stabilization may alleviate short-term political pressures but risks undermining producer incentives and long-term supply resilience. Without complementary investments in storage, logistics, and transparent procurement mechanisms, imports alone cannot deliver durable price stability. A more balanced policy mix—combining predictable import rules, countercyclical procurement, and farmer income protection—is therefore essential.

Furthermore, the study emphasises the pivotal role of domestic production, illustrating that a surge in domestic output has a more pronounced impact on the price of mills-harvested dry grain (GKP or unhusked rice) than on the consumer medium price. This discrepancy suggests that the benefits of increased domestic production may not be fully reflected in consumer pricing, indicating potential inefficiencies or market intricacies. In light of these findings, strategic recommendations for policymakers in Indonesia encompass a thorough reassessment of trade policies, farmer-oriented policies, logistical infrastructures, and support mechanisms for domestic production and import management.

From the rice farming business perspective, the study underscores the imperative for strategic adaptation and risk mitigation strategies in response to the complex dynamics of rice imports and domestic production. There is an urgency for farmers to prioritise diversifying and exploring value-added opportunities. Farmers should be encouraged to participate in cooperative structures that strengthen their bargaining power in the market. This proactive approach can empower the farming business group to navigate market anomalies effectively, capitalise on emerging opportunities, and build resilience, ultimately contributing to the long-term sustainability of their rice commodity.

Addressing these anomalies is imperative for cultivating a more transparent, competitive, and consumer-centric rice market, aligning with economic expectations and fostering food security for the Indonesian populace. The rice market circumstance has been a long-complex interplay of Indonesia's agricultural, economic, and policy factors. Understanding the nuanced relationship between rice import, production levels, and pricing dynamics is crucial for policymakers, agricultural stakeholders, and researchers seeking strategies to promote food security and economic stability in a dynamic agricultural landscape.

The study offers valuable insights into the intricate dynamics of rice imports and domestic production in Indonesia, challenging conventional economic expectations. Academicians can delve deeper into understanding the specific market gaps that contribute to the observed anomalies, exploring the impact of policy interventions on market efficiency and equity. Additionally,

comparative studies across different regions or countries could shed light on the generalizability of these findings. This study opens the door for a more nuanced exploration of the complexities within rice and other agricultural products, providing a foundation for scholars to contribute to developing more effective and tailored agricultural policies.

References

Adam, L., Jin, J., Khan, A., Hussain, J., & Sophia, T. T. (2021). A Study of the Adoption of Technology in Agriculture: Evidence from the Indonesian Paddy-Rice Farmer. In *Cutting-edge Research in Agricultural Sciences Vol. 12* (pp. 105–124). Book Publisher International (a part of SCIENCEDOMAIN International). https://doi.org/10.9734/bpi/cras/v12/2487F

Anderson, K. (Ed.) (2009). *Distortions to agricultural incentives: A global perspective, 1955–2007*. London: Palgrave Macmillan, Washington DC: World Bank

Anderson, K., & Nelgen, S. (2012). Trade barrier volatility and agricultural price stabilization. World Development, 40(1), 36-48.

Antriyandarti, E., Agustono, Ani, S. W., Rusdiyana, E., & Sukaton, D. L. A. (2023). Consumers' willingness to pay for local rice: Empirical evidence from Central Java, Indonesia. *Journal of Agriculture and Food Research*, *14*, 100851. https://doi.org/10.1016/j.jafr.2023.100851

Arianto Patunru, by A., Szami Ilman, A., & Patunru Assyifa Szami Ilman, A. A. (2019). *A Perspective on the ASEAN Economic Community Political Economy of Rice Policy in Indonesia: A Perspective on the ASEAN Economic Community*.

Arif, S., Isdijoso, W., Fatah, A. R., & Tamyis, A. R. (2020). Strategic Review of Food Security and Nutrition in Indonesia 2019-2020. Jakarta: Smeru Research Institute.

Bhagwati, J.N. 2004. *In Defense of Globalization*. New York: Oxford University

Bulambo, K., Azadi, H., Polepole, S., Nabintu, M., Bembeleza, E., Dontsop, P., Masimane, J., Haurez, B., Fofana, M., & Lassois, L. (2023). Consumer Preference for Rice Grain Quality in the South Kivu and Tanganyika Provinces, Eastern DR Congo. *Foods*, *12*(21), 3995. https://doi.org/10.3390/foods12213995

Candradijaya, A. (2014). Climate Change Impact on Rice Yield and Adaptation Response of Local Farmers in Sumedang District, West Java, Indonesia. *International Journal of Ecosystem*, *2014*(5), 212–223. https://doi.org/10.5923/j.ije.20140405.02

Fellmann, T., Hélaine, S., & Nekhay, O. (2014). Harvest failures, temporary export restrictions and global food security: the example of limited grain exports from Russia, Ukraine and Kazakhstan. *Food Security*, 6, 727-742.

Fitrawaty, Hermawan, W., Yusuf, M., & Maipita, I. (2023). A simulation of increasing rice price toward the disparity of income distribution: An evidence from Indonesia. *Heliyon*, *9*(3), e13785. https://doi.org/10.1016/j.heliyon.2023.e13785

Food and Agriculture Organisation (FAO). (2020). Statistical Yearbook World Food and Agriculture 2020.

Fukagawa, N. K., & Ziska, L. H. (2019). Rice: Importance for global nutrition. *Journal of nutritional science and vitaminology*, 65(Supplement), S2-S3.

Gupta, P., & Huang, B. (1998). *ADBI Working Paper Series IN-KIND TRANSFER AND CHILD DEVELOPMENT: EVIDENCE FROM SUBSIDIZED RICE PROGRAM IN INDONESIA Asian Development Bank Institute*. https://www.adb.org/publications/kind-transfer-and-

Goli, I., Azadi, H., Najafabadi, M. O., Lashgarara, F., Viira, A. H., Kurban,

A., ... & Witlox, F. (2023). Are adaptation strategies to climate change gender neutral? Lessons learned from paddy farmers in Northern Iran. *Land Use Policy*, *125*, 106470.

Götz, L., Glauben, T., & Brümmer, B. (2013). Wheat export restrictions and domestic market effects in Russia and Ukraine during the food crisis. *Food Policy*, 38, 214-226.

Government of Indonesia. (2021). Perpres Nomor 66 Tahun 2021. Sekretariat Negara. Jakarta.

Hermawan, W., Fitrawaty, F., & Maipita, I. (2017). Factors Affecting the Domestic Price of Rice in Indonesia. *JEJAK*, *10*(1), 155–171. https://doi.org/10.15294/jejak.v10i1.9133

Hoakman & Messerlin, 2006. Removing the Exception of Agricultural Export Subsidies. DOHAAA

Idris, M. (2023, February 05). *Kompas*. Retrieved from Kompas.com: https://money.kompas.com/read/2023/02/05/000600026/harga-beras-impor-mahal-mendag-salahkan-pedagang-ambil-untung-besar?page=all

InterCAFE. (2018). *Market Study On Food Sector In Indonesia Final Report. Lembaga Penelitian dan Pengabdian Masyarakat (LPPM) IPB 2018*.

Jadhav, R. (2022, September 9). *India restricts rice exports, could fuel food inflation*. Reuters. Accessed from https://www.reuters.com/world/india/india-imposes-20-duty-rice-exports-various-grades-2022-09-08/

Johnstone, S., & Mazo, J. (2011). Global warming and the Arab Spring. *Survival*, 53(2),

Krugman, P. R., Obstfeld, M., & Melitz, M. J. (2018). *International economics: Theory and Policy (11th Eds)*. Pearson.

Mohanty, S. (2015, Januari 1). *Trends in Global Rice Trade*. IRRI. Accessed from https://ricetoday.irri.org/trends-in-global-rice-trade/

Nugroho, R. A. (2024, Januari 15). *Parah! Impor Beras RI Cetak Rekor di 2023, Tembus 3 Juta Ton*. CNBC Indonesia. Accessed from https://www.cnbcindonesia.com/news/20240115151718-4-505835/parah-impor-beras-ri-cetak-rekor-di-2023-tembus-3-juta-ton

OECD. (2020). *Agricultural Policy Monitoring and Evaluation 2020*. Accessed from https://www.oecd-ilibrary.org/

OECD. (2022). *Producer and Consumer Support Estimates*. OECD Agriculture statistics (database).

Ortiz-Bobea, A., Ault, T. R., Carrillo, C. M., Chambers, R. G., & Lobell, D. B. (2021). Anthropogenic climate change has slowed global agricultural productivity growth. Nature Climate Change, 11(4), 306-312.

Rai, A., & Wibowo, S. H. (2020). Analysis Relationship of Imported Rice with Rice Production, Imported and Domestic Rice Prices with VECM. *Jurnal Matematika, Statistika Dan Komputasi*, *16*(3), 337. https://doi.org/10.20956/jmsk.v16i3.9436

Ruspayandi, T., Bantacut, T., Arifin, B., & Fahmi, I. (2022). Market-Approach-Based Policy to Achieve Rice Price Stability in Indonesia—Can It Be a Complement? *Economies*, *10*(12), 296. https://doi.org/10.3390/economies10120296

Savage, S., Singh, J., Parkin, B., & Adeoye, A. (2023, October 23). *The Return of the Rice Crisis*. Financial Times. Accessed from https://www.ft.com/content/416736ec-7960-496d-b6c8-fd7a2fd99668

Sayaka, B., Croppenstedt, A., & DiGiuseppe, S. (2007). *An Assessment of the Impact of Rice Tariff Policy in Indonesia: A Multi-Market Model Approach*. www.fao.org/es/esa

Setiawan, A. C., Mursinto, D., & Haryanto, T. (2021). DIRECT FERTILIZER SUBSIDIES ON PRODUCTION AND HOUSEHOLD INCOME IN INDONESIA. *Airlangga, Kec. Gubeng, Kota SBY*, *20*(1).

Setiawati, D., Daris, E., & Najamuddin, D. M. (2018). ANALISIS FAKTOR-FAKTOR YANG MEMPENGARUHI PEMBENTUKAN HARGA BERAS DI INDONESIA. *Jurnal Agribisnis*, *12*(1).

Shama, R. (2011). Food export restrictions: Review of the 2007-2010 experience and considerations for disciplining restrictive measures (pp. 1-12). Rome: FAO.

Strubenhoff, H. (2016, February 2016). The WTO's Decision to End Agricultural Export Subsidies is Good News for Farmers and Consumers. Brookings Institute. Commentary. Accessed from https://www.brookings.edu/articles/the-wtos-decision-to-end-agricultural-export-subsidies-is-good-news-for-farmers-and-consumers/

Sutton, W. R. & Weng, X. (2019). *Repairing the roof when the sun is out*. World Bank Blogs.

The Economist. (2015, November 12). *Paddy-whacked*. The Economist. Accessed from https://www.economist.com/finance-and-economics/2015/11/12/paddy-whacked

The Economist. (2023, July 26). *What will be the impact of India's rice-export ban? The Economist*. Accessed from https://www.economist.com/the-economist-explains/2023/07/26/what-will-be-the-impact-of-indias-rice-export-ban

UNCTAD. (2023). *Key Statistics and Trends In Trade Policy 2022*.

UNCTAD-World Bank. (2018). The Unseen Impact of Non-Tariff Measures: Insights from A New Database. https://unctad.org/webflyer/unseen-impact-non-tariff-measures-insights-new-database

USDA. (2023). *Rice Sector at a Glance*. Accessed from https://www.ers.usda.gov/topics/crops/rice/rice-sector-at-a-glance/

Warr, P., & Kohpaiboon, A. (2009). Thailand. In K. Anderson and W. Martin (Eds.). *Distortions to Agricultural Incentives in Asia*. (255–79). Washington, DC: World Bank.

World Bank (2006) *Managing Through a Global Downturn*, East Asia Update, World Bank, East Asia and Pacific Region, Washington DC.

World Bank. (2007). *Issues in Indonesian rice policy*. World Bank Office Jakarta.

World Bank. (2023). Food Security Update December 2023.