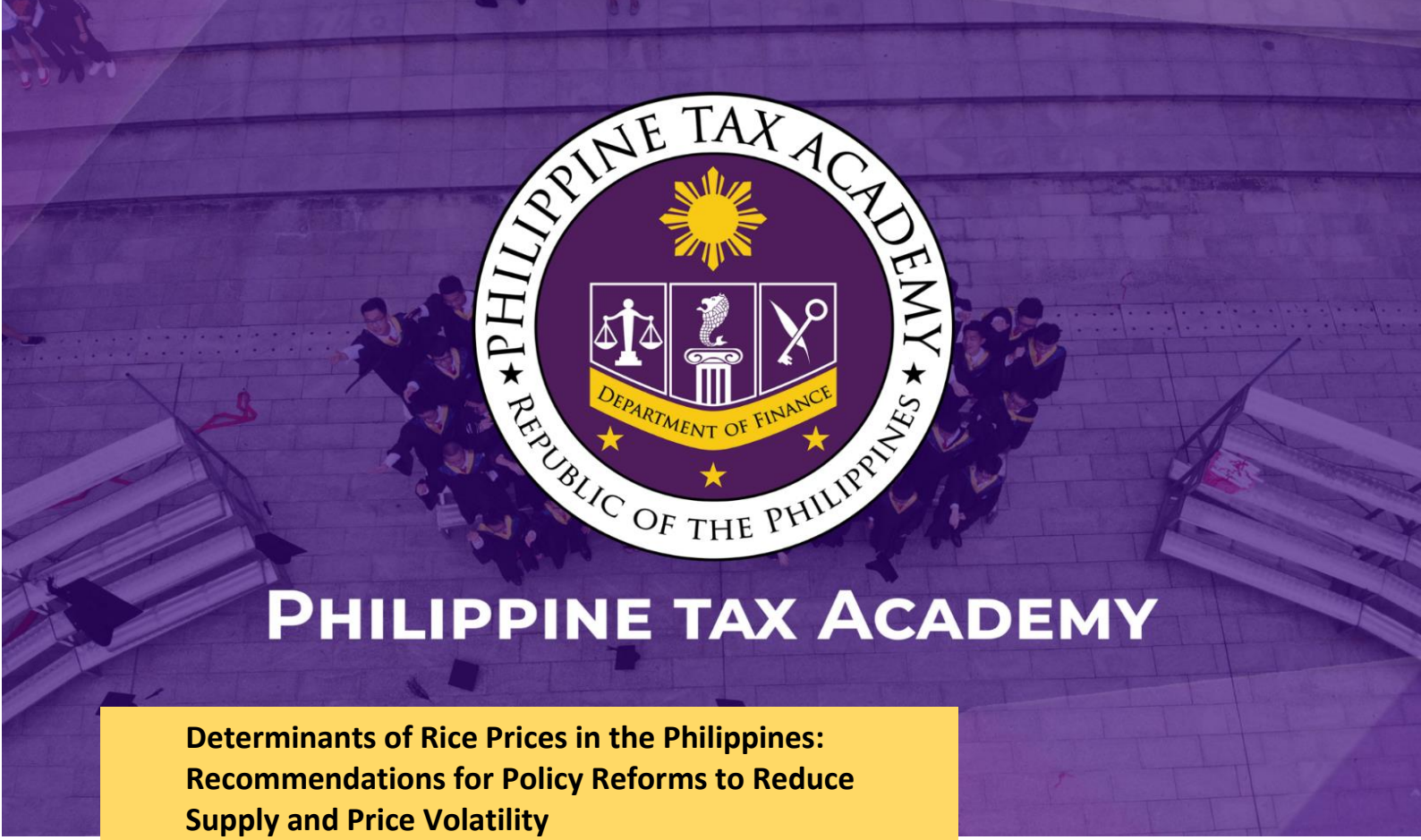

Determinants of Rice Prices in the Philippines: Recommendations for Policy Reforms to Reduce Supply and Price Volatility

Gil S. Beltran
President

Abstract

This study explored the determinants of rice prices in the Philippines with the aim of identifying policy reforms that can reduce supply and price volatility. Regression models and time series data were used to determine the impact of production, stock inventory, and population growth on rice prices. The results indicated that the farmgate price is influenced by the production growth, the growth of rice inventory, and the population growth while both the wholesale and retail prices are influenced by the farmgate price and the world price. These suggest that policy measures crafted to reduce supply and price volatility should primarily focus on productivity enhancements, an improved stock management program, an information system that enables stakeholders to make informed decisions, a gradual reduction of tariffs in alignment with the improvement of productivity, and an insurance system that enables a quick recovery in the event of a disaster. Recommended policy actions for these key elements are discussed.

Keywords: *Policy Reforms, Regression Models, Rice Inventory, Rice Prices, Rice Production, Rice Supply*

**This technical paper is part of an ongoing study, and its contents may be modified or revised in the future based on the outcomes of its upcoming phases. Feedback, comments, and suggestions from the PTA stakeholders, researchers, academic community, and/or research institutions are welcome within 60 days from the date of posting. Contact us through email: reid@doftaxacademy.gov.ph*

Determinants of Rice Prices in the Philippines: Recommendations for Policy Reforms to Reduce Supply and Price Volatility

INTRODUCTION

The movements of rice prices attract the headlines in the Philippines due to the importance of rice in the Filipino consumer's diet and its large share in the consumer basket. The rice price increases are monitored by news programs and are closely followed by stakeholders. Due to the political sensitivity of the rice prices, discussions on the issue elicit sharp exchanges between stakeholders that reverberate in the media, the halls of government agencies, and public places. However, the causes and consequences of such price movements are not properly discussed. This paper discusses the reasons why rice prices keep rising despite efforts to keep them low and why they dropped when the Republic Act 11203, otherwise known as the Rice Tariffication Law, was signed on February 14, 2019.

Objective

This study examined the factors affecting rice prices in the Philippines with the aim of identifying policy measures that would lead to a more stable economic environment for rice production and consumption. It analyzed the impact of the recent rice sector reforms, particularly, the Rice Tariffication Law five years after its passage, and recommended policy actions to preserve the gains therefrom.

LITERATURE REVIEW

Rice sector reform studies were first conducted by the Asian Development Bank (ADB) in 1986 when it offered to create a reform program called the Grains Sector Development Program (GSDP) for the Philippines. The GSDP prioritized policy and institutional reforms that centered on the following: (a) adopting a more liberalized and cost-effective approach to pricing and importing grains; (b) enhancing the management of grain buffer stocks; (c) restructuring the National Food Authority to transition from a grains marketing monopoly into a public regulatory agency and separate private sector marketing corporations; and (d) implementing a more targeted and effective food subsidy program for the poor (Asian Development Bank, 2000). In one of the ADB-commissioned studies, Cororaton (2004) concluded that market reforms are necessary and should be supported by safety nets for the adversely affected rice farmers. Unfortunately, the GSDP failed to produce the desired reforms. A study conducted by Tolentino in 2002, with a revised version in 2006, explained why the rice sector reform program failed to succeed despite its sound economic design. From the political economy perspective, the study identified the main problem as the lack of ownership of the reform due to the frequent changes in the leadership of the Department of Agriculture (DA) and the absence of strong support from the Philippine Congress (Tolentino, 2002). Similarly, Balisacan and Ravago (2003) argued that the NFA, which is the government's rice price and supply stabilization arm, "instituted interventions that exacerbated market

failures, increased the volatility of domestic prices, discouraged the private sector from investing in efficiency-enhancing distribution of storage facilities, and bred corruption and institutional sclerosis." In the 2008 ADB Validation Report on the GSDP, the project was rated as "unsuccessful."

Thereafter, several studies were carried out by a research team of the Philippine Institute of Development Studies (PIDS) composed by Briones, Galang, and Tolin from 2013 to 2017. In their first study, they debunked the 100% rice self-sufficiency program and concluded that such a claim can only succeed with the risk of "an unreasonably high price of rice" (Briones et al., 2013). This was supported by the findings of Clarete (2015) who concluded that rice self-sufficiency "is costly insurance from food insecurity risks" and that the "risk of not finding rice to buy in the world market is low considering that nearly half of the world's exportable rice comes from the ASEAN region." In their final study, Briones et al. (2017) reported that "the preferred option is to pursue tariffication, with revenues earmarked as a safety net for rice farmers and that "a 35-percent tariff rate seems appropriate as a tariff equivalent." This study was liberally quoted by the Department of Finance (DOF) in its position paper presented to the Philippine Congress and in its *DOF Economic Bulletin* on rice sector reform during the discussions on the rice tariffication bill which started in 2017 (Department of Finance, 2017). A recent study by Dait (2023) suggested that, to maintain the country's access to rice security, a long-term agricultural strategy should be institutionalized that focuses on increasing the land area used for rice production, promoting the use of irrigation, and utilizing other inputs aside from inorganic fertilizers. Moreover, proactive climate variability adaption measures are required to mitigate the long-term effects of changes in temperature and rainfall on rice production in the Philippines (Dait, 2023).

Significance of the Rice Market

In the Philippines, rice is the staple food in the diet. It accounts for 25% of the consumer basket, the highest among Asian countries (Ganbold, 2022). Rice production accounts for 17% of total agricultural output and employs 2.4 million Filipino farmers (Philippine Statistics Authority, 2020). In particular, rice farms account for 4.8 million hectares out of 13.42 million hectares under agricultural crop cultivation, constituting 35.8% of the country's total land area devoted to agriculture (Philippine Statistics Authority, 2020). However, decades of poor policy implementation and management have led to high levels of trade protection, high production costs, and high retail prices for Filipino consumers. At the same time, the intensified climate change and the present war in Ukraine have destabilized the rice supply, made prices unstable, and pushed the marginal rice farmers and the poor consumers further to extreme poverty.

The domestic rice market is supplied by products sourced from both the domestic production and the imports. From 1990 to 2022, the domestic rice production was increased by 2.4% annually while the consumption rose by 2.9%. The share of the domestic production to total supply decreased from 91% to 77%. As a result, the weight of the imported rice in the consumer basket has risen from 9% to 23% as shown in Table 1. When India, the biggest rice exporter, implemented a rice export ban on non-Basmati rice in September 2023, to protect its domestic consumers, world rice prices jumped to US$536/MT, pushing up the domestic

rice prices. This was a repeat of the 2008 event when the world prices of rice rose to US$700/MT due to a similar ban induced by a sharp fall in production caused by drought (Table 1).

The domestic production is protected by tariffs. A 35% tariff on rice imports[1] effectively sets the domestic retail price of rice at levels higher than the world price. Before the passage of the Rice Tariffication Law, quantitative restrictions (QRs) before 2019, pushed the retail price by percentages to as high as 288% than the tariff rate in 2001. Nonetheless, the National Government subsidy amounting to 2.5% of GDP (Jha and Mehta, 2008) reduced the retail price to 91% in 2008 and 125% in 2009 of world price (Table 2).

From 1990 to 2002, the domestic rice production increased by 2.3%. However, the production growth has been declining from 2.6% in 1990-2000 to 2.2% in 2000-2010 and further went down to 1.9% in 2010-2020. On the other hand, rice consumption grew by 2.5% in 1990-2000, 3.5% in 2000-2010, and declined to 1.4% in 2010-2020. Comparably, the population grew by 1.7% annually and slipped to 1.4% in the decade 2010-2020. Thus, the consumption growth outstripped both the production and the population growth during this period.

Rice Prices

The Philippine Statistics Authority (PSA) monitors three categories of rice prices, to wit:

1. farmgate price;
2. wholesale price; and
3. retail price.

The farmgate price of dry palay (rough rice) is the price at which farmers sell unmilled product to traders, excluding the selling and transport costs. On the other hand, the wholesale price is the price at which traders sell to retailers who buy the product in large volumes. The retail price is the price at which retailers sell the product to consumers. The consumers are the end users of the product, buying the product without reselling it. For simplicity, this study used the average price in the Philippines as reported by the PSA.

For world rice prices, the Thailand export price is used as reported by the Thai Rice Exporters Association (TREA) on its website. A similar price is reported by the International Monetary Fund (IMF) in its publication, *International Financial Statistics*. The price of white rice, 5% broken among different rice types, was chosen because it approximates the average import price of the Philippines from Thailand. These prices are expressed in the current Philippine pesos, except for the Thai export price which is reported in the current US$ and needs to be converted to the Philippine pesos using the average exchange rate for the period.

[1]Under Executive Order 135 signed in 2021, the 35% tariff rate applies on rice originating from ASEAN and non-ASEAN. For non-ASEAN, the 35% rate is temporary and is in effect only up to the end of 2024. The tariff rate for non-ASEAN reverts to 40% for minimum access volume (MAV) in-quota and 50% MAV out-quota after this date.

For the time series regression analysis, the prices are converted to constant pesos using the GDP price deflator reported by the PSA.

Recent Rice Sector Reform

After decades of price regulation and tight control of domestic trading by the government, the Philippines decided to pursue reform in its rice sector. Corollary to this, the Rice Tariffication Law of 2019 aims to modernize the agricultural sector and make it globally competitive by liberalizing the importation, exportation, and trading of rice. The law lifted the quantitative import restriction on rice and replaced it with tariffs. Under this law, businesses and individuals can buy rice from foreign sources after the payment of the 35%–50% tariff. The law has led to a reduction in the price of rice with the retail prices dropping from Php 44.99/Kg in 2018 to Php 41.68/Kg in 2020. However, the price has since increased to Php 47.41/Kg as of December 2023 due to higher world prices triggered by adverse climate developments in major rice-producing countries.

According to the DOF, the Rice Tariffication Law has generated Php 46.6 billion for the farm sector from 2019 to 2021. From this, the amount of Php 10 billion a year was used to fund the Rice Competitiveness Enhancement Fund (RCEF), which is the government initiative to help rice farmers improve their competitiveness and income. The RCEF program has different components, including the mechanization program which aims to increase rice farmers' productivity and profitability through the use of appropriate production and postproduction mechanization technologies. The program is implemented with the assistance of local government units (LGUs). Another RCEF component is the credit facility which covers farmers listed in the Registry System for Basic Sectors in Agriculture (Department of Agriculture, n.d.).

The production cost of rice dropped from Php 11.76/Kg in 2018 to Php 11.45/Kg in 2019, a 2.6% decline in current peso terms. Using the GDP deflator index, the production cost declined from Php 11.48/Kg (2017=100) to P10.95/Kg in 2021, a 4.6% reduction. The yield per hectare also rose from 3,972 Kg to 4,045 Kg, 1.8% higher just after a year. It has since increased further to 4,154 Kg in 2021, a 4.5% improvement over 3 years (Table 3).

A more competitive rice market has also emerged with less price and import quantity regulation by the Department of Agriculture, narrowing down the price margins of rice traders. Since 2019, the domestic wholesale price of rice has declined from 179% of the world price (in this case, the Thailand price) to 137% in 2023, the price margin closer to the tariff imposed on imported rice. The ratio of retail price to world market price also declined from 197% to 148 %. The ratio of retail price to farmgate price has also narrowed from 252.1% to 208.5% (Table 2C).

METHODOLOGY

A regression analysis of rice prices was conducted to identify variables that need to be addressed by policy action. The Data for the farmgate, wholesale and retail prices; rice

production and stock inventory; and rice consumption and population growth were taken from the reports of the DA and the PSA. Regression models and time series data were used to determine the impact of production, stock inventory, and population growth on rice prices.

Results

Regression Analysis of Rice Prices

What are the factors that determine domestic rice prices? The regression analysis using data from 2000 to 2023 suggested that:

1. The farmgate price is influenced by the production growth, the growth of rice inventory, and the population growth.

Equation 1:

Farmgate price of rice	=	40.03 ln population	- 8.75 ln production	– 2.87 ln stock inventory
		t = 4.41	t = -2.86	t = -1.4

Adj R^2 = 0.90 n =24 D.W. = 1.85

The independent variables population and production showed significant t-values at 1% level of significance while the stock inventory growth showed a 17% level of significance. The deviation is due to a high correlation (0.72) between the stock inventory and the production using the 1990 to 2023 data. This is expected because the production contributes to a part of the annual increment in-stock inventory.

Alternative equations regressing the production and the stock inventory separately showed both independent variables registering higher t-values.

Equation 1.1:

Farmgate price of rice	=	41.44 ln population	– 13.62 ln production
		t = 5.56	t = -5.09

Adj R^2 = 0.90 n= 24 D.W. = 1.77

In Equation 1.1, all independent variables are significant at 1% level of significance. Replacing the production with the rice stock inventory in this equation, using the same database, resulted in higher t-ratios, as follows:

Equation 1.2:

Farmgate price of rice = 10.56 ln population – 4.36 ln production
t = 3.28 t = 2.29

Adj R^2 = 0.87 n =24 D.W. = 1.85

The adjusted R^2 was slightly lower than in Equation 1.1 but the t-values of both the population and the stock inventory remained significant at 1% and 3% level of significance, respectively.

The wholesale price is influenced by the farmgate price and the world price as evident in the Equation 2 results. The coefficients of the farmgate price and the world export price reflect their relative shares in the consumption basket.

Equation 2:

Wholesale price = 1.5 farmgate price + 0.24 world export price
t = 12.25 t = 1.70

Adj R^2 = 0.94 n = 24 D.W. = 1.74

2. The retail price is influenced by both the farmgate price and the world price.

Equation 3:
Retail price = 1.85 farmgate price + 0.24 world export price
t = 17.52 t = 2.77

Adj R^2 = 0.94 n = 24 D.W. = 1.63

All independent variables are significant at 1% level of significance.

The Philippines is a part of the world rice market with the domestic prices heavily influenced by developments in the world market. The coefficient for world export price is 0.24 for both the wholesale price and the retail price, which is almost the same as the share of imported rice (0.23) in the domestic market in 2022. No amount of domestic price and import quantity regulation could lower the price down the farmgate price and world export price without a substantial subsidy, which the country cannot afford.

DISCUSSION

The regression results indicate that the ideal programs for the rice sector should include these key elements: productivity enhancements, an improved stock management program, an information system that enables stakeholders to make informed decisions, a gradual reduction of tariffs in alignment with the improvement of productivity, and an insurance system that enables a quick recovery in the event of a disaster.

a. Productivity enhancements

A rice productivity program that fosters efficient farm yields through better seeds, modern farm implements and practices, and more irrigation facilities would contribute to price stability. For example, a Filipino company SL Agritech Corp., which is reportedly the largest seed producer in Asia, is marketing a hybrid rice seed variety called SL8H. Based on farm testing conducted in Iloilo, SL8H could raise yield from 4.154 MT/ha in 2021 to 10–12 MT/ha. This variety has a potential to boost productivity by 241 % to 289%.

The use of new milling technology, modern drier, or mechanical harvester would reduce wastage and increase recovery from 60% to 65%. This could enhance the production efficiency by 8.3%. (Department of Finance, 2017). Since manual harvesting takes more time and is usually more expensive, especially during the harvest season when the demand for workers surges, the use of farm machinery by farmers' cooperatives allows farmers to harvest quickly whenever a strong typhoon approaches an area. This also holds true for areas that are prone to drought or other natural disaster.

Rice production is water-intensive. Existing rice varieties consume, on average, about 2,500 liters of water supplied either by rainfall and/or irrigation to a rice field to produce 1 Kg of palay (rough rice). According to the International Rice Research Institute (IRRI), "these 2,500 liters account for all the outflows of evapotranspiration, seepage, and percolation" (Bouman, 2008). This requires more efficient rainfall storage and water management in the country's dams. The release of excess water from dams that flood river basins during the rainy season is better avoided by reengineering the country's dam systems to expand storage capacity.

Irrigation facilities may also need to expand. It takes 115 days from planting to harvesting a rice crop (Tan, 2021). An irrigated rice farm can therefore have as many as three harvest cycles a year as opposed to rainfed farms which can only support a single cropping cycle in a year. Irrigation could potentially increase harvest by thrice in 1.46 million hectares of unirrigated rice farms in the country (PSA, 2023 as cited by the Philippine Rice Research Institute), raising the overall production in the country by 91.3%. In line with this, the areas of irrigable farms should be evaluated to ensure productivity improvement. Likewise, assuming 2017 prices, a Php 4 billion budget annually for the National Irrigation Authority (NIA) could raise irrigation coverage by 1.3M hectares (Department of Finance, 2017).

Furthermore, minimizing wastage across rice production, distribution, and consumption among different institutions involved in the rice business could help lower costs and raise viability. Cost reduction measures such as better drying, milling, and handling facilities, and better farm-to-market roads and ports will enhance the competitiveness of rice farming and trading. Additionally, consumers should be educated on proper rice handling and storage to avoid wastage, lengthen the shelf life, and preserve the nutrients, flavor, and overall product quality. This could reduce an estimated **Php 7.27 billion** worth of rice in a year from being wasted in the country based on the 2008 data. This is equivalent to 12.2% of the country's total rice imports which could feed around 2.5 million Filipinos in a year. In 2016, the PSA cited "an average individual wastage of around 335 grams from annual rice leftover." Expanding the RICEponsible campaign to beyond the 42 LGUs presently involved can promote practices for more efficient rice consumption to a wider audience (Philippine Rice Research Institute, 2017).

Professionalizing rice farming by tapping research findings and keeping farmers updated on the latest good farming practices would also contribute to better results. For instance, with DA as a proponent, research on rice varieties that consume less volume of water and endure higher temperatures is a step in the right direction (Department of Agriculture, n.d.). A better agricultural extension program is also necessary to implement scientific farming at the grassroots level. A rice production growth that exceeds the annual population growth which is down to 1.4% per year could also ease the demand and reduce pressures on the farmgate price. It is worth noting that rice consumption has grown by 2.2% annually from 2000 to 2002, resounding the need for better rice production.

b. Rice stock management

A better rice stock management that capitalizes on better domestic production levels would contribute to stable prices. Enabling the NFA to keep a stable buffer will dampen attempts at speculation and price rigging. Based on Equation 1.2, a percentage rise or drop in the average stock inventory, respectively, decreases or raises the farmgate price by 4.36%. The NFA may need to set a benchmark for the ideal stock inventory that quells supply and price manipulation.

c. Information system

An up-to-date information system that allows stakeholders in the industry to monitor prices throughout the country similar to the TREA website and enables stakeholders to tap favorable prices in rice-deficit areas would help in making the rice market more vibrant and competitive. This could also help stabilize prices in these areas.

d. Tariff policy

Due to the negative impact of high rice prices on poor consumers and the nutritional status of children, the 35% tariff may be gradually reduced during the medium term in alignment with productivity improvement. The latest data show that the production cost of rice in the Philippines is 7.0% higher than the arithmetic average for six (6) Asian countries (Table 4). The yield per hectare is also 10.6% lower than the average in these countries (Table 5). Using December 2023 prices and assuming 7% freight and insurance charges which are the average for all traded commodities, the milled rice production cost of Php 18.64/Kg as of 2021 should decrease by Php 3.83/Kg to bring the tariff rate down to 10%. At this level, the average production cost should fall somewhere between the production costs of Thailand and India.

e. Crop insurance

Due to the increasing frequency of extreme weather phenomena stemming from climate change, the role of a viable and sustainable index-based crop insurance system for farmers becomes crucial. With a crop insurance system in place, farmers hit by natural disasters can claim benefits to enable them to replant and recover after an adverse event. Equally, a subsidy fund may need to be set up by Philippine Crop Insurance Corp. (PCIC) to help the poorest of the poor farmers. While the rest of the farmers who can afford the insurance premium can be covered by the private sector insurance industry. The PCIC may need to retool itself to be able to manage this fund well and create and maintain a list of qualified beneficiaries. These considerations could help stabilize the rice supply.

CONCLUSION AND RECOMMENDATIONS

The results of regression analyses indicated that the farmgate price is influenced by the production growth, the growth of rice inventory, and the population growth while both the wholesale and retail prices are influenced by the farmgate price and the world price. These suggest that policy measures addressing supply and price volatility should primarily focus on improving rice production and inventory stock management. In addition, policymakers and administrators in the rice sector, as well as lawmakers, should consider introducing gradual adjustments on tariffs aligned with the rice production improvement. The Philippine government, aside from providing monetary and non-monetary assistance to farmers, should also ensure that an equitable insurance system is in place to help rice farmers recover during an unexpected loss due to world rice market volatility, climate changes, or natural disasters. Aspiring for a long-term solution, the government should invest in expanding the capacity of the country's dam and irrigation systems to provide adequate water supply to farmland during the dry season. Furthermore, a vibrant information system that would allow rice stakeholders to monitor prices across the country should be established. This could give them an advantage in favorable prices in regions where rice shortage exists, making the market more competitive.

STATISTICAL APPENDICES

Table 1. Rice Production and Imports, 1990-2022.

Year	Production (MT)	Imports (MT)	Local Production as % of Supply	Imports as % of Supply
1990	6,095	606	91.0%	9.0%
1991	6,326	-	100.0%	0.0%
1992	5,970	1	100.0%	0.0%
1993	6,170	202	96.8%	3.2%
1994	6,892	-	100.0%	0.0%
1995	6,894	264	96.3%	3.7%
1996	7,379	867	89.5%	10.5%
1997	7,370	722	91.1%	8.9%
1998	5,595	2,171	72.0%	28.0%
1999	7,708	834	90.2%	9.8%
2000	8,103	639	92.7%	7.3%
2001	8,472	8,081	51.2%	48.8%
2002	8,679	11,967	42.0%	58.0%
2003	8,829	886	90.9%	9.1%
2004	9,481	1,001	90.5%	9.5%
2005	9,550	1,822	84.0%	16.0%
2006	10,024	1,716	85.4%	14.6%
2007	10,621	1,806	85.5%	14.5%
2008	10,997	2,432	81.9%	18.1%
2009	10,633	1,755	85.8%	14.2%
2010	10,315	2,378	81.3%	18.7%
2011	10,911	707	93.9%	6.1%
2012	11,793	1,041	91.9%	8.1%
2013	12,059	398	96.8%	3.2%
2014	12,405	1,087	91.9%	8.1%
2015	11,870	1,478	88.9%	11.1%
2016	11,528	605	95.0%	5.0%
2017	12,607	885	93.4%	6.6%
2018	12,469	2,002	86.2%	13.8%
2019	12,305	3,118	79.8%	20.2%
2020	12,619	2,219	85.0%	15.0%
2021	13,054	2,967	81.5%	18.5%
2022	12,921	3,863	77.0%	23.0%

Source: Philippine Statistics Authority

Table 2A. Thailand Export Price of Rice

Year		Export Price/MT USD	Export Price/Kg USD	FOB Export Price/Kg Php White 5% brokens	FOB Export Price/Kg Php 2018=100
2000		203.69	0.20	8.33	16.16
2001		172.71	0.17	6.75	12.34
2002		191.83	0.19	8.48	14.83
2003		199.46	0.20	10.17	17.24
2004		245.78	0.25	12.68	20.22
2005		287.81	0.29	15.60	23.37
2006		303.52	0.30	17.01	24.17
2007		332.39	0.33	18.31	24.36
2008		700.2	0.70	35.93	45.89
2009		589.38	0.59	27.20	33.85
2010	520.49	491.72	0.49	21.87	26.04
2011	551.71	549.40	0.55	23.79	27.19
2012	580.24	573.48	0.57	24.22	27.11
2013	519.31	516.81	0.52	21.94	24.04
2014	426.48	422.83	0.42	18.77	19.95
2015	380.05	385.91	0.39	17.56	18.78
2016	388.26	394.81	0.39	18.75	19.79
2017	399.07	398.93	0.40	20.11	20.62
2018	403.08	420.56	0.42	22.15	22.15
2019	396.51	417.72	0.42	21.64	20.87
2020	477.84	496.71	0.50	24.64	23.53
2021	441.96	458.17	0.46	22.57	21.07
2022	419.06	436.58	0.44	23.79	21.07
2023	512.20	553.79	0.55	30.08	25.30

*Free-on-Board (FOB)

Sources: Thailand Rice Exporters Association & Philippine Statistics Authority

Table 2B. Philippines' Wholesale and Retail Rice Prices.

Year	Wholesale Price/Kg Php	Wholesale Price/Kg Php, 2018=100	Retail Price/Kg Php	Retail Price/Kg Php, 2018=100
			Well Milled	
2000	17.77	34.48	19.45	37.74
2001	17.61	32.20	19.43	35.53
2002	18.21	31.86	19.98	34.96
2003	18.3	31.01	20.2	34.23
2004	19.12	30.48	21.04	33.54
2005	20.93	31.36	22.88	34.28
2006	21.39	30.39	23.56	33.48
2007	22.89	30.46	24.72	32.89
2008	29.81	38.07	32.71	41.78
2009	31.17	38.79	34.12	42.46
2010	31.72	37.77	34.34	40.89
2011	32.01	36.57	34.73	39.68
2012	32.70	36.59	35.30	39.50
2013	34.50	37.80	36.87	40.40
2014	39.36	41.84	42.32	44.98
2015	38.31	40.96	42.04	44.95
2016	38.10	40.21	41.72	44.03
2017	38.91	39.89	42.14	43.21
2018	42.42	42.42	44.99	44.99
2019	38.80	37.43	42.73	41.22
2020	37.87	36.16	41.68	39.80
2021	37.70	35.20	43.18	40.31
2022	38.36	33.97	43.58	38.60
2023	42.72	35.94	47.41	39.88

Source: Philippine Statistics Authority

Table 2C. Farmgate Prices of Rice and Price Ratios

Year	Farmgate Price (Dry Palay)	Farmgate Price (Dry Palay)	Wholesale as % of Thailand Export Price	Retail Price as % of Thailand Export Price	Retail Price as % of Farmgate Price
	Per Kg	Php, 2018=100			
2000	8.42	16.34	2.13	2.34	231.0%
2001	8.17	14.94	2.61	2.88	237.8%
2002	8.82	15.43	2.15	2.36	226.5%
2003	8.84	14.98	1.80	1.99	228.5%
2004	9.45	15.06	1.51	1.66	222.6%
2005	10.43	15.63	1.34	1.47	219.4%
2006	10.46	14.86	1.26	1.39	225.2%
2007	11.22	14.93	1.25	1.35	220.3%
2008	14.13	18.05	0.83	0.91	231.5%
2009	14.63	18.21	1.15	1.25	233.2%
2010	14.81	17.63	1.45	1.57	231.9%
2011	15.05	17.20	1.35	1.46	230.8%
2012	15.92	17.81	1.35	1.46	221.7%
2013	16.53	18.11	1.57	1.68	223.0%
2014	19.46	20.68	2.10	2.25	217.5%
2015	17.55	18.76	2.18	2.39	239.5%
2016	17.76	18.74	2.03	2.22	234.9%
2017	18.08	18.54	1.94	2.10	233.1%
2018	20.09	20.09	1.91	2.03	223.9%
2019	16.95	16.35	1.79	1.97	252.1%
2020	16.76	16.00	1.54	1.69	248.7%
2021	16.76	15.65	1.67	1.91	257.6%
2022	17.44	15.45	1.61	1.83	249.9%
2023	20.90	17.58	1.42	1.58	226.8%

Source: Philippine Statistics Authority

Table 3. Production Cost and Yields

Year	Cost/Kg Php	Cost/Kg Deflated using GDP Deflator 2017=100	Yield/ha Kg	GROSS RETURNS Php	GROSS RETURNS Deflated using GDP Deflator 2017=100	NET RETURNS Php	NET RETURNS Deflated using GDP Deflator 2017=100	Net Profit - Cost Ratio
2002	6.7	11.20	3,188	27,483	45,937	6,126	10,240	0.29
2003	6.65	10.78	3,370	29,791	48,294	7,387	11,975	0.33
2004	7.05	11.08	3,513	33,198	52,172	8,428	13,245	0.34
2005	7.63	11.32	3,588	37,423	55,516	10,037	14,890	0.37
2006	7.61	10.65	3,684	38,535	53,924	10,498	14,690	0.37
2007	7.86	10.46	3,801	42,647	56,754	12,785	17,014	0.43
2008	9.62	12.04	3,770	53,270	66,652	17,002	21,273	0.47
2009	10.81	13.00	3,409	50,324	60,539	13,483	16,220	0.37
2010	10.5	12.32	3,622	53,859	63,173	15,830	18,568	0.42
2011	10.88	12.23	3,678	55,795	62,727	15,792	17,754	0.39
2012	11.05	11.94	3,845	62,366	67,393	19,891	21,494	0.47
2013	11.97	12.67	3,513	58,878	62,339	16,818	17,807	0.4
2014	12.33	12.79	4,002	80,320	83,311	30,956	32,109	0.63
2015	11.95	12.03	3,898	67,542	68,016	20,951	21,098	0.45
2016	11.04	11.18	3,869	67,427	68,304	24,719	25,040	0.58
2017	11.05	11.05	4,006	72,950	72,950	28,699	28,699	0.65
2018	11.76	11.48	3,972	79,670	77,750	32,976	32,181	0.71
2019	11.45	10.78	4,045	68,561	64,544	22,243	20,940	0.48
2020	11.5	10.72	4,089	68,519	63,844	21,492	20,025	0.46
2021	12.02	10.95	4,154	69,600	63,410	19,680	17,930	0.39

Source: PSA

Table 4. Comparative Cost of Producing 1 Kg of Palay
(*Php/Kg, 2013-2014)

Country	Unhusked Rice (Palay)	Milled Rice Equivalent
Vietnam	6.53	9.92
Thailand	8.81	13.68
India	9.87	14.99
PHILIPPINES (2021)	12.02	18.64
China	14.08	21.39
Indonesia	15.69	23.67
AVERAGE	11.23	16.63

Source: PIDS Policy Notes, March 2017
*Except the Philippines which uses 2021 data

Table 5. Rice Yields, 2021

Country	Yield (MT/ha)
China	7.11
Vietnam	6.07
India	4.21
Indonesia	4.21
PHILIPPINES	4.15
Malaysia	3.75
Thailand	2.99
AVERAGE	4.64

Source: FAO

Table 6. Philippines' Rice Production and Consumption

Year	Production Dry Palay (MT)	Growth (%)	Milled Rice Consumption (MT)	Growth (%)	Population Growth	
1990	6,095		6,701		63.64	
2000	8,103	2.62%	8,742	2.45%	76.81	1.72%
2010	10,315	2.22%	12,693	3.45%	92.72	1.73%
2020	12,619	1.85%	14,838	1.43%	108.3	1.42%
2022	12,921	1.75%	16,784	2.17%	110.8	1.38%
Average Growth		2.30%		2.82%		1.69%

Source: Philippine Statistics Authority

Table 7. Philippines' Rice Stock, Production, and Imports

Year	Stock Inventory (Monthly Average in MT)	Production Milled Rice (MT)	Imports (MTM)
	2,321.80		
2000	1,826.77	12,389,412	639
2001	2,097.98	12,954,870	8,081
2002	1,896.15	13,270,653	11,967
2003	2,095.95	13,499,884	886
2004	1,917.93	14,496,784	1,001
2005	1,797.05	14,603,005	1,822
2006	2,061.46	15,326,706	1,716
2007	1,715.38	16,240,194	1,806
2008	2,178.47	16,815,548	2,432
2009	2,555.73	16,266,417	1,755
2010	3,101.90	15,772,319	2,378
2011	3,009.04	16,684,062	707
2012	2,245.02	18,032,525	1,041
2013	2,169.06	18,439,420	398
2014	2,162.33	18,967,826	1,087
2015	2,626.71	18,149,838	1,478
2016	2,886.66	17,627,245	605
2017	2,436.92	19,174,601	885
2018	2,102.03	14,362,711	2,002
2019	2,502.48	18,811,827	3,118
2020	2,417.82	19,294,856	2,219
2021	2,167.05	19,960,170	2,967
2022	2,030.25	19,756,392	3,863

Source: Philippine Statistics Authority

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Philippine Tax Academy

7th Floor, EDPC Building, Roxas Boulevard corner Pablo Ocampo Sr. Street, Manila 1004
Tel. Nos. (+632)8523-6051, (+632)5317-6367
Email: info@doftaxacademy.gov.ph