Effectiveness of Imposing Maximum Retail Price and Import of Rice to Ensure Availability of Rice at an Affordable Price to Consumer

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ABSTRACT

The purpose of this study is to assess the effectiveness of imposing a maximum retail price of rice and import of rice to regulate the retail price of rice in the market to secure the consumer. Interviews were conducted with subject specialists in three key government organizations responsible for in intervening to rice market, two representatives of the rice miller association, and a representative of the importer's association. Market prices of main rice types in Colombo districts, maximum retail price, seasonal production, and import figures were used from 2015 to 2022 in this study. Further, legal aspects and the regulations made by respective agencies were used. One sample t-test and right tail tests through SPSS software were used in data analysis. The results of the one-sample t-test and the right tail test proved that the market price was significantly higher than the maximum retail price of the selected main rice types throughout the study period from 2015 to 2022. In addition, the Study identified that the maximum retail price was not imposed in the critical periods, from October to January of the following year in certain years. Further, the Study identified in certain years that rice imports were made without considering the rice availability from local production. It may be due to the absence of a proper mechanism to assess the stock availability or rice importers get an opportunistic advantage to import rice. The study assumed that secondary data used in the study would represent the retail market price. Even though the market has different grades, the study considered only the price of grade 01 based on the availability of data. The results of this study provide new insights to policymakers and the key players in the industry to revisit policy formulations and implementations. Even though most of the researchers have conducted their research based on the value chain and market concentration, this study focused the impact of policy-level implementations.

Keywords: Maximum retail price, Market price, Rice types, One sample t-test, Right tail test

INTRODUCTION

The Sri Lankan rice industry experiencing the critical issue of high price fluctuation, rice scarcity during the offseason, and lower prices for paddy during peak harvesting time. Lower prices during harvesting affect severely the farmers as more than 60 percent of the surplus production reaches the market within three months, especially in the *Maha s*eason (February,

March, and April) (Wijesooriya et al., 2021). High price fluctuation of rice creates uncomfortable for consumers. During the off-season, SMS millers are facing business failures due to the inability to compete with large-scale millers. During the last decade in Sri Lanka, the supply of rice from domestic production has been higher than the total household requirement except in 2017 and 2022. The domestic supply of rice in 2017 was lowered by 46.1 percent due to the unfavorable weather conditions that prevailed in the country. Accordingly, 1.7 million metric tons of rice was available for domestic consumption, which was a 0.65 million metric tons deficit from the 2.35 million metric tons annual consumption requirement (Central Bank, 2017). In 2022, due to the impact of the ban on the importation of inorganic fertilizer and other agrochemicals, the annual paddy production declined by 34 percent. Accordingly, 2.1 million metric tons of rice was available for domestic consumption, which was a 0.25 million metric tons deficit from the annual consumption of 2.35 million metric tons. However, to arrest the price pressure and to ensure food security, 0.783 million metric tons of rice were imported in the year 2022 (Central Bank, 2022).

Out of the country's total consumption, assumed around 33 % is supplied by a few large-scale leading rice millers, and the rest is supplied by small and medium-scale (SMS) millers (Thibbotuwawa, 2021). The operation of SMS millers is limited during the off-season due to the unavailability of paddy at an affordable price (Wijesooriya et al., 2021). The upstream of the rice value chain consists of farmers, collectors, middlemen, brokers, and millers. The downstream of the value chain mainly consists of wholesalers, retailers, supermarkets, and the consumer. The large-scale millers are the most specific actors in the middle of the rice value chain, which can impose market power either upstream or downstream, which is common in most paddy-producing countries (Weerahewa et al., 2017). Prasanna (2019) and Wijesooriya et al. (2021), urged that a few politically backed large-scale mill owners control the industry with their significant market share, storage facilities, sophisticated technology, easy access to credits, and political patronage. In addition, brand loyalty regulates the market since well-established brand loyalty is a crucial factor in the present concentrated market (Wijesooriya et al., 2021).

These technologically efficient large-scale millers are blamed for anti-competitive actions such as price discrimination, the artificial creation of scarcity, exercising lobbying power, earning an excessive profit, and creating entry barriers (Wijesinghe et al.,2017). The Consumer Affairs Authority (CAA) has been imposing a maximum retail price (MRP) for rice to stabilize and regulate the price in the market as the directive of the Government to secure the consumer. The

selling of rice beyond the MRP is illegal and CAA takes legal action in such instances. Further, Premarathna et al. (2016), stated that even though the prices are fixed by the government, the effectiveness is limited. In addition, the government allowed the import of rice to stabilize the market price by increasing the supply, especially during the off-season. However, Bandara et al., (2023) urged that the retail price of rice in the market vary with the availability and the imposed MRP has not regulated the market price of rice. Therefore, this study aims to assess the significance of imposing MRP and increasing supply through the import of rice to regulate the retail price of rice in the market.

LITERATURE REVIEW

Past scholars; Wijesooriya et al. (2017), Henegedara (2006), Damayanthi (2006), Wickremasinghe et al. (2016), and Prasanna (2018) highlighted the ineffectiveness of the government paddy purchasing mechanism to meet the need of producers and reduce the bargaining power of the farmers. This ineffectiveness of the government purchasing mechanism may be a result of the opportunistic actions of leading rice millers which has less evidence in the literature. On the other hand, the reduction of farmers' bargaining power may be due to the information asymmetry, and cost incurred to find the market information as well as may be due to the inability to process information. Wickremasinghe et al. (2016), urged that surplus production in the *Maha* season reached the market starting from Ampara. The sharp price drop was observed when the government's role in purchasing is not prominent, and it will continue for other regions as well. Wijesooriya et al. (2021), further, insisted that rice prices become stable to a certain extent when the guaranteed price (floor Price) is implemented and the ratio between the market price of paddy and the retail price of *Nadu* (long grain white) rice ranged between 1.97-2.2. When the guaranteed price has not been implemented, the ratio between the market price of paddy and the rice retail price tends to exceed the above 2.2. Damayanthi (2006), identified the issues in the government purchasing scheme, such as quality checking, delay in payments, delay in marketing, issues related to packing and transportation, the inefficiency of the purchasing mechanism, and corruption in the paddy purchasing mechanism, and the distant locations of paddy purchasing centers from urban areas. In addition, Weerahewa (2004), analyzed the impacts of liberal and protectionist policies on the paddy sector in Sri Lanka and revealed that liberalization would support farmers to be more competitive in an environment of significant holdings managed by entrepreneurial farmers. The economic gains of paddy farming in Sri Lanka were studied by Henegedara (2006) and he

revealed that less competitiveness in paddy marketing is the leading cause for farmers to have an unfair price or a price below the guaranteed price during the harvesting period. The lesser effectiveness of cooperative societies, farmer organizations, and government purchasing mechanisms is mainly due to less capability in handling market risks. Further, their study confirmed that price determination is mainly done by private traders. Prasanna (2018), confirmed that paddy farmers do not derive an adequate net income from paddy farming, and the majority of farmers are compelled to sell their harvest at a lower price during the harvesting period, which may be insufficient to cover the cost of production adequately. Their study further revealed the existence of an oligopolistic market structure and pre-modern economic characteristics of the paddy marketing channel. These characteristics eventually weakened the farmers' bargaining power in marketing and forced them to accept the trading terms offered by traders. Damayanthi (2006) studied the problems in paddy marketing and revealed that 85% of sampled farmers selling their harvest to private traders have issues related to having a fair price at the harvesting time. Wijesooriya et al. (2017), stated that the farm gate price of paddy during the harvesting months, is well below the guaranteed price, particularly in areas where high supply of to the market, low storage facilities, fewer infrastructure facilities, fewer private millers, and low-income families.

As investment made in rice mills is highly specific, most large-scale millers adopted vertical integration beyond the main role of paddy processing. They act in all the functions from farm gate to consumer such as buyers and stock controllers of paddy and as wholesalers and retailers of rice in many instances. This vertical integration and use of modern technology create the miller's ability to buy large quantities of paddy at once, especially during the harvesting period, and to maintain large paddy storage that can influence the rice market. This scale of the operation with an increasing return to scale can increase the productive efficiency of the milling operation as well (Wickremasinghe et al., 2016).

The physical asset specificity is highly relevant as established rice mills are difficult to move to other locations. Only a few exceptional studies are available in asset specificity across different industries while controlling for different types of functions. Site specificity is another important attribute as in certain districts such as Hambanthota and Kurunegala, millers are spread all over the paddy-producing areas of the district which enables farmers to directly sell their paddy to the mill while reducing the transaction cost. In contrast, in Anuradhapura and

Polonnaruwa, the role of village-level paddy collectors was prominent as mills are concentrated in urban areas which leads to higher transaction costs (Wickremasinghe et al., 2016).

Wijesooriya et al. (2021) urged that the limitation of the operation of SMS millers during the off-season due to the unavailability of paddy at an affordable price, created uncertainty for SMS millers to continue their business. Therefore, it is very clear that the poor performance of SMS millers even having around 57% of the market share is the main cause of the issues in the rice industry.

> Hypothesis 1: There is no significant difference between the Market Price of Rice and the Maximum Retail Price

MATERIALS AND METHODS

Two interviews were conducted with the subject specialist key officials of the Hector Kobbekaduwa Agrarian Research and Training Institute (HARTI), two interviews with the subject specialist of the Consumer Affairs Authority (CAA), two subject-specialized officers of the Paddy Marketing Board. In addition, two interviews were conducted with the representatives of the United Rice Producers Association and one interview with the Essential Food Importers Association.

HARTI is mandated to conduct research relating to the agrarian sector in Sri Lanka. Accordingly, the institute conducts market surveys, collects the daily market price of food commodities, and publishes them as daily, weekly, and monthly food commodity bulletins. Wijesooriya et al. (2021), stated that the Colombo district is considered as the central rice market in the country as it contributes high market potential as the production deficit is 25% in Colombo. Jayasinghe (2006) suggested that prices in Colombo and other regional markets are highly integrated either in surplus or deficit markets. Therefore, the retail market prices of rice in the Colombo district were used in this study. The monthly average retail market prices of major rice types; long grain white (LGW / *Sudu Nadu*), short grain white (SGW / *Sudu Samba*), redraw (RR / *Rathu Kekulu*), and white raw (WR / *Sudu kekulu*) published by the HARTI were used for this study for the period of the year 2015 to 2022. These selected four major rice types consume 91% of the population in the country; LGW: 33%, SGW: 16%, WR: 21%, and RR: 21%. (Ministry of Health and Indigenous Medicine, 2017).

Consumer Affairs Authority (CAA) was established as per the Consumer Affairs Authority Act number 09 of 2003. CAA is governed by a Board of Directors and a consumer affairs

council, an independent body that has been established to consult the Board of Directors. CAA is mandated to protect consumers against unfair trade practices, ensure consumers have adequate access to goods and services at competitive, and seek redress against unfair trade practices, restrictive trade practices, or other forms of exploitation of consumers by traders. Accordingly, the maximum retail price (MRP) has been imposed through a gazette notification, as per the provision in section 20(05) of the Consumer Affairs Authority Act number 09 of 2003. Accordingly, the MRP of four selected main rice types was used in this study from 2015 to 2022.

The government allows importing rice to increase the supply in the market expecting a stabilized market price of rice to secure consumers. The rice importers have been conducted either Government or through members of the Essential Food Commodity Importers Association. Therefore, the monthly rice import quantities to the country were obtained from the monthly food commodity bulletin published by HARTI.

DATA ANALYSIS

As identified through the interviews with the subject specialist of CAA, once MRP is imposed, the retail price of rice in the market should be either equal to or lower than the MRP. No, any organization can sell rice beyond the MRP. Hence if the MRP is imposed effectively, the market price of rice should be either equal to MRP or lower than MRP. If it is not imposed effectively, the market price of rice might be higher than the MRP. Therefore, MRP is considered as the specific value to analyze the deviation of market price with the MRP, and the appropriate statistical method is the one-sample T-test. The one-sample t-test is a statistical hypothesis test used to determine whether an unknown population means is different from a specific value (Oliver, 2014). Therefore, one sample t-test was used for the analysis.

The parameters for the t-test are as follows.

Test value = Maximum Retail Price (MRP) = μ_0

μ-mean monthly retail price

$H_0:\mu=\mu_0$ vs $H_1:\mu\neq\mu_0$

If t-value > Table-value then H_0 must be rejected.

Once the MRP is imposed, retail price $\leq$ MRP.

In the second step, the right tail test was conducted to identify whether the sample mean was higher than the test value for the instances where a significant difference was observed between mean monthly retail prices and the MRP in one sample t-test.

The right tail test is used when the sample mean is greater than μ_0

μ-mean monthly retail price

$$H_0: \mu \leq \mu_0 \quad vs \quad H_1: \mu > \mu_0$$

If $t<0$ then p-value=1-Sig/2
If $t>0$ then p-value=Sig/2
$$If\ P-value\ for\ t-test < 0.05\ then H_0\ must\ be\ rejected$$

RESULTS

Results of the Analysis of One Sample t-Test

The MRP was revised seven (7) times during the considered study period as shown in Table 01(The Gazette of the Democratic Socialist Republic of Sri Lanka, 2023). The results of the analysis of the one-sample t-test are also shown in Table 01. Accordingly, H_1 can be accepted in all four rice types from January 2015 to January 2017, from February 2017 to July 2017, from June 2020 to September 2020, from January 2021 to October 2021, and from May 2022 to December 2022 as the test values are higher than the critical value. The MRP of LGW from August 2017 to May 2019 was Rs. 74.00 and the MRP was not imposed for the other three selected rice types (The Gazette of the Democratic Socialist Republic of Sri Lanka, 2023) and H_1 can be accepted in the LGW rice type as the test value is higher than the critical value. The MRP from June 2019 to December 2019 was imposed only for SGW and LGW rice types and not for both WR and RR (The Gazette of the Democratic Socialist Republic of Sri Lanka, 2023). According to the results of the one-sample t-test shown in Table 01, H_1 can be accepted in the LGW and SGW rice types from June 2019 to December 2019 as the test values are higher than the critical value. Therefore, results proved that the market price (MP) of selected all four rice types during the considered period showed a significant difference with MRP.

Table 01: Results of the Analysis of One Sample T-test

Period	Type of rice	MRP	T- value vs $t_{\alpha, df}$	Sig.- Value	Result
January 2015 to January 2017	SGW	77.00	27.141>2.064	0	Accepted H_1
January 2015 to January 2017	LGW	68.00	12.670>2.064	0	Accepted H_1
January 2015 to January 2017	WR	66.00	5.558>2.064	0	Accepted H_1
January 2015 to January 2017	RR	66.00	4.191>2.064	0	Accepted H_1
February 2017 to July 2017	SGW	90.00	7.574>2.571	0.001	Accepted H_1
February 2017 to July 2017	LGW	80.00	9.458>2.571	0	Accepted H_1
February 2017 to July 2017	WR	78.00	4.835>2.571	0.005	Accepted H_1
February 2017 to July 2017	RR	78.00	4.179>2.571	0.009	Accepted H_1
August 2017 to May 2019	LGW	74.00	21.603>2.080	0	Accepted H_1
June 2019 to December 2019	SGW	85.00	13.859>2.447	0	Accepted H_1
June 2019 to December 2019	LGW	80.00	8.604>2.447	0	Accepted H_1
June 2020 to September 2020	SGW	98.00	3.899>3.182	0.03	Accepted H_1
June 2020 to September 2020	LGW	96.00	12.347>3.182	0.001	Accepted H_1
June 2020 to September 2020	WR	93.00	8.863>3.182I	0.003	Accepted H_1
June 2020 to September 2020	RR	93.00	10.653>3.182	0.002	Accepted H_1
January 2021 to October 2021	SGW	94.00	18.520 > 2.262	0	Accepted H_1
January 2021 to October 2021	LGW	92.00	14.951>2.262	0	Accepted H_1
January 2021 to October 2021	WR	89.00	18.807>2.262	0	Accepted H_1
January 2021 to October 2021	RR	89.00	11.851>2.262	0	Accepted H_1
May 2022 to December 2022	SGW	230.00	2.926>2.365	0.022	Accepted H_1
May 2022 to December 2022	LGW	220.00	3.283>2.365	0.013	Accepted H_1
June 2022 to December 2022	WR	210.00	3.268>2.447	0.017	Accepted H_1
June 2022 to December 2022	RR	210.00	3.779>2.447	0.009	Accepted H_1

Note: α= 0.05 significant level   (source: Author Calculated,2023)

The precise market price data is not available from January 2020 to May 2020 and from October 2020 to December 2020 may be due to the lockdown situation in the country as a result of the pandemic situation.

Results of the Analysis of the Right Tail Test

As the results of one sample t-test showed a significant difference between the MRP and the MP and the mean market prices were higher than the MRP, the right tail test was conducted to identify whether the MP was significantly greater than the MRP.

Table 02: Results of the Analysis of the Right Tail Test

Duration	Rice type	P value	P value vs α	Result
January 2015 to January 2017	SGW	0	P=0< 0.05	Accepted H_1
January 2015 to January 2017	LGW	0	P=0< 0.05	Accepted H_1
January 2015 to January 2017	WR	0	P=0< 0.05	Accepted H_1
January 2015 to January 2017	RR	0	P=0< 0.05	Accepted H_1
February 2017 to July 2017	SGW	0	P=0 < 0.05	Accepted H_1
February 2017 to July 2017	LGW	0	P=0< 0.05	Accepted H_1
February 2017 to July 2017	WR	0.002	P=0.002< 0.05	Accepted H_1
February 2017 to July 2017	RR	0.004	P=0.004< 0.05	Accepted H_1
August 2017 to May 2019	LGW	0	P=0< 0.05	Accepted H_1
June 2019 to December 2019	SGW	0	P=0< 0.05	Accepted H_1
June 2019 to December 2019	LGW	0	P=0< 0.05	Accepted H_1
June 2020 to September 2020	SGW	0.015	P=0. 015 < 0.05	Accepted H_1
June 2020 to September 2020	LGW	0	P=0< 0.05	Accepted H_1
June 2020 to September 2020	WR	0.001	P=0. 001 < 0.05	Accepted H_1
June 2020 to September 2020	RR	0.001	P=0. 001 < 0.05	Accepted H_1
January 2021 to October 2021	SGW	0	P=0< 0.05	Accepted H_1
January 2021 to October 2021	LGW	0	P=0< 0.05	Accepted H_1
January 2021 to October 2021	WR	0	P=0< 0.05	Accepted H_1
January 2021 to October 2021	RR	0	P=0< 0.05	Accepted H_1
May 2022 to December 2022	SGW	0.011	P=0. 011 < 0.05	Accepted H_1
May 2022 to December 2022	LGW	0.006	P=0.006<0.05	Accepted H_1
June 2022 to December 2022	WR	0.008	P=0.008<0.05	Accepted H_1
June 2022 to December 2022	RR	0.004	P=0.004<0.05	Accepted H_1

According to the results of the analysis of right tail test shown in Table 02, the study identified that all selected four main rice types during the considered period from 2015 to 2022 accepted H_1, which confirmed that the MP is significantly greater than MRP.
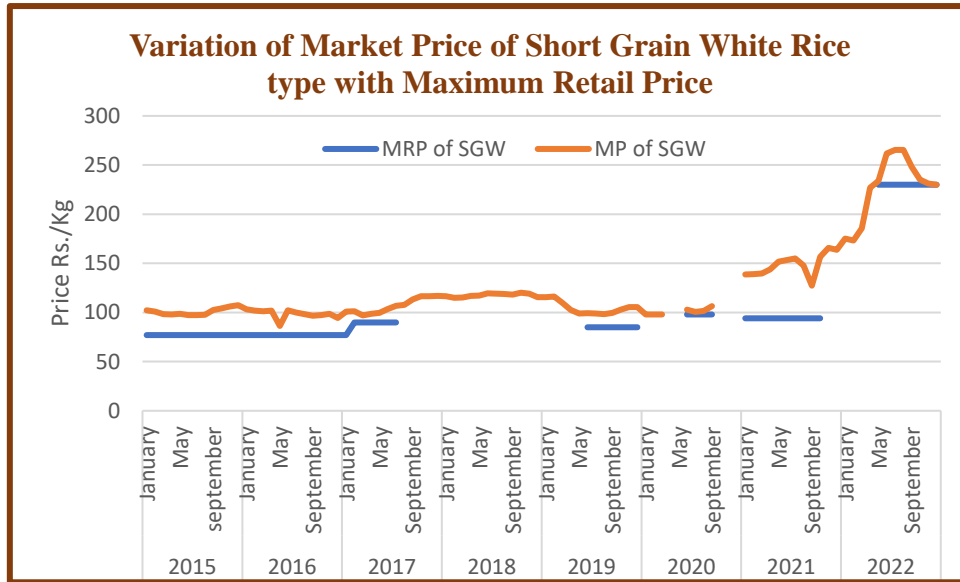

Figure 01: Variation of the Market Price of SGW Rice Types with MRP
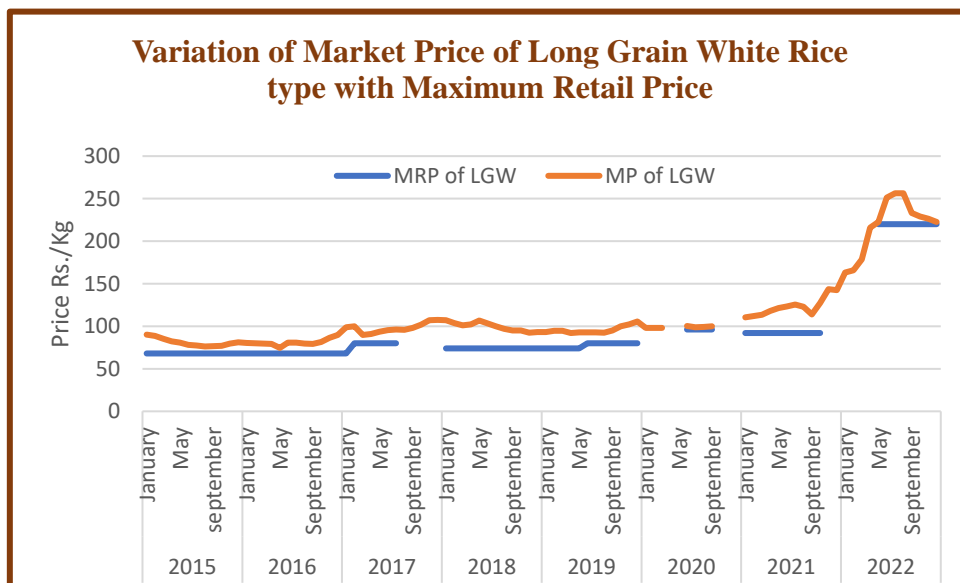
Figure 02: Variation of Market Price of SGW Rice Type with MRP

The variation of MP of SGW rice type with MRP is shown in Figure 01 and the variation of MP of LGW rice type is shown in Figure 02. Accordingly, the study identified that the MP of SGW and LGW was greater than the MRP during the entire study period.

The Variation of MP of WR and RR rice types is shown in Figure 03. Except in June 2016 MP of RR was greater than the MRP and MP of WR showed a higher MP than MRP during the entire study period from 2015 to 2022.
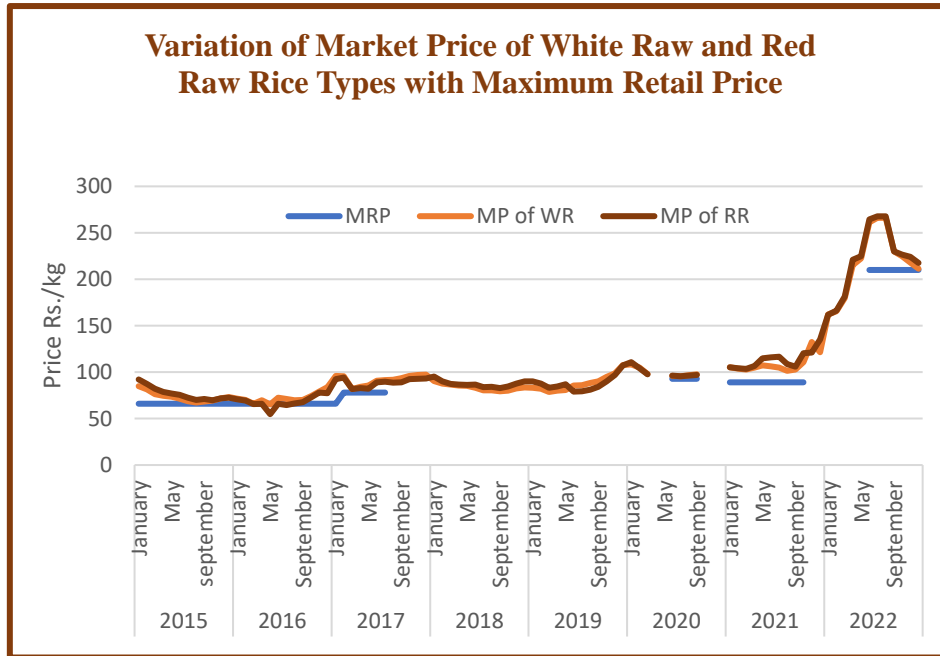
Figure 03: Variation of MP of WR and RR Rice Types with MRP

Results of the Interviews with Key Stakeholders

The study identified during the interviews with stakeholders that, once the CAA publishes the gazette through the media regarding the MRP, complaints come to the 1977 hotline regarding the places selling rice beyond the MRP. In addition, field officers are visiting the market as they have assigned targets. When a particular shop sells at a higher price than MRP, legal action will be taken against the shop owner. Sometimes if the product is branded, legal action is taken against the miller. Legal action can be taken only for organized business places (registered business places). Small boutiques and open markets (*Pola*) have not been considered for legal action as those places are not a legal body to charge against. At certain times, the miller will unload rice to the retail or wholesale shop indicating in the invoice an MRP. In addition, additional charges will be noted in the invoice as transport charges. Therefore, the selling price consists of the cost of rice as well as transport costs. However, the shop owner has to bear additional costs or needs to transfer them to the consumers, especially during the offseason.

Based on the consumer demand, processing technology, and quality of the raw material (Paddy), the rice available in the market has different quality levels even in the same rice type.

Moisture content, broken percentage, uniform color, and discolored grains are the main quality factors of rice (Rice Knowledge Bank, 2023). According to these quality factors, three grades; grade 1, grade 2, and grade 3 are available in the market at different prices. However, the MRP is imposed only for a rice type without considering the quality factors or the grades available in the market.

DISCUSSION

Impact of Impose of Maximum Retail Price

The study identified that imposed MRP to be done based on the quality factors enables millers to enhance the quality of rice in the industry. As the MRP is not considered a quality factor, almost all the millers tend to produce rice as per the imposed MRP to get higher profit. The representative of the United Rice Producers Association also proposed to impose MRP based on quality such as premium quality, normal quality, and lower quality. Otherwise, millers tend to reduce their quality due to the imposed MRP which affects competitiveness. The premium brands are available in the market as a handy and attractive package that is produced by large-scale millers. The validity of MRP for such premium handy packs is questionable.

As shown in Figures 01,02, and 03, all four rice types show almost higher MP than the MRP. Scholars: Thibbatuwawa (2021), and Wijesooriya et al. (2021) urged that the MP of rice be greater than the rest of the year from October onwards to the January of following years which requires the imposed MRP to regulate the MP of rice. However, the MRP for SGW was not imposed from October onwards to January of the following year in 2017, 2019, and 2021 even though it consumes 16 percent of the population. Similarly, the MRP was not imposed for LGW in 2016, 2019, and 2020 even though it consumes around 33 percent of the population. Further, the MRP for WR and RR was not imposed in 2017, 2018, 2019, 2020, and 2021 from October onwards to January of the following year even though it consumes more than 42 percent of the population. Accordingly, the study identified that the MRP was not imposed during the required period to regulate the MP in certain years. The main reason for not imposing MRP in the required time may be an opportunistic action of key players in the industry; may be large-scale millers, hidden political hand, importers, or policymakers.

Managing the Supply and Demand of Rice

Recent literature on the study of paddy-to-rice conversion was not available under local conditions and for the local paddy varieties. The paddy-to-rice conversion ratio varies with

processing types, machinery used, the quality of the rice, and the quality of the paddy. In modern types of machinery, the amount of brand removal is much higher to get a shiny appearance to attract consumers without considering the nutritional loss.

The percentage of broken in the rice is also low to meet the consumer attraction. The PMB used 63 percent for raw rice and 65 percent for parboiled rice as conversion ratios from paddy to rice based on the test conducted with the Institute of Post-Harvest Technology. However, the Department of Agriculture uses the conversion ratio from paddy to rice as 68 percent which is an overestimation in their crop forest publication (Department of Agriculture, 2022). Therefore, 63 percent were used in this study as a paddy-to-rice conversion ratio.

Representatives of the United Rice Producers Association urged with their experience that the cultivation of *Keeri Samba,* a kind of SGW paddy type is becoming popular in the country due to high demand and high income for farmers. However, the average production varies based on the different districts. The yield in Vavuniya and Mannar districts is around 2,500 Kg/ac and however, in Ampara or Polonnaruwa, the yield becomes 1,800Kg/ac. The milling outturn is also lower around 58 percent. In contrast, the yield of LGW (Nadu) becomes 2,200kg/ ac and the outturn will be around 64 percent. Under these circumstances, the discrepancy of national-level production statistics may have occurred due to this lower production and milling outturn of Keeri samba.

The last ten years' average paddy production in the *Maha* and *Yala* seasons are 2.599 million metric tons and 1.581 million metric tons respectively (Author, 2023). During the study period from 2015 to 2022, lower production than the average during both the *Maha and Yala* seasons was observed in 2017, and 2022 as shown in Figure 04. Even though the *Maha* season of 2018 showed a lower production than average, the annual production exceeded the consumption requirement. In contrast, as shown in Figure 05, except for 2017 and 2022, in all other years from 2015 to 2022, the rice availability from domestic production exceeds the annual consumption requirement. The lower production in 2017 was reported due to the prevailing adverse weather conditions in the country and 2022 was reported due to the ban on inorganic fertilizer and agrochemical imports (Central Bank 2022). However, even with the excess availability of rice from domestic production, an immense quantity of rice imports was observed in 2015, and 2018. Further, the quantity imported in 2022 exceeded the deficit amount.

The country's surplus rice availability from production was 547,900 metric tons and 37,800 metric tons respectively in 2015 and 2018. However, 284,100 metric tons in 2015 and 249,537 metric tons in 2018 were imported without considering the surplus in the market. Generally, scarcity in the market was observed from October onwards up to January of the following year. However, as shown in Figure 06, a significant quantity; 260,000 metric tons (91% out of the total imports) in 2015 and 237,145 metric tons (95 percent of the total imports) in 2018 was imported from January to May which is the time of harvest of main *Maha* season. It may be a loss of opportunity for farmers to sell their paddy at a higher price due to the excess supply of rice in the market**Figure 04: Seasonal paddy production during the last 10 years**
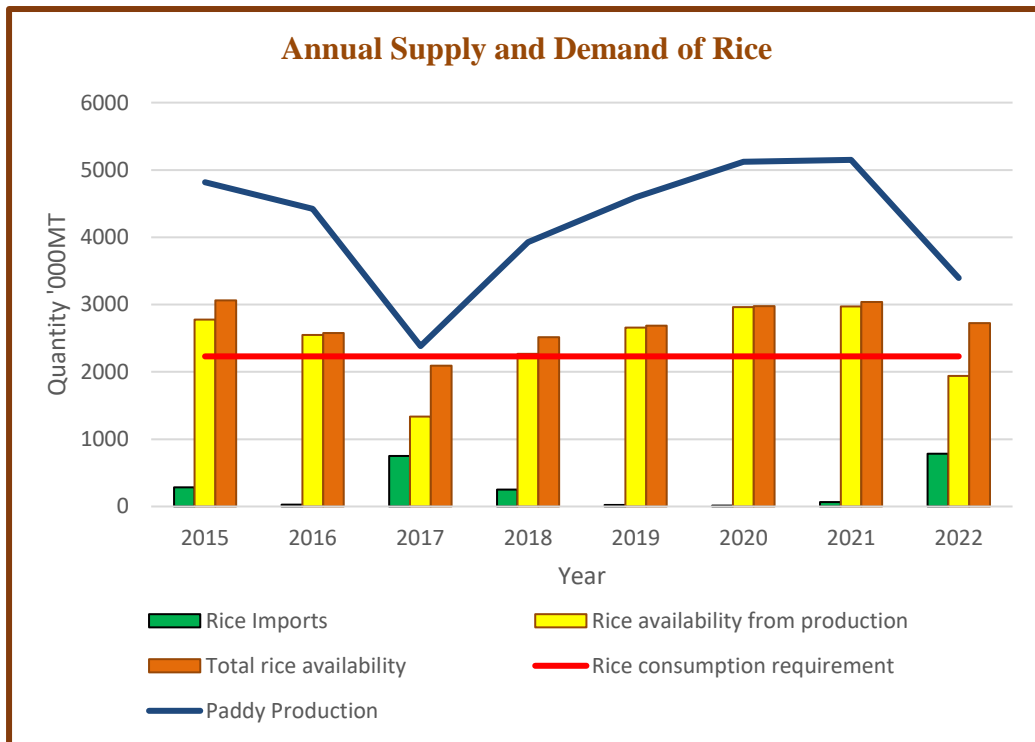
Figure 05: Supply and Demand of Rice from 2015 to 2022
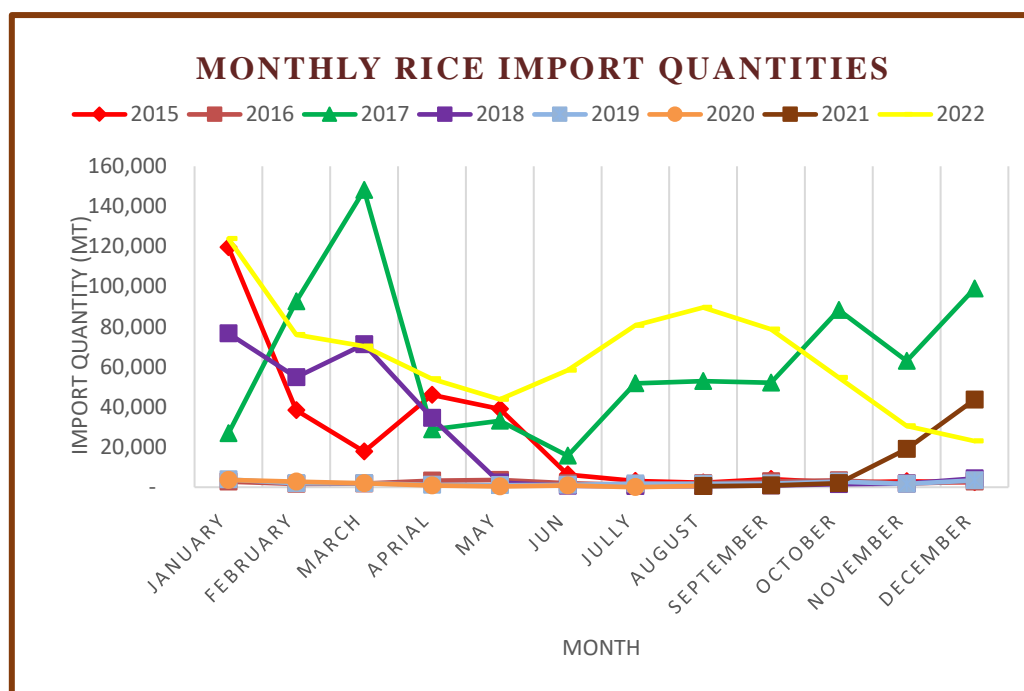
(source: Hector Kobbekaduwa Agrarian Research and Training Institute, 2023)

Figure 06: Import Quantities of Rice

The country had 892,500 metric tons (40% of the annual rice requirement) of deficit production in 2017 due to the prevailing adverse weather conditions. Therefore, 752,028 metric tons of rice was imported in 2017. However, the imported quantities were not adequate to replace the deficit quantities to meet the annual consumption requirement. The country had 290,000 metric tons (13% of the annual rice requirement) deficit of rice in domestic production in 2022. Hence to fulfill this 290,000MT of rice deficit, 783,418MT, around 2.7 times out of deficit was imported in 2022 (Hector Kobbekaduwa Agrarian Research and Training Institute, 2023). Under these circumstances, the study identified that rice imports took place without a proper assessment of the rice availability from local production. The import of rice without considering the rice availability from local production may be due to the absence of information on stock availability or else rice importers are getting an opportunistic advantage of importing rice by misguiding the policymakers.

The representative of the Essential Food Importers Association urged that rice imports take place with the policy decision of the government. In certain years government banned the import of rice and adjusted taxes to enable importers to import rice. Based on the trend in the market price of rice and the respective policy decisions they import rice. The quantity authorized to import will be decided by the Government at a certain time and most of the time

no restriction on import quantities. Under these circumstances, the import takes place based on previous experiences (heuristics). As discussed in the assumption of bounded rationality in transaction cost economics, economic actors make decisions about their mental capabilities of processing information or else based on the heuristics (Simon, 1990). The getting decisions based on heuristics is not always economical and it can create a loss.

According to sections 04 and 10 of the Paddy Marketing Board Act no 14 of 1971, facilities for sale, supply, transport or distribution, hulling, milling, or processing of paddy and rice are allowed only for authorized purchasers who get a permit from the PMB (Paddy Marketing Board, 1971). Accordingly, an order has been published in the gazette by the Minister (The Government Gazette, 2010). Under these circumstances, the millers should report their processing condition and stock availability every month. However, PMB has not made any formal procedure to implement this regulation may be due to the opportunistic action of key players in the industry. If the PMB assesses the stock level, it will assist policymakers in ensuring food security and identifying import requirements.

CONCLUSION

The MRP has been imposed to regulate the market price of rice, especially during the off-season which we can observe a higher market price from October to January of the following year. However, in certain years the MRP was not imposed for all rice types or certain rice types during the period which observed higher market price. There are several grades of rice available in the market with different qualities at different prices. The study identified that the imposed MRP did not consider quality factors such as broken percentage, moisture content, percentage of discolored grain, etc. Meantime the MRP was imposed based on the rice type irrespective of the grades. The analysis of MP with MRP through one sample T-test and the right tail test proved that MP of selected four main rice types are significantly greater than MRP throughout the study period from 2015 to 2022. Therefore, the study suggested that imposed MRP was not successfully implemented and the regulating retail market price was not attained as expected by the Government to safeguard the consumers during the considered study period. Therefore, the Study confirmed that rice is not available at an affordable price to consumers.

According to the order published by the gazette as per the provision act no. 14 of the Paddy Marketing Board Act 1971, regulating rice processing, storing, and milling, millers should report their processing condition and stock availability every month to the PMB. However, PMB has not made any formal procedure to implement this regulation continuously. If the

PMB assesses the stock level, it will assist policymakers in ensuring food security and identifying import requirements during production deficit instances. Under these circumstances, the study identified that due to the absence of information on stock availability, rice importers might get an opportunistic advantage of importing rice by misguiding the policymakers. In other words, the assumption of opportunism and bounded rationality are prominent in the industry as discussed in Transaction cost economics (Williamson, 1981). Hence can observe an immense quantity of rice imports in 2015 and 2018 even with the surplus rice availability and 2022 beyond the deficit rice requirement. Further, 2016, 2019, and 2021 rice imports were reported even without a production deficit. Therefore, the study confirmed that imports were made without considering the rice availability from domestic production in the country. Hence economic actors and policymakers should make appropriate decisions enabling market forces to decide the price of rice ensuring the availability and impose of MRP to make available the rice at an affordable price for the consumer.

The way forward and recommendations

- o As the price of rice varies with the quality criteria, recommend studying the feasibility of imposing MRP based on designated quality criteria.
- o Recommend studying the limitations and adopting appropriate strategies to implement MRP in the retail market to make sure the availability of rice to consumers at an affordable price
- o Recommends to adopt regulations to monitor rice processing and stock management to ensure food security and allow importations of rice only during identified deficit conditions based on stock availability.

Limitations

This study is mainly conducted based on the information published in the Monthly food commodity bulletin published by HARTI. Therefore, the market prices and the import figures are assumed as true and correct. In certain periods, market prices of respective rice types are available in either one, two, or three grades. As the imposed maximum retail price is valid for all grades in respective rice types, the price of grade 1 was considered in this study. There might be instances where lower market prices with lower quality have not been considered in this study.

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