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Market Monitoring in Rwanda's Rice Sector: Insights from Recent Events

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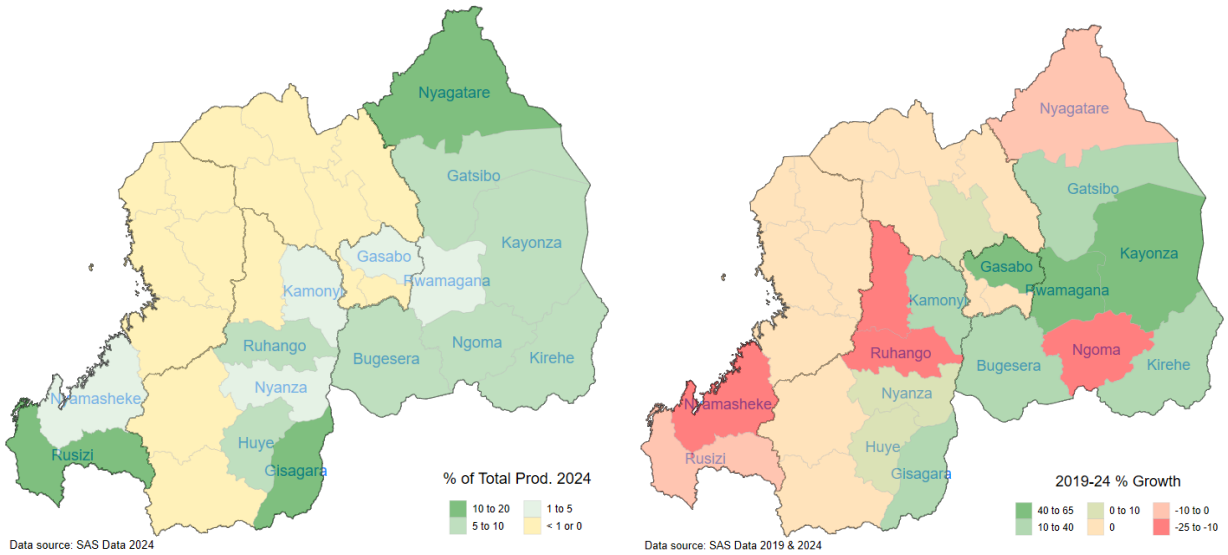
Summary

- While domestic rice production has risen 16% over the past five years, district level growth rates are varied and suggest strong growth in some districts but reductions in others. Leveraging higher growth area's successes could be used to further expand production in declining growth districts.
- Microeconomic data suggests that smallholder rice farmers have slightly larger than average landholdings, grow at lower elevations, and sell about twice the percentage of crop value when compared to typical smallholders.
- A declining Tanzanian rice premium over the last five years (2019-2024) suggests a greater substitutability between Rwandan and Tanzanian rice but specific reasons for this trend are unclear and warrant further research. Overall, a 50 percent premium has been reduced to currently about 20 percent.
- Following a dramatic price increase in 2022, a subsequent large decrease in Tanzanian wholesale rice prices may have undermined government price setting in August 2024. Domestic producer rice price setting has been based on costs of production but appears to not consider other factors, such as the effects of imported prices of direct substitutes. A price analysis reveals that Tanzanian wholesale prices, valued in USD, fell about 37 percent from October 2023 to August 2024, while Rwandan retail rice prices were down only 14 percent. This relative price decrease could have effectively squeezed Rwandan processors when faced with government determined local producer prices that constricted potential profitability against rapidly declining Tanzanian prices.
- Research presented below indicates that Tanzanian wholesale prices have large, immediate impacts on rice prices in Rwanda, but Rwandan prices have little to no effect on either imported or wholesale Tanzanian rice prices. Therefore, dramatic changes of Tanzania wholesale prices have large effects on both retail Tanzanian and Rwandan rice prices in Rwanda. This unidirectional effect highlights the importance of monitoring domestic and important international prices and studying prices which could have potentially helped policymakers adjust to market dynamics more effectively and better inform target interventions. We recommend developing an improved market monitoring and forecasting unit to better incorporate the food systems approach promoted in PSTA 5.

The following sections provide a general overview of rice production and marketing in Rwanda. By combining data from several sources, covering the 2019-2024 period, and including data from MINAGRI's eSoko markets, the Seasonal Agriculture Survey (SAS), World Food Programme (WFP) Tanzanian wholesale rice prices, and a 2022 IFPRI Rwanda smallholder commercialization survey. The data provide various insights into the current production, marketing and influence of selected imported rice products.

Figure 1a and b depict both district rice production trends as well as current percentage contributions to total production.[1] The figures shown in each district depict the current percent contribution to 2024's total Rwandan rice production (combining both Season A & B). Production is relatively concentrated within three districts, Gisagara, Nyagatare and Rusizi, contributing almost 40 percent of all production. Gisagara is the largest district producer of rice, contributing a total of about 16 percent of Rwanda's total rice production in 2024 and has seen strong growth over the past five years. The Eastern Province is the largest regional producer with slightly over half of all production, while the Northern Province produces virtually no rice. Recognizing the agroecological limitations of rice production, 15 districts contributed a total of only one percent of all rice production, with nine districts producing no rice at all. In terms of growth trends, Figure 1b (right panel), demonstrates where district production trends have either increased or decreased over the past five years (2019 to 2024). While overall national production has increased by about 16 percent, variations are significant. Even though four districts have declined by between 10 to 25 percent, these districts represent less than 14 percent of total production in 2024. On the other hand, the southeastern part of the country has seen broad growth of 10 percent or more. Unfortunately, two major producing districts (each over 10% of 2024's total production), located in the northeast and southwest parts of the country have seen declines (i.e. Nyagatare and Rusizi districts). Further analysis as to why district fluctuations are occurring could be useful for improving growth strategies.

Figure 1a & 1b. 2024 district level rice production contributions (%'s) and 5-year growth trends.



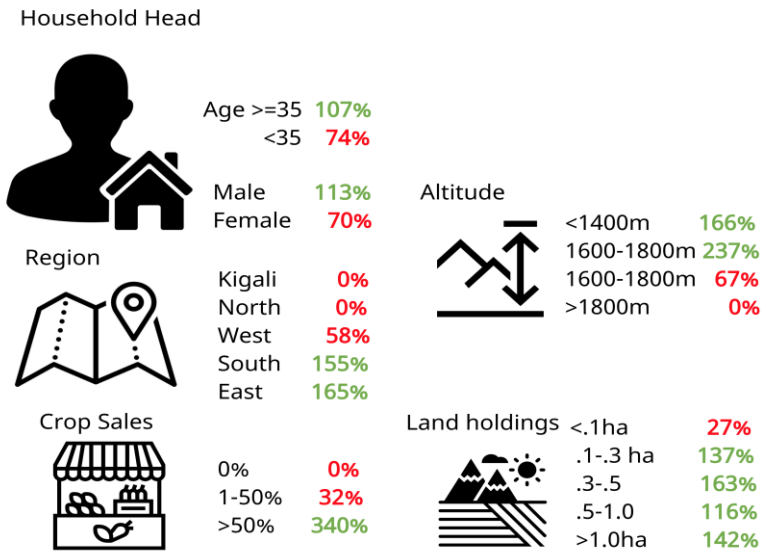
Authors' calculations

[1] Named districts provide at least one percent of total production in 2024.

Figure 2 uses a recent detailed household survey (2022) collected by IFPRI to better understand smallholder commercialization of Rwandan farmers and was designed to be provincially representative. For purposes here, we explore rice growing households to identify both similarities and differences with the general sample population. It is important to emphasize that while not a targeted sample of rice farmers, limiting potential statistical inferences, the 52 rice farm households surveyed out of the total 2,020 households do provide some general insights into smallholder rice farming.

As also depicted by Figure 1, surveyed rice farmers are generally located in the Southern and Eastern Provinces of the country. Older, male headed households were slightly overrepresented but in numbers that do not appear to be significant. An important difference is commercial engagement. Rice farmers are over three times more likely to be in the higher commercialization category, usually selling over 75 percent of their total crop production. On average, rice farmers sell nearly twice the percentage crop value as the average in our sample (32% vs. 67%, respectively). Additionally, farmers have slightly higher than average landholdings and plant at lower elevations. It is important to recognize that there are geophysical limitations to rice farming such as soil suitability, water availability, and elevation constraints, that need to be considered when discussing future rice growing potentials for Rwanda.

Figure 2. Distribution of smallholder rice producers by selected categories



Source: IFPRI's Smallholder Agricultural Commercialization in Rwanda, 2022

Using market price data in 26 eSoko markets,[2,3] retail price analyses is performed to better understand market dynamics between domestically produced Rwandan rice and imported Tanzanian rice. A graph of average Tanzanian wholesale prices in Tanzania, retail Tanzanian prices in Rwanda and average Rwandan rice prices is presented in Figure 3.

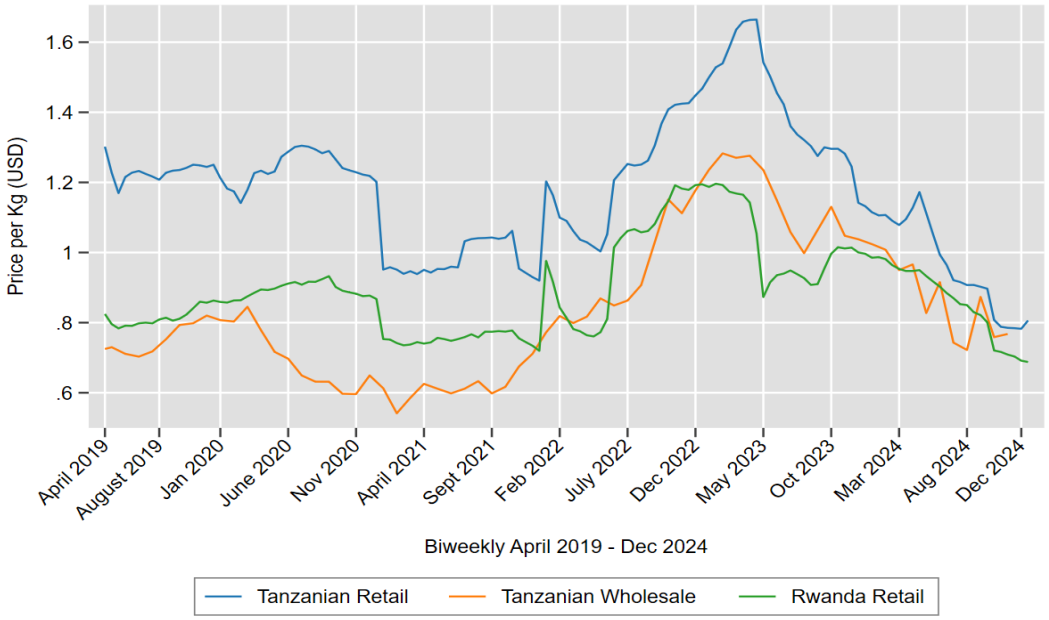
A Tanzanian retail rice price premium, determined by the percentage difference of the Tanzanian retail price divided by Rwandan rice price, was derived for each selected eSoko market and is represented in Figure 4 by blue circles. The orange line is the biweekly market average of the 26 individual markets and the red line is the linear trendline over the five-year period. While there is clearly a market premium for imported Tanzanian rice, as the percent of almost all individual values are positive, the premium is declining over the past five years and is currently less than half of the 50% premium in mid-2019. There are a variety of potential reasons for this, and possible reasons

[2] Markets which reported at least 75% of biweekly data responses during the period studied were included in this analysis.

[3] Average prices were used for each market, irrespective of farmgate, wholesale or retail and specific grade of rice. Future research will explore these important differences.

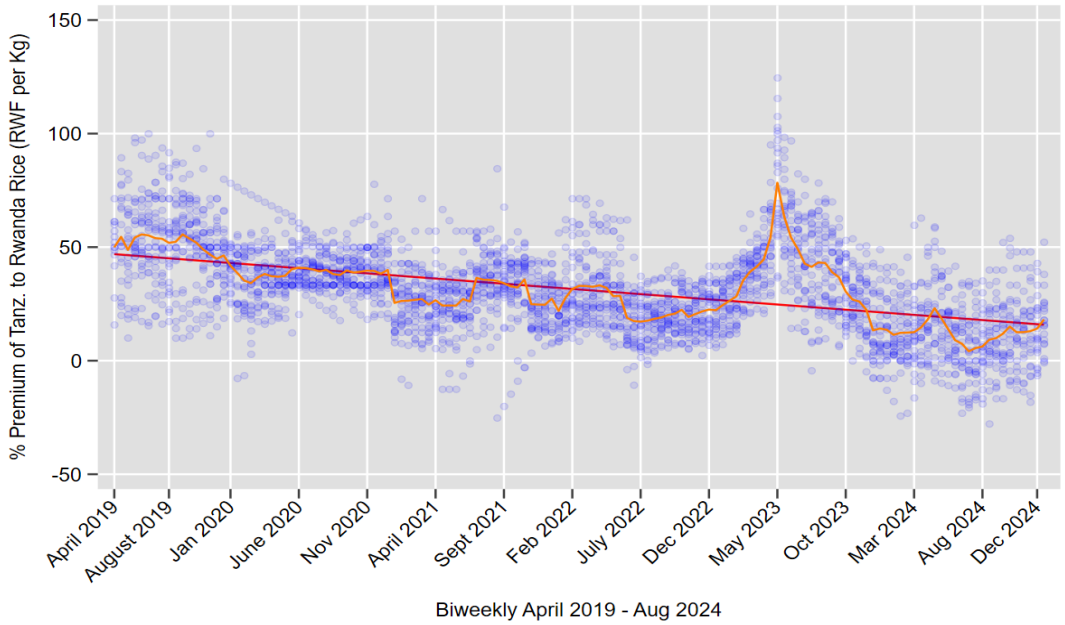
include, increased imports of Tanzanian rice, reduced relative production/importation costs of Tanzanian rice, reduced transportation costs, increased relative quality perceptions of Rwandan rice, reduced relative production of Rwandan rice, as well as other possible reasons. Further research to delineate the drivers behind the trends could be important. Of shorter-term significance is the May 2023 to August 2024 steep decline in price premiums from a high of 75% to a low of approximately 10%. This dramatic decline coincides with ancillary Rwanda rice market issues that need careful analysis.

Figure 3. Selected National Average Rice Prices



Authors' calculations

Figure 4. Tanzanian/Rwandan percentage rice premium (26 eSoko markets)



Authors' calculations

Using an average wholesale Tanzanian rice price index and two retail price indexes in Nyabugogo market (both Rwandan rice and Tanzanian rice prices), we analyze how shorter- and longer-term prices affect each other's prices. Nyabugogo market was chosen as a market of primary importance for Kigali and the country. Figure 5 visually depicts some of these selected relationships. Of principal importance is the large impact of the previous 2-week period Tanzanian wholesale prices have on both prices in Nyabugogo market. As expected, the largest and most

statistically significant effects are wholesale Tanzanian price changes on imported retail prices of Tanzanian rice (106% impact in a biweekly period). This can be referred to as a “pass-through effect” of wholesale prices onto retail prices. The effect on Rwandan rice prices is also strong (82%) and statistically significant. In addition, there is a small impact of Tanzanian retail price on Rwandan prices in the same market. On the contrary, Rwandan retail rice prices have no discernable effects on either local retail Tanzanian prices or, of course, on Tanzanian wholesale prices in Tanzania (depicted in red with “//” indicating no effect). Overall, our models indicate that Tanzanian wholesale prices are the principal driver for this selected market and related commodities. Further research, including other markets and potentially other commodities (including Asian rice, for example) should be considered to create more robust results.

Figure 5. Price transmissions between Tanzania and Rwandan rice in Nyabugogo Market

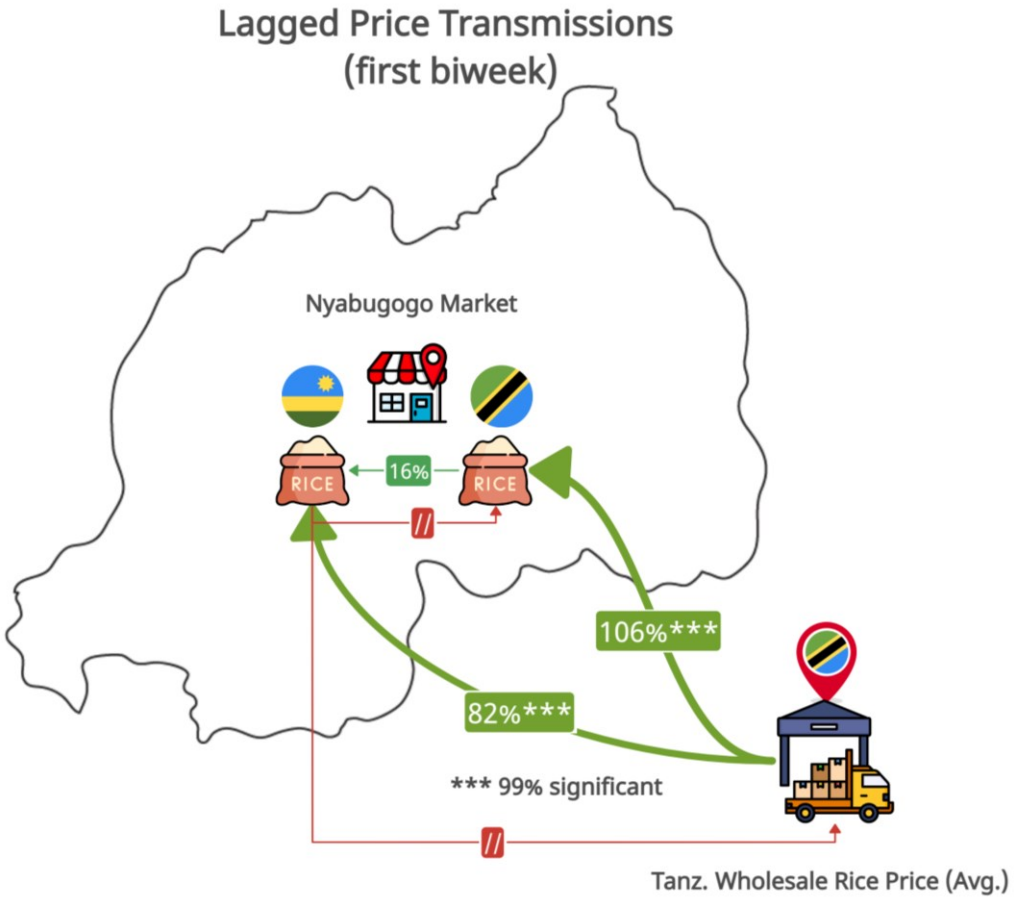
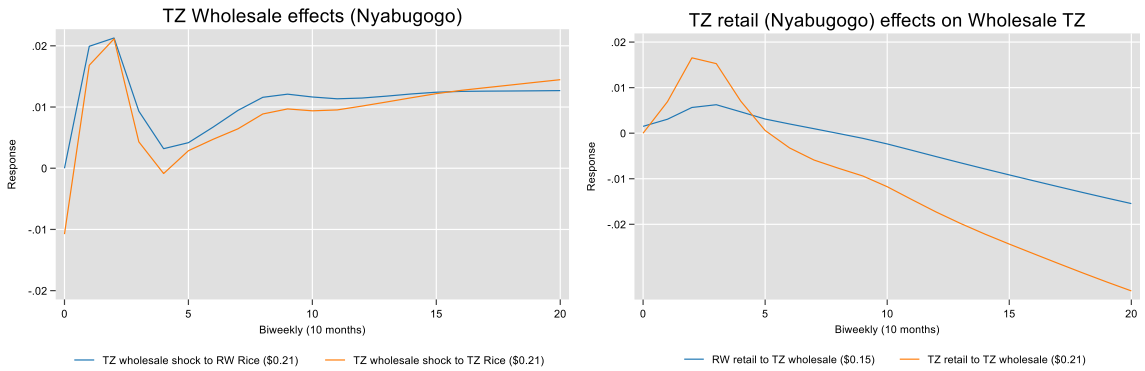


Figure 6 demonstrates how markets respond to price shocks over a 10-month period (20 bi-weeks). Figure 6a demonstrates how a one standard deviation price shock of the Tanzanian wholesale market impacts both rice prices in Nyabugogo. The orange line depicts a relatively larger, long-term price spike on Tanzanian retail prices in Rwanda and indicates that if prices rise in Tanzania they will be permanently reflected in Rwanda. The blue line also reflects a long-term impact on Rwandan rice, with essentially a comparable effect. Conversely, Figure 6b (right panel) shows relatively small initial positive effects that Nyabugogo prices have on Tanzanian wholesale prices that quickly dissipate to zero or less. These results indicate that impacts are statistically unidirectional and support the idea that Tanzanian wholesale rice prices drive both Tanzanian retail prices in Rwanda as well as domestically produced Rwandan rice prices.

Figure 6a & 6b. Market price shocks between Nyabugogo and Tanzanian wholesale markets



Authors' calculations

The analysis presented in Figure 5, 6a and 6b suggests that Rwanda's rice market is strongly influenced by Tanzanian wholesale prices, highlighting a dependency that limits Rwanda's pricing power. Therefore, to enhance resilience, the government should boost domestic production through improved inputs and farmer support. Establishing strategic rice reserves and negotiating stable trade agreements can help mitigate external price shocks. Diversifying import sources beyond Tanzania and improving market transparency through regular price monitoring would further stabilize the market. Additionally, enhancing the quality and branding of locally produced rice can increase its competitiveness and consumer preference, reducing reliance on imports

Conclusions and Recommendations

This analysis of Rwanda's rice sector reveals several potentially significant trends and dynamics that shape both production and marketing practices within the country. The data indicates a relatively concentrated production landscape, with a few districts being major contributors to total rice output. While national production has grown by approximately 16% over the past five years, there are district-level fluctuations. Understanding these disparities in production, and the underlying factors causing them, is essential for devising targeted policies aimed at enhancing rice cultivation in both high-performing and declining districts.

Moreover, the price dynamics between locally produced Rwandan rice and imported Tanzanian rice provide important insights into market competitiveness and consumer behavior. The declining premium for imported rice over time suggests an important trend that needs further research to accelerate this development. The data further emphasize the strong influence of Tanzanian wholesale prices on local retail prices, indicating a need for market strategies that can buffer Rwandan rice farmers against international price shocks. Overall, ongoing research and policy efforts aimed at dissecting these market dynamics and addressing the challenges faced by rice producers will be pivotal in fostering a resilient rice sector that can meet domestic demands and enhance food security in Rwanda.

Establishing a market monitoring unit within Rwanda's agricultural framework would be valuable to bolster the efficacy and resilience of the rice sector, and markets more generally. Such a unit would facilitate systematic data collection and analysis regarding production, pricing, and market trends, ensuring stakeholders have access to timely and accurate information. This would not only enhance the understanding of market dynamics between domestically produced and imported rice but also allow for proactive responses to price fluctuations and supply chain disruptions. By implementing real-time monitoring of market conditions, the unit could identify emerging challenges and opportunities, enabling policymakers to craft informed strategies that promote local rice production, support smallholder farmers, and enhance overall food security. Moreover, the presence of a market

monitoring unit would encourage transparency and accountability within markets, fostering a competitive environment that benefits both producers and consumers alike.

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