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MARKETING ANALYSIS OF RICE IMPORTS IN BURUNDI: A NEW EMPIRICAL INDUSTRIAL ORGANIZATION APPROACH

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ABSTRACT

This study examines the market power of the rice imports using the New Empirical Industrial Organization paradigm. The estimated equations rest on both the food import and optimality models that have their roots in the firm theory and the producer theory of demand as in traditional import demand theory. The main objective of this paper is two folds: to determine the market power of firms importing rice to Burundi and to measure both the elasticities and determinants of rice imports of Burundi. The findings of the NEIO model reveal that both the production and prices of rice do affect the importation of rice. The coefficients of the latter were statistically significant. For rice production, the result means that a production of one tonne of rice will reduce 17% of rice imported in Burundi. The conjectural variation variable λ was 0.18 denoting a level of competitiveness among the rice importers. The behaviour of firms is much closer to price taking that to collusion as evidenced by the NEIO model estimation. The government has to keep on investing in rice which can compete remarkably with the imported rice. Issuing a clear policy on agricultural commodity price may be a boost to producers and consumers as well.

Key Words: Rice, Market power, NEIO and conjectural variation.

I. INTRODUCTION

Since Burundi joined the East Africa Community (EAC), much attention has been concentrated on its level of competitiveness in this region block as well as its performance of its undergoing trade reforms. Many argue that being a member of EAC may threaten the growth of its industrialisation, currently at its infant stage, while others support the integration of this country in EAC as the only opportunity of improving the efficiency of its production sector through competitiveness and the solution to land-locked state. The recent agreement on EAC common market and the trade liberalisation have resulted in massive food imports that may weaken the agricultural production capacity and in long-term may cause food insecurity. This has been evidenced by many authors (Rusastra, *et al.*, 2008, Pingpoh, 2007 and Kang and Kennedy, 2009).

Rice consumption is only rising in urban areas and subjected to the seasonal variation of production (RoB, 2008). The price of rice is the determinant of the consumption. Comparatively to wheat, its elasticity is quite greater in respect to the purchasing power of the Burundian. The same source added other determinants such as population pressure, increasing urbanization and agricultural technology. Since there is a high rice product differentiation, the low income earners (in rural area), afford to eat the low rice quality, specially the rice from the marshland areas. While well-to-do class has a large range of choices and normally prefer the imported rice from Tanzania and Asian. Surprisingly, SRDI has so far produced highly preferable rice called 'aromatic rice' and sometimes carries the name of the origin of imported rice, 'Zambian rice'. This has been a remarkable market strategy.

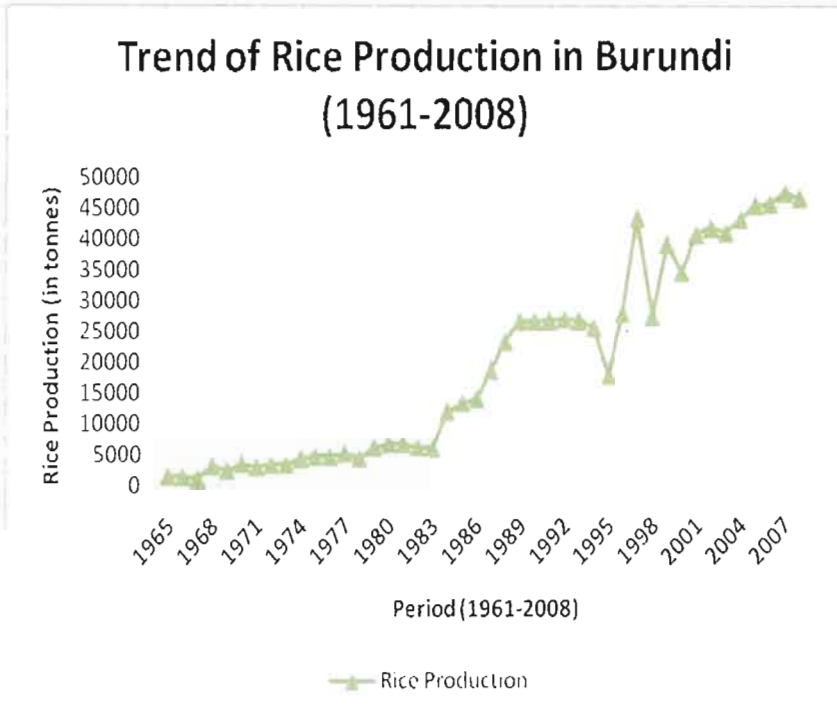
The EEA (2004) reported that since the implementation of SAPs and the liberalization of markets, the agricultural markets have been reformed and prices of commodities are determined through market mechanisms. The rice product market in Burundi is quite

well organized though affected by the seasonal bumper harvest (June through July) and shortage -December through March- (RoB, 2009, page 41). The rice marketing is dominated by three main actors: producer, private and SRDI. The latter buys rice from its service beneficiaries who are the tenants in the irrigation scheme of central and southern Imbo. This marketing activity plays a key role in rice price policy because every time the SRDI price is greater than that of the private one, the producers tend to sell their rice to this governmental institution.

However, the Burundian rice usually meets a stiff competition from the Asian and neighboring countries. According to government report (2008, p. 38), the price of rice imported from Tanzania, for instance, is sold at 1200 BIF/kg while the best local rice (SDRI rice) is at 1000 BIF/kg (beginning July 2008). The outcome is that like elsewhere in the lower income African countries, the urban dwellers prefer the imported rice to the local ones though the government is trying all its best to reverse the trend.

Rice is mostly grown in the three major provinces of Burundi; inter alia, Kirundi and Muyinga under rain-fed production system and Bubanza under intensive irrigated production system. It is among the six food groups singled out to be the food of importation-substitution by the government of Burundi in its Agricultural Strategy of Burundi 2008-2015 (RoB, 2008). The agricultural research centres, ISABU and FACAGRO, which engaged earnestly in the development of improved rice cultivars adapted to the challenging growing conditions of Burundi. The net output of these researchers is that the rice production curve has an upward trend. However, this failed to meet the increasing demand because the population growth kept increasing year in and year out. The annual population growth in 1999 was 1% and jumped to 3% in 2008. In figure 1, the importation of rice appears to correct the deficiency in the local rice supply.

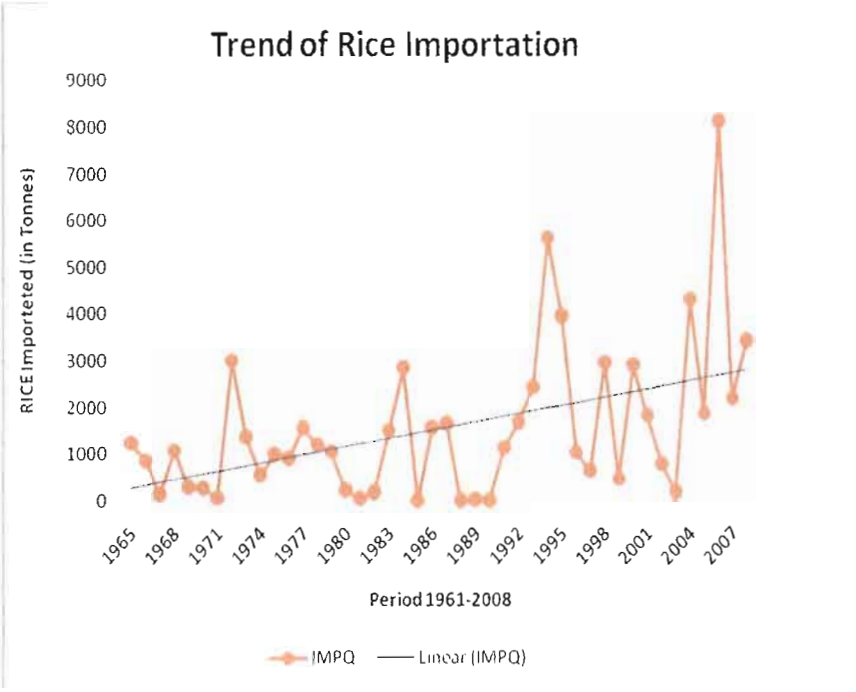
Figure 1: Production of Rice in Burundi (1961-2008)



Source: FAOSTAT, Data downloaded on December 4, 2010

To this shortage recorded in the rice balance sheet, Burundi resorts on rice imports from the neighbouring country (Tanzania) and far away countries like South-Eastern Asian countries (Pakistan, United Arab Emirates, India, Thailand and Viet Nam). In EAC, Tanzania is currently the leading country importer of rice to Burundi. The trend of rice imports from this country has been very volatile justifying the volatility of rice supply in Burundi (Figure 2). This has been a hindrance to the achievement of the strategy that aims at gaining the self-sufficiency in rice production and the country of objective of changing the trend of rice importation dependency to rice as food of importation-substitution.

Figure 2: Importation of Rice in Burundi (1961-2008)



Source: FAOSTAT, Data downloaded on December 4, 2010

In the figure, the trend of rice importation shows a fluctuated trend. In 2006, we observe a spike in rice importation due to a sky-rocketed local rice price increase that followed the unbearable increase of production and marketing costs. The reader should note that in the same period, the regional countries imposed an economic embargo on Burundi and it is strange to notice this importation shock when according to WARDA report, Burundi was ranked among Sub-Saharian countries whose rice self-sufficiency status was above 75% of self-sufficiency ratio (a ratio obtained from production over consumption). We can here hypothesize that the smuggling activities

Market competitiveness for rice imports in Burundi is an interesting area of study because rice production has shown extraordinary growth over the past 2 decades (Figure 1). From

1985 to 2007, rice production in Burundi significantly increased, rising from 13340 tons to 47298 tons, a nearly triple increase from 1985. Even though Burundi has experienced a substantial increase in rice production, it is still far below domestic consumption, a factor accredited to the rising population growth and a change of food consumption preference occurring during post-war period. Moreover, food importation robs the government of its scarce exchange earnings and hinders their allocation to the most needed sector of investment; although in some literature, it has pointed out that food importation helps in fighting against food insecurity. This may make sense if such importation is made on the type of food that the country has not a comparative advantage.

The aim of this study is to determine the market competitiveness in rice imports of Burundi. By applying the New Empirical Industrial Organization (NEIO), the paper develops and estimates the structural econometric model that yield the price, income and production elasticities for rice and also the host of results that are used to determine the impact of import prices on retail prices. The concentration of rice import players hinge that it can impact on the local production as well as on the rice farmers' income.

The remaining of this paper is organized as follows. First the theory of NEIO is given in the part of the methodology. The specification of the model and the source of the data complete the part of methodology. The results and the recommendations end the last of this paper.

II. RESEARCH METHODOLOGY

2.1 Theoretical Literature of NEIO Model

The discipline's emphasis on firm behavior and market structure is to a large extent influenced by the work of a group of economists at Harvard in the 1930's. Edward Mason and his PhD student Joe S. Bain formulated a framework for empirical analysis called the

Structure-Conduct-Performance (SCP) that attempts to describe how these key aspects of the market structure relate to each other. The SCP paradigm became the dominant framework for empirical work in IO between the early 1950s until the early 1980s. Its influence only began to wane in the 1980s with the emergence of game theoretical analysis of oligopolistic markets - an approach labeled as the 'New Industrial Organization' (NIO). The body of empirical associated with this approach is known today as the New Empirical Industrial Economics (NEIO).

The NEIO paradigm was expanded by the Chicago School of Thought (post-1980). It entails the use of statistics and econometrics in order to understand the market power of firms in the sense of Cournot duopoly model. During 1980-90 game theory took center stage with emphasis on strategic decision making and Nash equilibrium concept. However, critiques met the use of game theory as with this theory anything can happen, i.e., less precise.

After 1990, empirical industrial organization with the use of economic theory and econometrics lead to a complex empirical modeling of technological changes, merger analysis, entry-exit and identification of market power. As developed by Bresnahan (1982), the NEIO approach allows one to analyze the extent of market power in a market within a demand and supply framework. Market power exists when one group of marketing agents has a higher bargaining power than the other group of marketing agents. Economists and policy makers are interested in the degree of market power in different industries as its presence signals a market failure.

A natural method of measuring market's competitiveness (or inexistence of market power) is the price-marginal cost markup since the price is equal to the marginal cost at a perfectly competitive market. Typically, a demand equation, a marginal cost equation, and an optimality equation representing the equilibrium

of marginal revenue and marginal cost are specified and estimated as a simultaneous system.

Market power is identified by examining the change in the price cost relationship from one equilibrium position to another. Critical to the determination of the market power parameter is the statistical significance of the variable, which rotates either the demand function or cost schedule. Profit maximization is an underlying assumption of the model, although the estimated market power parameter measures the amount of market power exercised by firms.

The study of this kind has been pioneered by Bresnahan (1982). It starts with the firm maximization goal:

$$\text{Max} \quad \Pi_i = P(Q).q_i - C(q_i) \quad \ldots\ldots (1)$$

The first order condition as before is (differentiation):

$$P(Q) + q_i P'(Q)(\partial Q/\partial q_i) - C'(q_i) = 0 \quad \ldots\ldots (2)$$

According to Bresnahan (1982), the term $\partial Q/\partial q_i$ becomes:

$$\partial Q/\partial q_i = (\partial q_i/\partial q_i) + \partial Q/\partial q_i = 1 + \lambda_i \quad \ldots\ldots (3)$$

Where $(1 + \lambda)$ is the conjectural variation or the competitiveness of the market conduct. Rearranging equation (7), we have the following in the aggregate market:

$$P(Q) + \Psi QP'(Q) = MC \quad \ldots\ldots (4)$$

Where: $\Psi = \partial Q/Q_i$ and $MC = C'(Q)$

In equation (9), the left hand describes the perceived marginal revenue, with Ψ explaining the degree of competitiveness (or conduct) in the industry.

In other literature, we find that $(1 + \lambda_i)$ linked to Lerner Index in oligopoly scenario (Cournot duopole model):

$$L_i = [(P(Q)-MC(q_i)]/P(Q) = (S_i/ \varepsilon). (1 + \lambda_i) \quad \text{..... (5)}$$

Where: $\lambda_i = dq_1/dq_2$, S_i = firm market share and ε = price elasticity demand.

Theoretically, λ_i is the conjectural variation variable that measures the output response of the firm's rivals (here firm 1 and firm 2 being two rivals). It also shows the degree of coordination (collusion) between two firms (Scherer and Ross, 1990). This variable is depended on other factors such as seller concentration, set of entry barrier measures and industry or firm characteristics. It is also known as conjectural variation elasticity at the industry level-in Bresnahan/Lau (1982) method (- which is interpreted as the average on the individual firm's conjectural variation elasticities (Bask, Lundgren & Rudholm, 2007).

Given the need of establishing a long-run profit equilibrium in a dynamic context, the SCP and NEIO paradigms will not help since the estimation of their models of time series data lead to spurious regression. A search for unit roots and use of co-integration approach was used in this paper as one way to solve this problem of spurious regression or nonsense regression. Nevertheless, the NEIO approach remains static while competition is dynamic (Hunnicutt and Weninger, 1999). To try to overcome this limitation of SCP and NEIO models, the advanced theory on persistence profitability can be applied. The same authors revealed other shortcoming of Conjectural Variation model (CV) or NEIO such as the over-emphasis on price as the crucial determinant of

market power. In fact, the trade policy and the infrastructure (roads, telecommunication, food warehouses, etc.) are important to rice importation.

2.2 Empirical Literature Review

The studies carried elsewhere applying NEIO model are the analysis of structure and conduct of world rice market by Kang, Kennedy and Hilburn (2009) which provided the effects of total production, export price and real exchange rate for exporting countries. This paper inspires the current in offering the methodology of computing the market power in the agricultural trade set-up.

Perekhozhuk, Grings and Glauben (2009) estimated the oligopoly power in the Ukrainian Milk Processing Industry by applying the New Empirical Industrial Organization approach. The finding revealed that the oligopoly power in four out of twenty two regions of Ukraine did exist and with a potential deviation of price procurement for raw milk ranging from 3.6 to 46.7 %. According to the three authors, this suggested the intervention of government to regulate the raw milk order to end these price cartels.

In agricultural seed sector, Zuma (2006) examined the market behavior of processing firms in the seed maize industry in Kenya. A system of five equations was used to estimate market consumer demand, input demand and a pricing behavior equation. He also used the market power tools such as the conjectural variation elasticities and Lerner indices. His findings indicated the existence of anti-competitive behavior in the period under study. He concluded that the assumption of the price-taking behavior held by other authors was inappropriate for the seed maize processing industry in Kenya.

Considering India, Kenya and Sri-Lanka as tea producers on one hand and Canada, United Kingdom and the United States of

America as tea consumers on the other hand, Weerahewa (2003) found a high conjectural elasticity value for Sri-Lanka in input market with a conjectural variation elasticity of 0.1273 in output market indicating a relative degree of competitiveness in tea sector. Combined the Lerner index and conjectural approaches, the author revealed that the tea producers in Sri-Linka, like in any developing countries, are not exploited optimally the tea processors.

2.3 Specification of NEIO Model

The NEIO approach uses the aggregate data of firms and attempts to integrate both the microeconomic theory with structural econometrics models in order to arrive to the estimation of Market Power based on prices and quantity decisions of firms.

Let Q be the market demand of the firms comprises of homogenous products (q_1, q_2, …, q_n) in such way that industry output is:

$$Q = \Sigma q_i \quad \text{..... (6)}$$

The market demand equation is given by the implicit function:

$$Q_t = Q(P_t, Z_t)$$

Where:

Q_t = total quantity demanded,

P_t = Price of output,

Z_t = Exogenous variables affecting demand (e.g. income, price for substitute products, etc.),

t = time subscript

Frequently, the demand equation is also expressed as an inverse equation since both P and Q present simultaneity.

Hence, $$Q_t = Q(P_t, Z_t) \rightarrow P_t = P(Q_t, Z_t) \text{..... (7)}$$

Industry revenue is given by:

$$\mathbf{R_t = P_t \,.\, Q_t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \mathbf{(8)}$$

From equation (8), we derive the perceived marginal revenue, i.e., $MR_t(\lambda)$ as follows (see equation 5):

$$\mathbf{MR_t(\lambda) = P_t + \lambda Q_t(dP_t/dQ_t) = MC} \ldots\ldots\ldots\ldots\ldots\ldots\ldots \mathbf{(9)}$$

Again, λ is the conjectural variation variable or the index of the degree of market power, i.e, the gap between the market price and industry marginal cost. If there are 5 firms in industry, it indicates how firm 1 conjectures that other firms will vary their output choice when firm 1 makes a slight change in its output. The task will be to compute empirically the value of λ since $\lambda = 0$ means perfect competition, $\lambda = 1$ means perfect monopoly and if $\lambda \in [1,0]$ means the firms are in the range of oligopoly.

In this study, we are going to carry out a research in determining the market power of an importation of tradable agricultural commodity like rice by applying the NIEO Approach. The importation model will be:

$$\mathbf{IMPQ_t = \alpha_0 + \alpha_1 P_{rt} + \alpha_2 I_t + \alpha_3 PCB_t + \alpha_4 Q_t + \alpha_5 LIMPQ_{t-1} + e_{it}} \ldots\ldots\ldots \mathbf{(10)}$$

Where:

$IMPQ_t$ = Total quantity of rice imported into Burundi at time t,

P_{rt} = Retail Price of rice at time t,

I_t = Annual per-capita income at time t,

PCB_t = Per-capita consummation of rice at time t,

Q_t = Quantity of rice production in rice at time t,

$LIMPQ_{t-1}$ = lag total quantity of rice imported into rice (or at time t-1),

e_{it} = Stochastic error term, normally distributed with mean μ and variance σ^2.

Given that:

$$\mathbf{MC = \beta_0 + \beta_1 P_{it} + \beta_2 T} \ldots\ldots\ldots\ldots\ldots\ldots\ldots \mathbf{(11)}$$

Where:

MC = Marginal cost in importing rice,

P_{it} = Rice price of importation, that represents a proxy to cost of rice to retailers,

T = Time trend that captures marginal cost rise due to technological advance in for instance transport, storage, etc.

If we substitute equation (11) into equation (9) and change $IMPQ_t$ for Q_t and P_{rt} for P_t, we get optimality condition:

$$\mathbf{P_{rt} = \beta_0 + \beta_1 P_{it} + \beta_2 T + \beta_3 IMPQ_t + e_{2t}} \ldots\ldots\ldots\ldots\ldots\ldots \mathbf{(12)}$$

And we can obtain α_3 by applying a derivation on IMPQ and attach to it the conjectural variation variable as shown in equation such as:

$$\mathbf{\beta_3 = -\lambda(dP_{rt}/dIMPQ_t)} \ldots\ldots\ldots\ldots\ldots\ldots\ldots \mathbf{(13)}$$

From equation (10), we derive:

$$\mathbf{dIMPQ_t/dP_{rt} = \alpha_1 \rightarrow\ dP_{rt}/dIMPQ_t = 1/\ \alpha_1} \ldots\ldots\ldots\ldots\ldots\ldots \mathbf{(14)}$$

Put together equation (13) and equation (14), we obtain:

$$\beta_3 = -\lambda\,(dP_{rt}/dIMPQ_t) \rightarrow \beta_3 = -\lambda\,(1/\alpha_1) \ldots\ldots\ldots\ldots\ldots\ldots \textbf{(15)}$$

Now, the end of it is to estimate the value of λ by this formula:

$$\lambda = -\alpha_1\beta_3 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \textbf{(16)}$$

In summary, to estimate the value of the conjectural variation variable in this context, one must estimate a simultaneous equation made up of equation (10) and equation (12) in order to derive the coefficients α_1 and β_3 using adequate tools of simultaneously equation, i.e., instrumental variable estimation IV Indirect Least Squares (ILS), 2-Stage Least Squares (2SLS) and 3-Stage Least Squares (3SLS) methods. In this paper, the 2-Stage Least Squares approach was used to estimate the simultaneous equations underlined here beneath (Gujarati, 2004, p.770). We should note that the two equations are over-identified according to the order condition.

$$\begin{cases} IMPQ_t = \alpha_0 + \alpha_1 P_{rt} + \alpha_2 I_t + \alpha_3 PCB_t + \alpha_4 Q_t + \alpha_5 LIMPQ_{t-1} + e_{it} \\ P_{rt} = \beta_0 + \beta_1 P_{it} + \beta_2 T + \beta_3 IMPQ_t + e_{2t} \end{cases}$$

Then, depending on the value of λ, we may formulate the recommendations by bearing in mind that always the monopoly market is detrimental to both consumers and producers.

2.4. Data source

The sources of the data were the FAOSTAT, UNCTAD BRB, ISTEEBU and the International Monetary Fund (IMF). Extrapolation method was used to compute the missing data. The availability of the rice import price time series were found from the ratio of the rice import volume over the rice imports in values.

The same method was done to estimate the local price of rice featured as the retail price i.e., the ratio of production of rice in

volume over the production of rice in value. The per capita rice consumption was computed by assuming that the annually consumption rice volume is roughly70% of annually rice total production. Therefore, per capita rice consumption was derived from the division of rice consumption over the population of the same year. All nominal variables involving prices and incomes were deflated by consumer price index and gross domestic deflator.

In order to avoid running a nonsense or spurious regression, it is important to check the presence of unit roots on the time series data of the variables considered in the model. The tests of augmented Dick-Fuller and the Philips-Peron were used in this study. Furthermore, the model specification and stability was tested by classical tests such as Breusch-Godfrey serial autocorrelation LM test and White test for heteroscedasticity.

III. Empirical Results

Before estimate the model, we first present the descriptive statistics of both independent and dependent variables so that one may capture the variation, central tendency and dispersion of the data used.

Table 1: Description of the variables used in the NEIO Model

Variables	Min	Mean	Max	Standard Deviation
Local Price of Rice, P_{lt} (USA$/Tonne)	12.60	246.2751	1086.53	272.56529
Rice Production, Qt (10^3 Tonnes)	934.00	18015.0729	47298.00	16198.87632
Lag quantity of rice imports, LIMQt-1	1.39	6.5599	9.01	1.74496
Import rice Price, Pit (USD$/Tonne)	.00	.1338	.54	.14717
Import quantity IMQt (10^3 Tonne)	4.00	1561.5625	8150.00	1599.26097
Per-capita income, It (USD$/head/year)	83.45	123.7400	156.44	19.68569
Per capita consumption (Kg/head/day)	.02	2.4056	6.43	2.20594

Source: Author's calculations, 2010

As reported earlier and noted in the above table, the local price of rice is volatile due to the forces of demand and supply and also the prevailing agricultural and food policy in the country. However, the range of import rice price is relatively small. This conveys that all along, the country has tried to control the importation of this commodity through the fiscal instruments. It may also indicate that the consumption of rice was moderately low. Compare to

other countries in the sub-Sahara region, the income per capita is very dismal (below one dollar per day) and this is one of characteristics of the poorest countries in the world.

The augmented Dickey-Fuller and Philips-Peron tests of unit roots suggested that the time series data under consideration are stationary (see appendix 1).

For the results of the simultaneously equation model, both the tests of Breusch-Godfrey and White indicated that the hypotheses of existence of serial autocorrelation on one hand and heroscedasticity on the hand were rejected. Both the coefficients and elasticities are presented on the following table.

Table 2: NEIO Estimation Model

Demand Equation	**Coefficient**	**t-Ratio**	**Elasticity Coeff. * P/Q**
C	-2525.945***	-1.913746	
PRESTIM	37.02431*	3.395567	0.16
I	-401.9088	-1.586448	-0.09
PCB	1096.310	1.138551	0.35
Q	-0.176301***	-1.709861	-0.48
LIMPQ	700.0167*	6.611549	0.64
Optimality Equation			
C	-52.37503***	28.75082	
P	0.059494***	0.031895	0.10
IMPQEST	0.005408	0.004739	0.9
T	1.823447*	0.596745	

Note: *** 10% level of significance, ** 5% level of significance and * 1% level of significance, PRESTIM=

Adjusted local price of rice according to 2SLS method, I= per capita income, PCB= per capita rice consumption, Q= quantity of rice, Production, LIMPQ= quantity of rice imported lagged once, P= price of rice importation, T= trend,
IMPQEST= adjusted quantity of rice imported according to 2SLS method.

Source: Author's calculations

The table above shows that except the variable of retail price and importation of rice, all other variables carry the expected signs and some of them are statistically significant. If we attempt to interpret the results, for the elasticity of per capita consumption, we may say that at given price change will result in a more than proportionate change in quantity of imported rice in Burundi. However, the importation of rice impede on the production of rice in Burundi, for at give change in quantity of rice production will result in a less than proportionate change in quantity rice imported. Economic theory supports that an increase in local production should lead to the reduction of rice imported, which is the case here. Indeed, 10% of rice production will cause a 1.8% reduction in rice importation. In nutshell, the determinants of the importation of rice are local price and production rice while the retail price is impeded by the price of importation of rice in the country.

Although the estimation of the parameters of these variables is quite important, the most essential part of this paper is the determination of the market power parameter λ. Its estimation involves both α_1 and β_3. These values are 37.02 and -0.005 and taking them together, we get an absolute value of 0.1851. On straight continuum of the market structure, starting from competition to monopoly, this result suggests that the rice importation market is closer to competition. We may say that the local production has somewhat clouded out the rice importation

thanks to the improvement of local rice varieties and the strategy of adapting the imported rice varieties to agricultural environment of Burundi. The other argument is that there are rice importers have a little impact on the local rice production and market. This is consistent with the reality of rice trade matrix where only Tanzania and some few Asian countries import rice to Burundi.

Conclusion

Rice consumption is highly depending on the imports and the latter have experienced high volatility due to the socio-political condition in and the fiscal policy of Burundi. Rice imports come from many top rice world producers (India, Pakistan, etc.) and the neighboring country, i.e., Tanzania.

The Burundi government has attempted to shift the demand rice imports by investing in the research centre in order to provide highly producing rice cultivars to the rice farmers that meet the taste and preference of consumers. This has yielded successful result. The study was aiming to gauge the determinants of rice imports and the impact of the high concentration of rice imports market on rice prices by applying the NEIO model to the Burundian rice market. The time series data for 1961-2008 were collected mainly for FAOSTAT and UNCTAD but supplemented with the data from ISTEEBU and BRB.

The results show that both per capita consumption and income on one hand and rice production on the other hand have an impact on rice importation, while price importation significantly affects the local rice price in Burundi.

Therefore, we recommend that the government of Burundi keeps on investing in rice research since this has shown a positive effect on the competitiveness of local rice production on the importation counterpart. Besides, another implication is that the import price of rice is higher than what would exist if the market operated

under perfectly competitive conditions. To sum up, the rice exporting firms are exercising some market power, but not in proportion to their control over market supplies,

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