Reversing Urban Bias in End-Markets: Competitiveness of Senegal River Valley Rice

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Introduction

Urban bias, defined as "the inefficient and systemic bias against agriculture and the rural economy in the allocation of developmental resources", is probably the largest institutional impediment to the competitiveness of food sectors in the world's poorest countries (Bezemer and Headey, 2008). Some West African countries now recognize that agricultural growth, and hence reversal of urban bias, is a precondition to broader growth. In April 2008 Senegalese President Abdoulaye Wade launched the GOANA program (Grand Offensive in Agriculture for Food and Abundance). The goal of the program is to make Senegal self-sufficient in food by 2015, notably by irrigating and cultivating unused land near the Senegal River Valley (SRV) and ramping up the production of rice, the staple food for millions of Senegalese (Ministère de l'Agriculture et de l'Elevage, 2008). Despite the GOANA program, domestic food production covered only 28% of the domestic demand in 2008 (Gergely and Baris, 2009).

Rice imports into Senegal, particularly, consist almost entirely of broken rice. In international markets, broken rice is considered an inferior product and is therefore much cheaper than whole-grain rice. During the colonial period under the French administration, cheap broken rice from Asia was imported in large quantities in order to keep food prices under control and at the same time promote groundnut production as an important cash crop. The import policy remained unchanged after independence in 1960. Senegal has almost no natural resources of its own so cheap labor was essential to achieve industrialization. Cheap labor relies on cheap food and import was the easiest way to ensure cheap food (Brüntrup, Nguyen and Kaps, 2006). Politically seen, urban dwellers were and still are the most important voters in post-colonial West Africa.

Senegalese policy makers now face the remaining effects of the historical urban bias in rice end-markets; i.e. urban consumers in Senegal have developed a marked preference for imported broken rice (Fall *et al.*, 2007). The crucial question now becomes how to reverse urban bias' footprint on Senegal's end-markets. Recently, perhaps triggered by high international rice prices, SRV producers have joined efforts in supplying a new enhanced-quality SRV rice brand *Rival* (Riz de la Vallée). Governance of quality (processing, cleaning and packaging) and provision of micro-financing is conducted by the Oxfam-funded platform PINORD (Platforme d'appui aux Initiatives du Nord). Assessing the impact of this initiative on end-market competitiveness of SRV rice could provide useful complementary information to Senegalese policy makers' current GOANA program. Therefore, we assess the competitiveness of SRV rice in two large urban consumption poles, i.e. the capital Dakar, close to the port and remote from the rice production zones, and Saint-Louis, the former capital and major urban pole in the rice production zone of the SRV.

Material and Methods

We conducted two consumer experiments in both cities during the period of November 2008 to February 2009 to elicit consumers' willingness to pay (WTP) for rice quality attributes. Each experiment lasted five days during which 10 experimental auction sessions were conducted, each day one in the morning and one in the afternoon. The market segment targeted in our consumer experiment are women as they the major decision makers purchasing rice in Senegal as well as in other rice consuming West-African countries. The experiments took place in two youth centers, one at 500 m from the central market in Saint-Louis, and one on the Tilene market, one of the largest markets in Dakar. For each session, 10 participants were recruited using a purposive non-probability sampling method. Women were randomly selected and recruited on the spot, most of who were going to or returning from the market. We priced our participation fee such that urban consumers would be on average indifferent between participating and not participating. At a fee of 3,000 FCFA (US$6), we obtained a participation rate of approximately 50%.

We ran three Vickrey (1961) second-price auctions simultaneously and used a fixed benchmark following Melton *et al.* (1996) and Roosen *et al.* (1998). The analyzed rice qualities are (i) conventional SRV rice (used as benchmark), (ii) unlabeled and (iii) labeled (*Rival*) enhanced-quality SRV rice, and (iv) labeled imported Thai broken rice. The benchmark rice is a mix of varieties (Sahel 108 and 201) and is commonly available on the market. In terms of quality and price, it is inferior to the three alternatives in the auction. The imported Thai broken rice has a grain quality somewhere between the benchmark and the enhanced-quality SRV rice and contains some impurities. The unlabeled and labeled rice types are equal, i.e. enhanced-quality SRV rice (Sahel 108 variety) which is purified, carefully sifted, and branded and marketed as *Rival*. We visually presented the four rice types in four bags on a table in the front part of a closed conference room in the youth centre. The rice types were also presented on the participants' tables in four dishes, each one containing one kilogram of uncooked rice. Each participant was endowed with one kilogram of the "benchmark" mediocre-quality SRV rice and was presented three times with the option to exchange this kilogram into an alternative rice type. We did not use any manuals or monitors and conducted the experiment verbally in the national languages *Wolof* and *Pulaar*.

We paid considerable attention to explaining the mechanism and training participants in its procedure. Following Shogren *et al.* (1994), we used commonly known brands of biscuits to familiarize the participants with the Vickrey auction. We conducted two rounds with an evaluation after each round to check whether all participants understood the system or whether more clarification was needed. To accelerate the learning process of the endow-and-upgrade method, we used the analogy of buying new jewelry in exchange for old jewelry, where only the price for "upgrading" is paid, a buying method commonly applied by Senegalese women in the jewelry market.

We conducted two bidding rounds separated by a sensory test aiming at assessing the impact of post-cooking quality attributes on WTP. During the sensory test, each participant was presented four dishes with cooked samples of the four rice types and was asked to taste the rice types. At the end of the two rounds, analogously to Roosen *et al.* (1998), we randomly selected one product and one bidding round as binding. We explicitly explained this during our introduction to avoid the substitution effect that could arise if participants could win more than one product, which could in turn compromise bidding their true value for the products.

Results and Discussion

Table 1 displays and compares the mean bids among the rice types in Saint-Louis and Dakar before and after the sensory test. Due to the use of the endow-and-upgrade method, bids have to be interpreted as differences in WTP between the benchmark rice, priced at 300 FCFA/kg (US$0.60/kg) during the period of November 2008 to February 2009, and an alternative rice type. Due to the mass of bids located at zero FCFA, we also calculated the "adjusted mean" which is

the mean of all non-zero bids. Average individual non-zero bids range from 86 to 165 FCFA/kg (US$0.17–0.33/kg), depending on the product, the market, and the bidding round. From the table, three observations can be made. First, mean bids for imported rice in Saint-Louis suggest price premiums of 17–22% relative to the benchmark SRV rice, which are consistent with the premiums observed on the Saint-Louis market since 1997 (Lançon and Benz, 2007).

Table 1: Descriptive statistics of consumers' WTP for alternative rice types

	Rice type	Saint-Louis		Dakar	
		Before sensory test	After sensory test	Before sensory test	After sensory test
Mean (FCFA)	Imported	67 (96)	52 (80)	29 (57)	22 (46)
	Unlabeled	125 (108)	90 (91)	97 (85)	77 (81)
	Labeled	131 (116)	102 (116)	113 (89)	88 (84)
Zero bids (%)	Imported	49	57	71	74
	Unlabeled	19	30	20	33
	Labeled	20	33	17	28
Adjusted mean (FCFA)	Imported	134 (98)	122 (80)	104 (62)	86 (52)
	Unlabeled	154 (100)	129 (82)	122 (78)	116 (74)
	Labeled	165 (108)	154 (112)	136 (80)	123 (74)

Note. Standard deviations are in parentheses. The adjusted mean is the mean of all non-zero bids. The price of the benchmark rice was about 300 FCFA/kg (US$0.60/kg) during November 2008 – February 2009 at an exchange rate of US$1 = 502 FCFA.

Secondly, the participants were more likely to buy quality SRV rice than imported rice and they were willing to pay price premiums for it, particularly for the labeled product *Rival*. This suggest that if quality is enhanced and tailored to consumers, price premiums for SRV rice may be twice as large (30–44%) as price premiums for imported rice.

Thirdly, the likelihood of upgrading from the benchmark rice to any of the alternative rice types declines considerably after tasting and the WTP drops at the same time. Several participants told us that if it is eaten without any supplements, the benchmark rice tastes better because of its mixed grain (broken, intermediate and long) composition. Some of the participants considered the mixed composition as a plus because through sifting, they can obtain different grain types from a single rice product. Moreover, as this rice type needs to be purified before cooking, it was less discounted in cooked form than in non-cooked form. This finding indicates the existence of a price sensitive market segment of consumers with limited time constraints who may prefer the cheap mediocre-quality rice, despite the additional work it involves during preparation. After all, we must not forget that a large part of the Saint-Louis population has been exposed to the benchmark rice for a very long time and is used to its visual, sensory and cooking characteristics.

Conclusions and Outlook
Urban bias constitutes an important institutional impediment to economic development in poor countries. Some African governments now recognize that they should invest in agriculture in order to reverse urban bias, but often forget the equally important objective of investing in quality tailored to consumers so as to reverse urban bias' footprint on end-markets. Our results suggest that investment in intrinsic post-harvest quality tailored to consumers in end-markets is the first step that needs to be undertaken in the reversal of urban bias' footprint on Senegalese end-markets.

Recently, farmers in the Senegal River Valley (SRV) have started marketing enhanced-quality SRV rice branded as *Rival*. Vickrey second price auctions suggest that SRV rice is able to compete against imported rice if post-harvest quality is tailored to consumer preferences. However, although our experimental evidence shows that there exists a segment of consumers which significantly responds to enhanced post-harvest quality, the important mass of zero bids

before the sensory test uncovers the existence of a market segment (17-20%) of consumers who prefer the conventional mediocre-quality SRV rice, despite the availability of enhanced-quality SRV rice. This suggests that striving for visual post-harvest quality attributes, such as homogeneity, may come at the cost of sensory quality. This provides useful information for generic promotion programs that need to accompany food self-sufficiency programs, which aim to reverse urban bias.

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