

Domestic or imported? An analysis of rice demand in Senegal

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MOTIVATION

Rice: one of the three major crops cultivated worldwide, along with wheat and corn

- Plays a determining role in achieving food security and political stability in many developing countries

- One of the main staple food in many countries sub-Saharan African countries, both in urban and rural areas
 - Global rice exports estimated at 34.234 million metric tons in 2018 with about 31.46% going to Africa (**Kathiresan et al., 2020**)



MOTIVATION

- Senegal highly dependent to rice importations
- Supply side measures put in place to reduce the dependency
 - Fertilizer subsidies and improved seeds subsidies
 - Investments in large-scale irrigation
- Supply focused policies implicitly assume perfect substitutability between imported and domestic rice (Demont et al., 2017).
- Is this assumption verified?

This paper contributes to the rice policy debate by analyzing the demand side, in both rural and urban areas, using the case study of Senegal in West Africa



DATA

- ❑ Quantitative data collected under the Agricultural Policy Support Project (2015-2019)

- ❑ Sample of **6,328 households** from two different surveys (urban in 2017 and rural in 2018)
 - Urban sample: 2,014 households located in 19 major Senegalese cities
 - Rural sample: 4,314 households located in areas of rainfed agriculture

- ❑ Nation-wide stratified two-stage random sampling
 - Primary units: Enumeration Areas (EAs)
 - Secondary units: households drawn from the EAs of the first stage.
 - Sample weights attributed to all observations.



METHOD

- Expenditures and price elasticities derived from the Quadratic Almost Ideal Demand System (QUAIDS) model
 - Extension of the Almost Ideal Demand System (AIDS) (Deaton and Muellbauer, 1980)

- Food items classified in 8 categories: local rice, imported rice, other cereals, legumes, fruits and vegetables, meat-fish and poultry, dairy products and other foods.
 - Categories defined according to nutritional status of food groups, preceding studies (Saweda et al., 2020; Dolislager, 2017)





FEED^{THE}**FUTURE**

The U.S. Government's Global Hunger & Food Security Initiative

RESULTS



In Senegal, urban households consume more local rice and rural households more imported rice

Table 1: Per capita annual consumption (kg) of different rice types, by urban and rural households

	Urban	Rural	National
Rice	91	83	88
Imported rice	41	57	47
Broken	25	39	30
Whole grain	17	18	17
Local rice	49	27	41
Broken	23	13	20
Whole grain	26	13	21

Table 4: Cross price elasticities

	Urban			Rural		
Food groups	Local rice	Imported rice	Cereals	Local rice	Imported rice	Cereals
Uncompensated cross price elasticities						
Local rice	-0.414*** (0.009)	-0.007 (0.009)	-0.035*** (0.005)	-0.351*** (0.006)	-0.111*** (0.005)	-0.105*** (0.004)
Imported rice	-0.012 (0.007)	-0.393*** (0.008)	-0.039*** (0.004)	-0.090*** (0.006)	-0.338*** (0.006)	-0.103*** (0.004)
Cereals	-0.077*** (0.019)	-0.078*** (0.020)	-0.286*** (0.015)	-0.083*** (0.007)	-0.100*** (0.006)	-0.434*** (0.006)
Compensated cross price elasticities						
Local rice	-0.337*** (0.009)	0.072*** (0.009)	0.023*** (0.005)	-0.243*** (0.006)	0.022*** (0.005)	0.042*** (0.004)
Imported rice	0.071*** (0.007)	-0.309*** (0.008)	0.022*** (0.004)	0.018** (0.006)	-0.205*** (0.006)	0.045*** (0.004)
Cereals	0.031 (0.019)	0.031 (0.020)	-0.207*** (0.014)	0.031*** (0.007)	0.041*** (0.007)	-0.277*** (0.005)

POLICY IMPLICATIONS

- Location is an important determinant of local rice consumption.**
 - Rural households consume far less local rice than their urban counterparts.
 - More a problem of access than preferences issues
 - Need to improve access to a good quality local rice

- Broken rice is the most consumed rice type by both rural and urban households**
 - Related to the preferences towards this type for the national dish
 - Consumption of local rice can be increased by making broken rice more available

POLICY IMPLICATIONS

Different levels of substitutability between domestic and imported rice, depending on the location.

- No substitutability between domestic and imported rice for urban households
- Low substitutability for rural households
- Rice types should be considered in policy making

Low price elasticity of local and imported rice

- Necessary to Senegalese diets
- Price policies like subsidies or taxes may not be good shifters of demand
- Rising incomes and increased urbanization are more likely to accelerate this shift.