THE EMERGENCE OF PARALLEL MARKETS IN A TRANSITION ECONOMY: THE CASE OF MOZAMBIQUE

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1. INTRODUCTION

In response to the economic crisis gripping most countries in sub-Saharan Africa, we must focus attention on protecting human resources and alleviating poverty as a complement to economic reform policies. The challenge is to raise the incomes of the poor without compromising macroeconomic stability. Mozambique is one country where such a challenge is acute due to the economic decline that resulted from years of ill-advised state intervention in markets, coupled with the civil conflict that has resulted in massive economic dislocation. In response to the crisis gripping the country, Mozambique instituted a system of food rationing in the capital, Maputo, ostensibly designed to ensure a minimum amount of low-priced staple foodstuffs for all households. This rationing system, the Novo Sistema de Abastecimento (NSA),[1] was intended as the marketing channel through which the enormous quantities of commercial food aid would be distributed, the objective being the assurance of food security of the poor. In this paper we explore the implications for the poor of state intervention in food markets in Maputo, with particular attention to the implications for the poor and the effectiveness of the food rationing system in meeting food security objectives.

In examining the effectiveness of the rationing system, we also explore the expected, albeit poorly understood consequence of rationing: the emergence of parallel markets for the subsidized goods. Thus, in our efforts to understand the distributional implications of the ration system, we also focus on the questions of who has access to official prices instead of relying on parallel markets, including the quantities purchased and prices paid in the alternative market outlets

The findings presented in this paper are based on a household survey conducted in Maputo, which is described briefly in Section 2. In Section 3 we detail the evolution of the food rationing system, along with a discussion of how food markets are structured. The role of food aid and the intent of the continued state intervention in the distribution system is highlighted, especially in regards to the state's role in perpetuating the system of food rationing. We then turn in Section 4 to address the issue of the determinants of access to, and use of ration cards for the purchase of subsidized commodities. We end in Section 5 by highlighting the major policy recommendations that follow from this investigation.

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[1] For a description of the history and functioning of the NSA, see Harold Alderman, David Sahn, and Jehan Arulpragasam, "Food Subsidies and Exchange Rates Distortions in Mozambique," *Food Policy*, October 1991.

2. THE HOUSEHOLD SURVEY DATA

The data employed in the paper are from the integrated household survey of 1,816 households conducted by the Food Security Department of the Ministry of Commerce and the Cornell University Food and Nutrition Policy Program over a 7 month period, October 1991 to April 1992. The multipurpose survey was designed to collect detailed information on household structure, consumption, incomes, labor market activities, morbidity, child nutrition and feeding practices, and housing characteristics. The sample was a self-weighted random sample of households in greater Maputo (including Maputo City, Matola, and Inhaca), derived from a complete enumeration of households, that in the first stage of sampling, served as the basis for randomly selecting clusters of the city and outlining regions to survey. Each of these clusters were then re-enumerated, and the sample size within the cluster was adjusted for any deviation from those found in the original enumeration. A random sample of households was then selected from each of the clusters in the second stage of the sampling procedures.

One final point needs to be made relating to the data in this paper. Food markets, and the NSA in particular, have evolved over the course of the past few years, in terms of rules and regulations, the nature of intervention, and the implications for the welfare of consumers. The discussion in this paper reflects conditions that prevailed during the period that the survey was undertaken. It is not necessarily indicative of the situation a year earlier or later, although the lessons learned from the analysis certainly have application beyond the narrow time frame.

3. FOOD MARKETS AND PRICES IN MAPUTO

Four basic commodities — yellow maize flour, yellow maize grain, rice, and sugar were distributed through the NSA. Given the decline in production and the disruption of markets due to bad policy and war, it was necessary to import a large share of these products, particularly for the capital city, Maputo. The severe balance of payments and budget deficit in Mozambique, coupled with extensive poverty, induced donors to meet this need by providing food aid. In fact, in recent years virtually all the products destined to be distributed through the NSA were food aid, but perhaps more important, is that according to the donor's distribution plans, most of the food aid *should* have been destined for the NSA. This was particularly true for the yellow maize supplied under the U.S. food aid program (P.L. 480 Title III). With the exception of a small share of product destined for free distribution to institutions such as orphanages and hospitals, all the yellow maize under the U.S. food aid program in Maputo was supposed to enter the NSA.[2]

The fact that food aid was the source of the product distributed through the NSA meant that the success of the rationing scheme was in part subject to the vagaries of food aid availability. Furthermore, owing to the donors' instrumental role in the NSA, the issue of the distributional impact of the subsidy was paramount. But before turning to an analysis of who actually benefited, we first provide some background on the functioning and structure of product markets, and the ration system through which the staple goods were distributed.

Households with a ration card were entitled to an allocation of commodities that was to be distributed through designated NSA retail shops. For households in the central (i.e., *cement*) part of the city, the ration consisted of 2.5 kg of yellow maize flour, 1.5 kg of rice and 1 kg of sugar per capita per month. The only difference in the ration for those in the outlying districts of the city (the *canico*, or *cane*, areas), was that they were provided maize grain instead of flour.

Retail shops (*lojas*, in Portuguese) that distributed the rationed goods were licensed by the government. They received their allotment of commodity from the state food distribution agency that operated in Maputo (EACM) according to the number of cardholders they served. The same retail shops that participated as outlets for the NSA, were also selling the four NSA commodities, and a wide variety of other goods, outside the ration system. There were also other *lojas* not licensed to participate in the NSA that were selling maize, sugar and rice, as well as other products, to consumers outside the ration system. In addition, a third source (in addition NSA ration sales through *lojas*, and off-ration sales through both participating and nonparticipating *lojas*) of goods existed - the informal open-air parallel markets, known as *dumbanengues*. These *dumbanengues*

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[2] In addition to the commercial program for Maputo and Beira, where the food aid was supposed to be sold through the NSA, there was a noncommercial emergency relief food aid distribution program under PL 480 Title II in rural areas.

or parallel markets, are widespread throughout Maputo. *Dumbanengues* exist on hundreds of street corners, as well as in the form of large conglomerations of traders that gather daily in numerous open areas. Thus, there are three major types of markets for purchasing yellow maize, rice and sugar: rationed purchases through the NSA made at licensed *lojas* by NSA cardholders, nonrationed purchases at the NSA licensed and nonlicensed *lojas* that do not require the use of the NSA card, and nonrationed purchases through *dumbanengue*.

In the case of rice and sugar, the markets had been partially liberalized prior to the survey. This allowed for commercial imports, and the private marketing of imported and domestically produced product. We therefore expected to find, during the course of the survey, *lojas* and *dumbanengue* selling rice and sugar outside the formal ration shop system. This simply reflected the emergence of a legal, free market.

In contrast, the market for yellow maize was supposedly under the control of the state, with prices administered from port to retail outlet. Thus, there should have been little or no off-ration retail maize sales in the *dumbanengue*.[3] And if off-ration sales occurred at the *lojas*, such transactions should have taken place at the official price.[4]

Any appreciable quantity of product available in the *dumbanengue* would thus have to have been diverted somewhere along the official marketing chain. Furthermore, unlike in the NSA where the official price would have been adhered to, in the *dumbanengue*, supply and demand forces would have set the price. The former would be determined by the amount of diverted food aid, and the latter determined by excess demand in the official market.

The household survey data revealed, that all NSA products — rice, sugar, yellow maize flour and yellow maize grain — indeed were purchased by householders in the *lojas*, off-ration, and in the *dumbanengue* as well. It is interesting to examine the relative prices of products sold through the NSA versus the other market channels.[5] In Figure 1, the median per kilogram price of yellow maize

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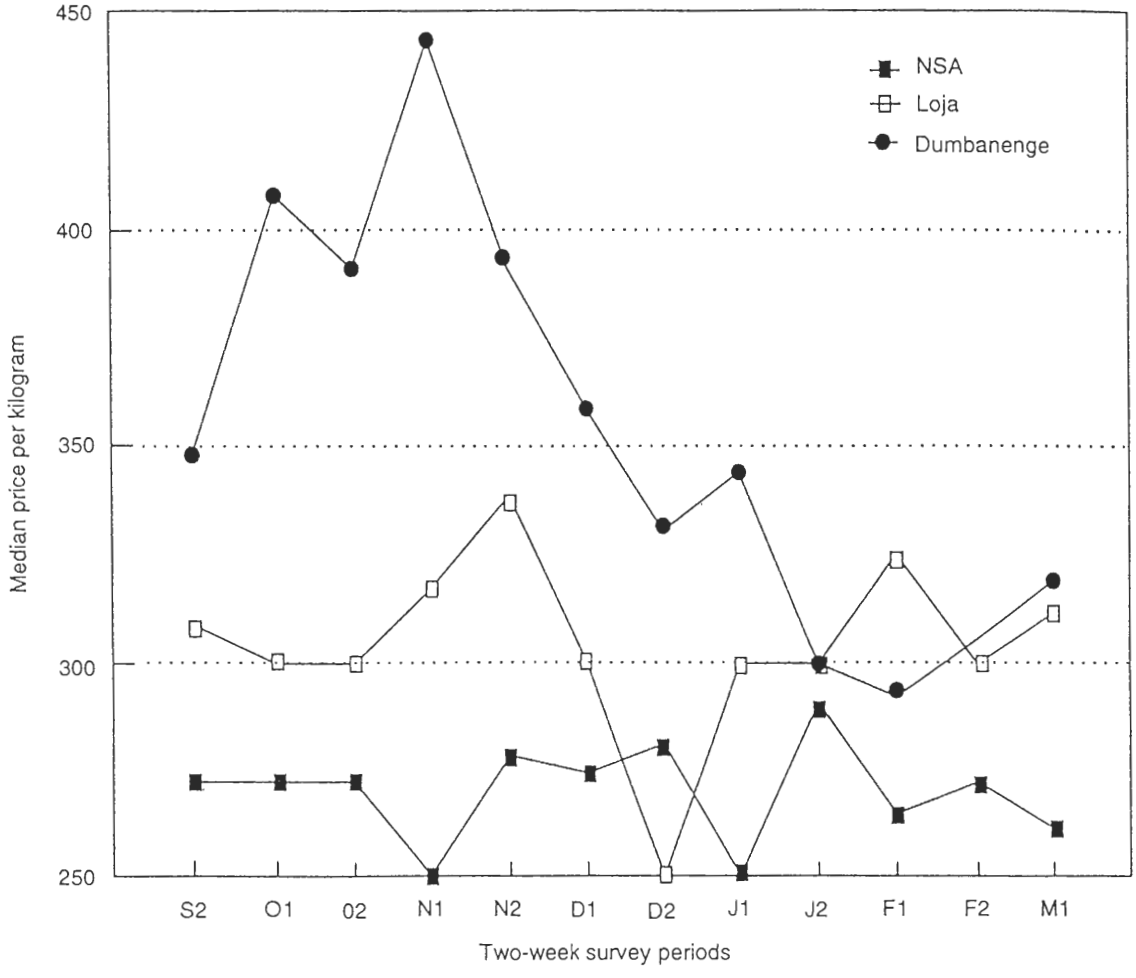
[3] There might have been a trickle of yellow maize imports from South Africa and Zimbabwe. Also, small quantities could plausibly be from the re-sale of rationed product and private imports.

[4] Some nonrationed purchases through the *lojas* were possible, even without diversion, since the supply of yellow-maize product may have been greater than the demand of cardholders, thereby leaving quantities of yellow maize leftover for general sales In fact, even off-ration sales by the *lojas*, however, should have also been made at administered prices.

[5] We use prices reported by households. Like the consumption and expenditure data, prices are from recall. We have compared the recall prices from the survey with the system of market reconnaissance that is being performed by the Ministry

(continued...)

Figure 1 - Yellow Maize Grain Prices in Survey Months



S2 corresponds to surveys administered between September 15-30
O1 corresponds to surveys administered between October 1-15
O2 corresponds to surveys administered between October 15-30
N1 corresponds to surveys administered between November 1-15
N2 corresponds to surveys administered between November 15-30
D1 corresponds to surveys administered between December 1-15
D2 corresponds to surveys administered between December 15-30
J1 corresponds to surveys administered between January 1-15
J2 corresponds to surveys administered between January 15-30
F1 corresponds to surveys administered between February 1-15
F2 corresponds to surveys administered between February 15-29
M1 corresponds to surveys administered between March 1-15

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[5](...continued)
of Agriculture. The two sets of numbers are quite consistent, although not always precisely the same.

grain is shown in the three major types of market outlets, reported by two-week intervals.[6] This allows us to capture the temporal variability observed during the course of the survey. The median price for maize grain purchased with the NSA ration card was Meticais 275/kg, ranging between Meticais 250 and 287.5 during the two-week intervals that are shown in Figure 1. The median price, in fact, corresponds closely to the official price of Meticais 275/kg set by the government during the period of the survey.

The price of yellow maize grain sold by the *lojas*, but not formally through the NSA rationing system, is also shown in Figure 1. Most notable is that, for most of the survey period, the *loja* prices typically fall between those of the NSA and *dumbanengue*. For many periods, the price premium for *loja* purchases relative to the NSA is around Meticais 25/kg. However, this difference is variable, being as high as Meticais 100/kg. As mentioned earlier, since the maize market was controlled and prices administered by the government, in theory, all the maize grain sold through the *loja* should be at the official price, including excess supply not sold to cardholders. [7]

When comparing the *loja* price to the *dumbanengue* price, it is clear that the latter exceeds the former considerably. In fact, in the first week of November, the *dumbanengue* price was nearly two times higher than the NSA price. During the later two-week intervals, beginning in December, however, the *dumbanengue* price fell precipitously. This reflected the supply shock that followed the arrival of a ship with large quantities of food aid. The arrival of the food aid both increased the quantities of maize available in the parallel market, and reduced "derived" demand in that market owing to greater quantities that became available through the NSA.

This examination of maize grain prices in the three-tier markets thus suggests that, to a large extent, *lojas* adhered to the official price policy for the maize grain sold through their shops, regardless of whether or not the sale

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[6] These intervals correspond to the period in which the survey was administered to the household. The survey itself, however, is for a 30-day recall period, so that the prices reported reflect those that prevailed during the recall period. This implies that there is some overlapping in the recall period itself. For example, consider the case of S2. The prices reported here are derived from the questionnaires administered between September 15 -September 30, so the recall periods range from August 15 - September 15 to September 1-30. For any given recall period, (e.g., August 15 - September 15), the price reported is meant to be the mean of that paid during the period.

[7] The existence of a nonrationed market for yellow maize products operating through the *lojas*, most of which are the same *lojas* licensed to distribute NSA rations, suggests that merchants received yellow maize grain in excess of the demand by cardholders, and/or diverted some of the commodity designated for sale through the rationing system to nonrationed sales. The latter explanation seems unlikely since, off-ration *loja* sales correspond quite closely to the official prices.

was technically part of the formal NSA ration system.[8] And in contrast, those reliant on *dumbanengue* purchases were paying a large premium relative to official markets.

A similar picture emerges for yellow maize flour. The median price of yellow maize flour purchased during the course of the survey was Meticais 360/kg, corresponding to the official price in affect at the time (Figure 2). This price is considerably lower than in the parallel market. Once again, there was considerable intertemporal variation. Nonetheless, evidence that the price of off-ration sales from the *loja* was extremely close to the NSA price is a further testament to the fact that shopkeepers adhered to the official pricing structure set by government, regardless of whether the consumers were noncardholders or cardholders.[9]

In contrast to maize, the rice price in the *lojas* was far in excess of the official NSA ration price (Figure 3). This is a consequence of the market for rice having been partially liberalized. Commercial imports, along with domestic production, could therefore be sold both in the *lojas* and the *dumbanengues* at free market prices. A second reason that *loja* prices were high, relative to the NSA price, was that unlike the uniformity in the quality of yellow maize grain and flour sold through the *lojas*, there were differences in the quality of rice, sold through the *lojas*. Thus, the high *loja* price is a reflection of the fact that commercial imports of rice were generally of higher quality than the donated product normally distributed through the NSA. In fact, the reason for the temporary price hike in the NSA during the months of December and January was that there was a shortage of donated rice, and the product channeled through the ration system was higher quality commercial imports, instead of food aid.

The lower price of rice in the *dumbanengue*, than the *loja*, was likely a consequence of a lesser quality product. However, given the unknown differences in marketing costs, as well as the fact that the purchase costs and profits to

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[8] What is less apparent is who received access to this officially-priced maize grain sold by the *lojas* outside the formal structure of the NSA. One hypothesis is that, either due to a response error, or a problem in perception on the part of respondents, low-priced off-ration *loja* purchases of maize grain are in fact NSA purchases by cardholders. This hypothesis would also imply that any product purchased from the *loja* by noncardholders, had a price premium relative to purchases by cardholders. This does not stand up to scrutiny. First, the results indicate that the mean off-ration *loja* price paid was not substantially different for cardholders and noncardholders. Second, approximately one-quarter of non-NSA maize grain purchases from the *lojas* were made by noncardholders, compared to 35.1 percent for the entire population. This implies that noncardholders were not actively discriminated against in terms of the grain price paid for nonrationed purchases at the *lojas*.

[9] This, of course, does not imply that shopkeepers refrained from selling the commodities received from the state at a subsidized price, to other traders out the back door of the *loja* which subsequently would be sold in the *dumbanengue*.

Figure 2 - Yellow Maize Flour Prices in Survey Months

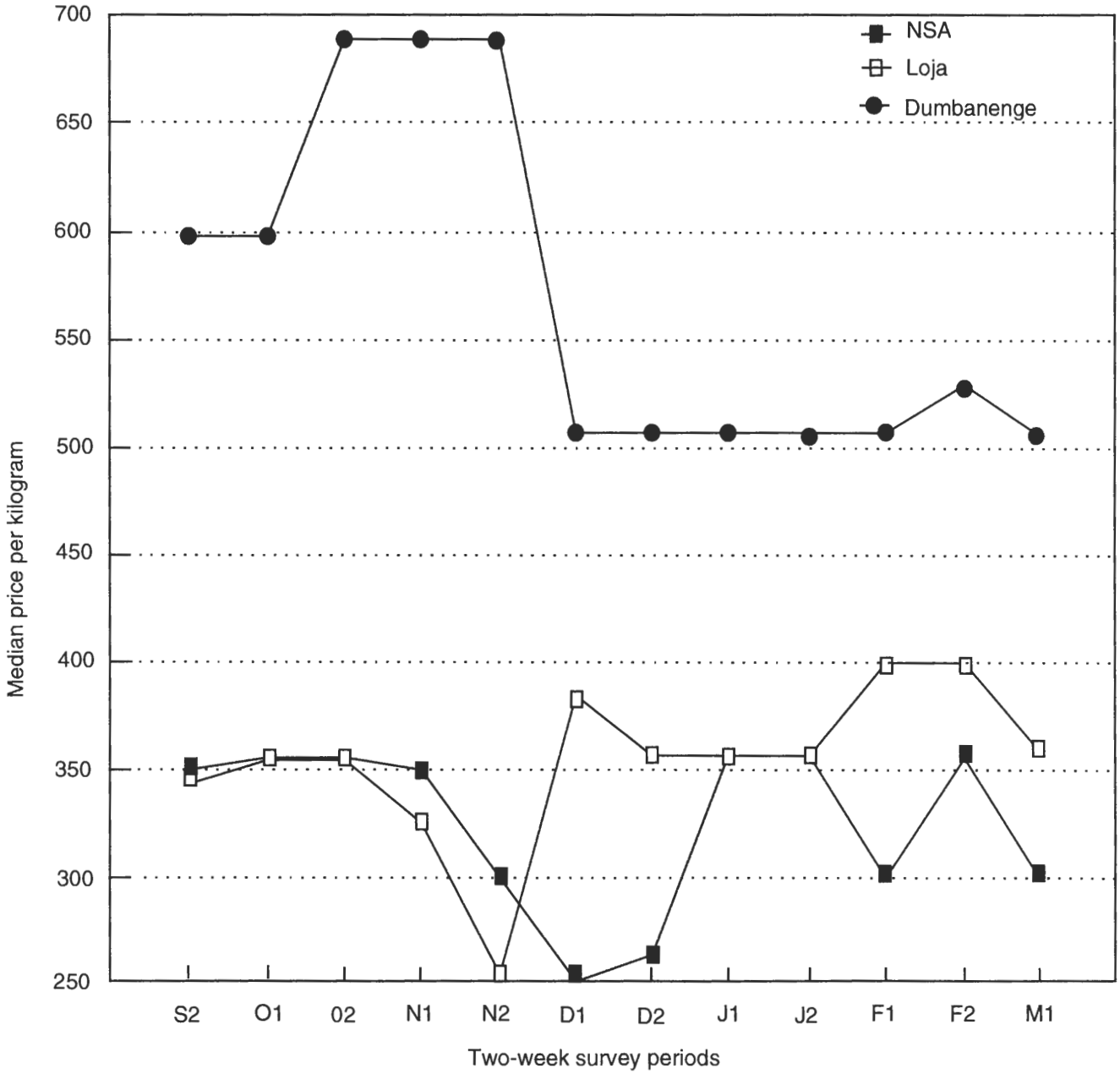
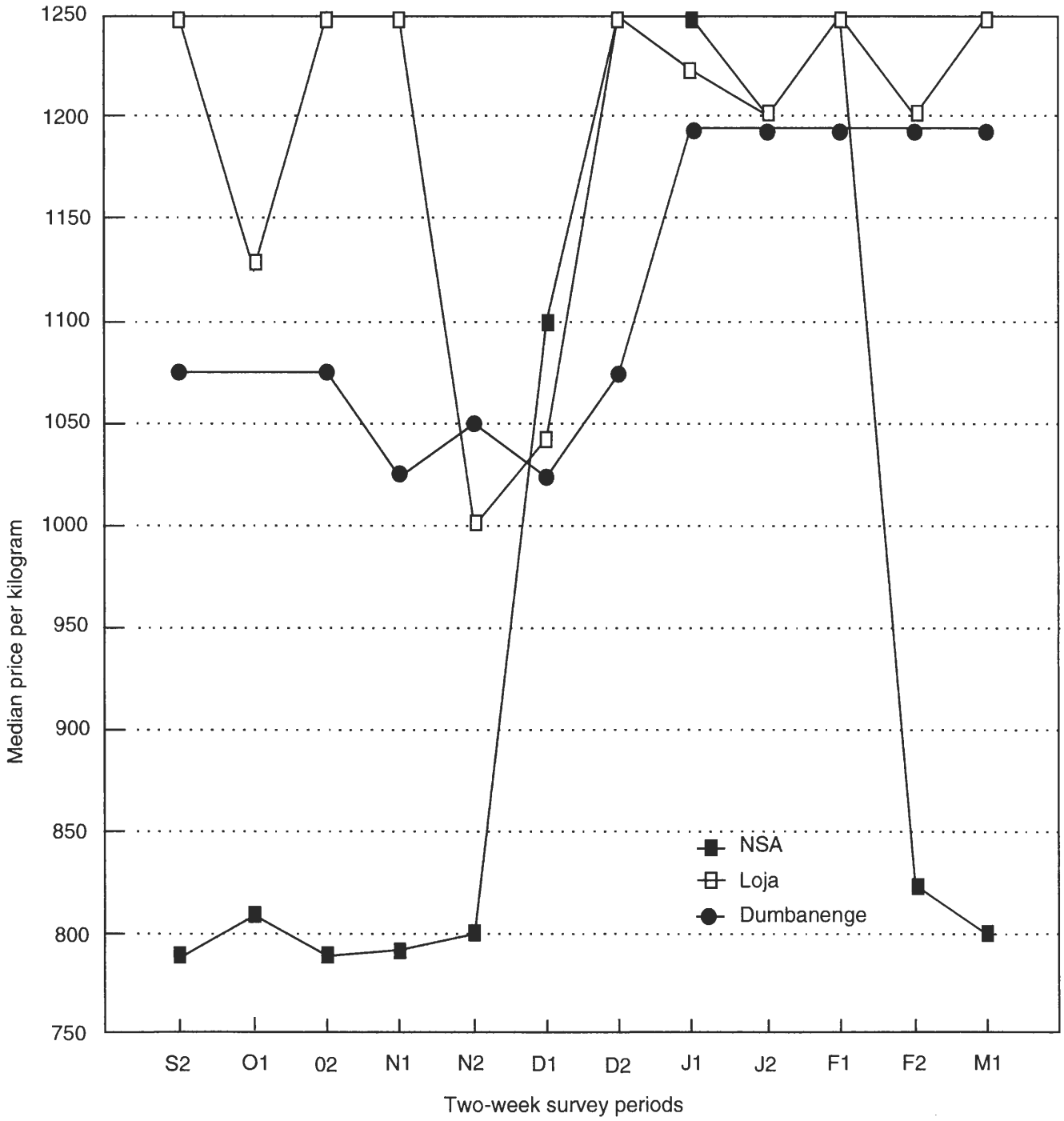


Figure 3 - Rice Prices in Survey Months

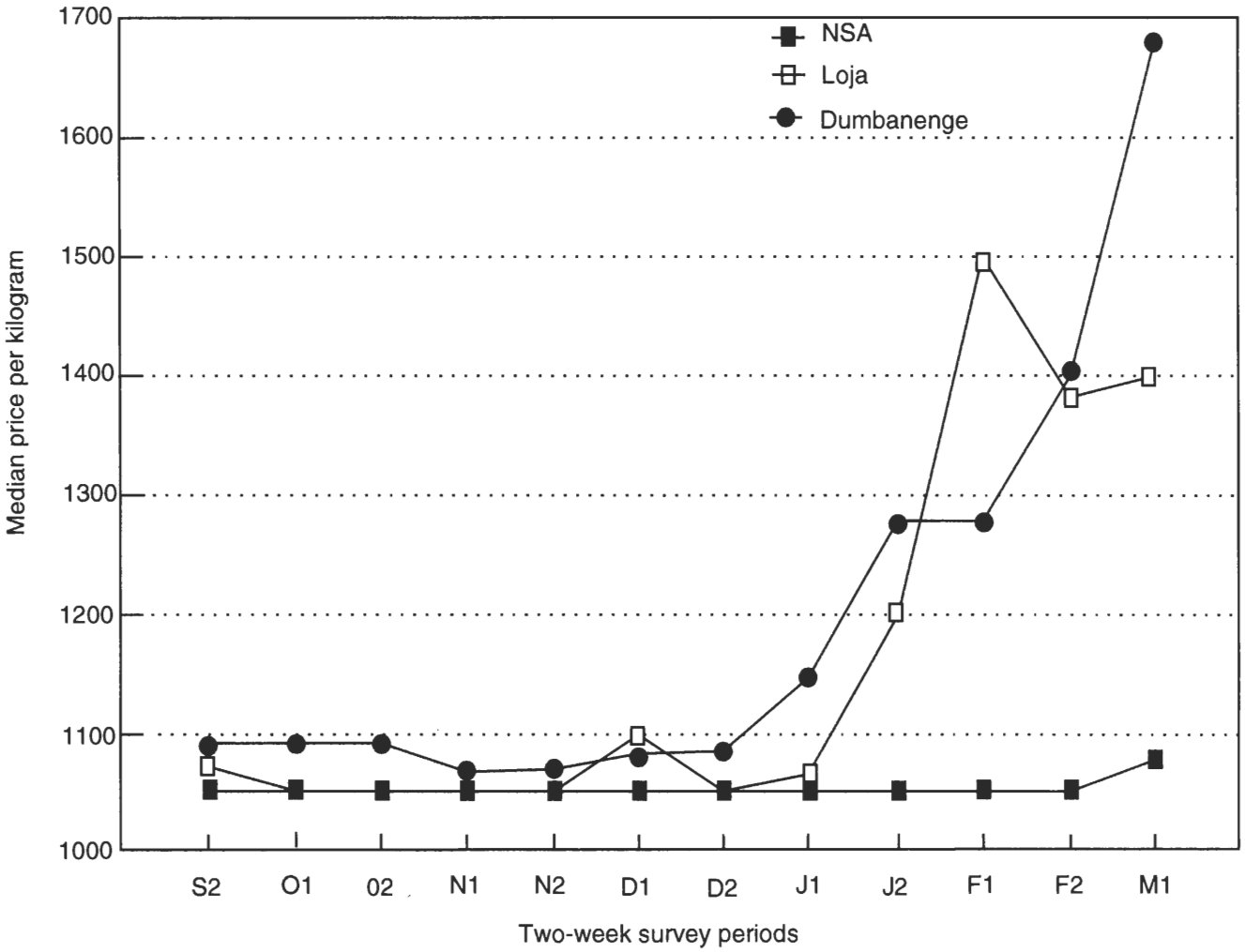


the traders in the *dumbanengue* are not known (although it was known that the source of product was often diverted food aid), it is difficult to determine the extent to which marketing cost factors versus product quality factors contributed to prices in the *dumbanengue* being lower than the *lojas*.

The price story about the final commodity rationed through the NSA, sugar, once again differs notably from the other commodities. The price of sugar in the NSA was stable throughout the survey; it closely adhered to the official ration price of Meticais 1,050/kg (Figure 4). Through December, prices of commodities sold in the *loja* outside the formal ration system corresponded to the NSA ration price, with those in the *dumbanengue* being only marginally higher. Shortly after the beginning of the calendar year, however, acute shortages of sugar occurred, both in the NSA, and open market. Traders responded by increasing the price in the *dumbanengue*.

The picture that emerges from the above discussion is one of a three-tier market for staple commodities, each with considerable inter-temporal variation, driven in large part by the vagaries of food aid arrivals and state intervention. What is also clear is that access to yellow maize flour and grain, and rice, through the NSA conferred major price benefits to consumers. In addition, those households that purchased yellow maize products through the *lojas*, but outside the formal rationing system also benefited from the intervention in markets. We therefore next address the key question of who benefited, and at what level from the official pricing structure.

Figure 4 - Sugar Prices in Survey Months



4. ACCESS TO THE NSA

WHO HAS A CARD?

Of the households residing in Maputo, 64.8 percent had an NSA card. Among the sub-sample of households without a NSA card, we explored whether in fact they attempted to get a card during the last 12 months. Most of the households without cards, 83.2 percent, never attempted to enroll in the ration system (Figure 5). Among them, 53.9 percent responded that they were not interested in the program. Another 18.0 percent said that they were too busy, with 14.5 percent reporting that they did not know how to apply. Among the 16.9 percent of households without cards that failed in their attempt to get a card, the primary reason was that they lacked documents, or similarly, that they were *deslocados*, displaced persons that had migrated to Maputo because of the war.

In order to explore the determinants of holding a card, we run a dichotomous dependent variable model, where those who hold a card are assigned a value of one, and those households without a card, zero. The model takes the following form:

$$\Pi_i = 1 - F(-\beta X_i) \qquad (1)$$

where Π_i is the probability that a household has an NSA card, and X_i is the vector of regressors that include endogenized per capita expenditure of household i, the age of the household head, the years the household head has lived in Maputo, a series of education dummy variables that correspond to the head having completed various levels of education, household size, and household composition variables for the number of persons less than 6, and those 7 to 14 years of age (we leave out the over 14 year old age group since we have included household size).

The results, shown in Table 1, indicate that as income rises, the probability of having a card declines. The size of the income coefficient, however, is small. This indicates that although income plays a statistically significant role, in practical terms the increase in the probability of having a card as income falls is very limited.[10]

In addition to income levels, the greater the number of years that the household head has resided in Maputo, as well as the longer duration that a household has lived in their dwelling, both raise the probability that the household will have a card. The age of the household head also has a positive effect on the probability of having a card, as does the education of the head. In particular, four of the education dummy variables are significant, and

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[10] When we rerun the same models using reported, rather than predicted per capita expenditures, the coefficient is slightly smaller in absolute value, being -1.08e-06, and also significant. In addition, using reported expenditures has no effect on the other coefficients, with the exception of the fall in the magnitude of the schooling coefficients.

Figure 5 - Percentage of Households with NSA Cards, and Reasons for Not Having Card

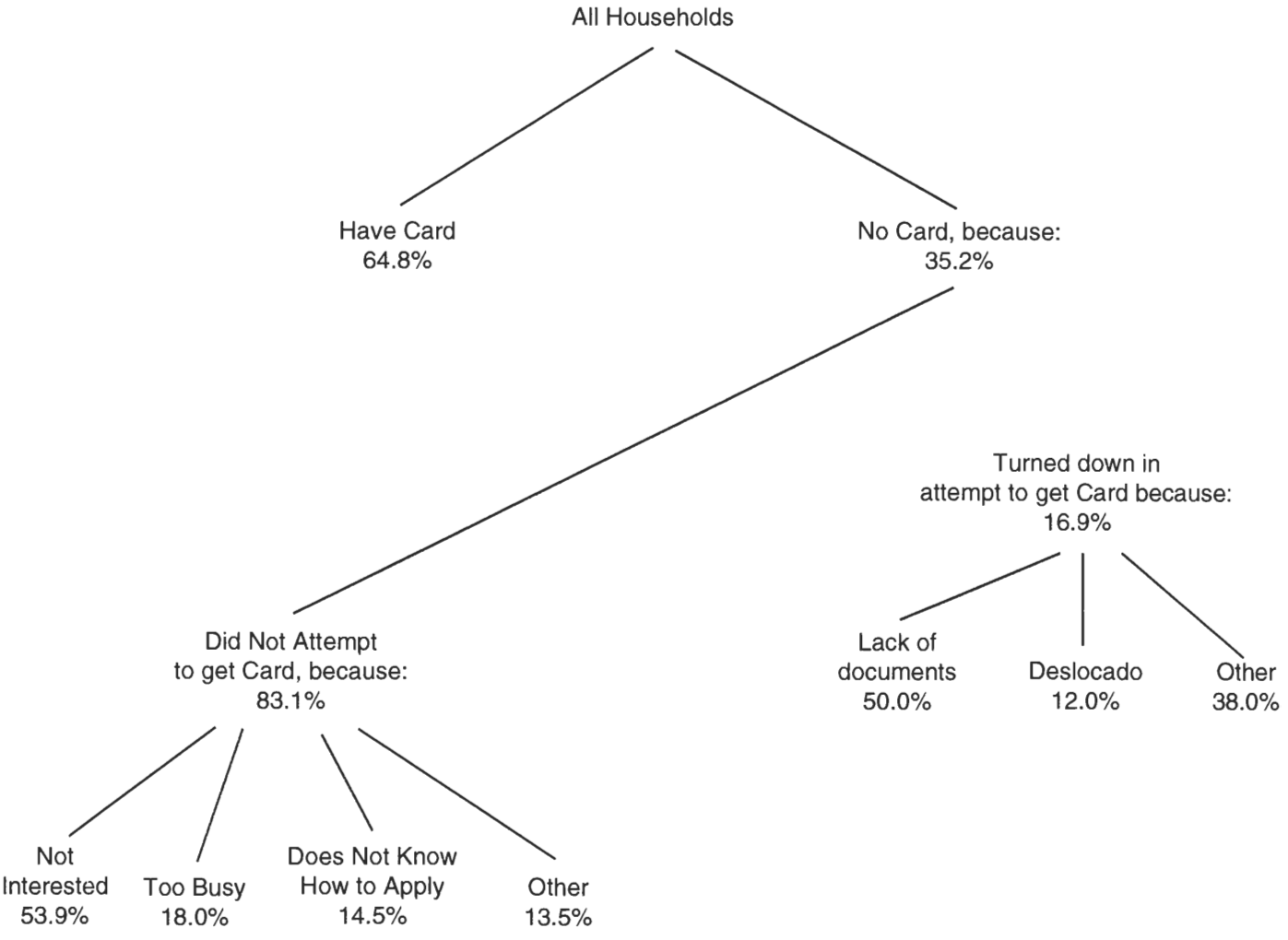

Table 1 — Maximum Likelihood Estimates of Probit Model of Cardholders/No Cardholders

	Dependent Variable: Card = 1; No card = 0		
Independent Variables	**Parameter Estimate[a]**	**t-Statistic**	**Mean Values**
Per capita expenditure[b]	-7.38	3.59	1.79×10^{-6}
Years in Maputo	0.19	7.46	21.45
Years in residence	0.30	7.18	10.33
Head age	0.14	3.64	40.60
Head grades 1-2	1.50	1.11	0.10
Head grades 3-4	4.49	4.11	0.39
Head grades 5-6	6.22	4.69	0.17
Head grades 7-9	8.44	4.37	0.12
Head grades 10-11	13.87	4.12	0.04
Head university	6.12	1.53	0.01
Household size	0.74	3.01	6.02
Children 0-6	-0.47	1.06	1.34
Children 7-14	0.46	1.19	1.59
Constant	-1.25	6.54	—
Nonzero observation	1,174		
Zero observation	639		
Chi-square (13)	391.74		

[a] All parameter values, except per capita expenditures, multiplied by 10.
[b] Predicted value of endogenous variable, and paramater estimate multiplied by 1,000,000.

increasingly positive, suggesting that more schooling raises the probability of having a card, and has a independent effect from other covariates included in the model. The coefficient for having attended less than two years of schooling, however, is small and not significant, suggesting that some minimal education, not resulting in literacy, does not effect the probability of having a card. Similarly, the education effect does not apply to the household heads who attended university, although, their small numbers in the sample suggest that limited meaning should be attached to this coefficient. And finally, the larger the household, the higher the probability that they have a card.

USE OF THE NSA

Of equal importance to having a card, is whether it was used, and the contribution of NSA participation in ensuring household food security. Specifically, we are interested in the extent to which consumers used the NSA as opposed to making off-ration purchases from the *lojas* and the *dumbanengues*, and relying on nonmarket sources, including own-production and other transfers (e.g., gifts, remittances).

The level of utilization of the NSA was surprising low. This is shown in Table 2, which presents the share of households consuming each of the NSA products, and the source of the product consumed, for NSA cardholders and the entire population, the latter group inclusive of the households with and without cards. Among cardholders, the share of households consuming products from any source ranged from 37.1 percent for yellow maize grain to 96.6 percent for sugar. The most important statistic is that less than 10 percent of the cardholder households relied on the NSA alone for purchase of yellow maize flour, rice and sugar, with only 19.8 percent of households purchasing maize grain only from the NSA. Of equal note is that less than 30 percent of the cardholder households in Maputo purchased any maize grain from the NSA, only 25.0 percent purchased rice from the NSA, and only 11.6 percent purchased any maize flour from the NSA. In contrast, the *dumbanengue* is by far the most important source of product for all commodities. Among the consumers of yellow maize flour, 70.7 percent of the households with cards purchased exclusively from the *dumbanengue*, while this was the case for nearly 40 percent of those purchasing yellow maize grain.

When we examine the same data, but this time for all households in Maputo (i.e., including noncardholders), as expected, fewer households rely on the NSA, and there are more households making purchases exclusively in the *dumbanengue*. This difference is particularly pronounced for yellow maize grain, where less than 20 percent of all households purchase any product through the NSA, as opposed to 27.9 percent of cardholders.

Putting together the information on the frequency of participation in each market, and the mean quantity consumed, we can arrive at an aggregate picture of the relative importance of each market and nonmarket source in Maputo. The results reinforce the prominence of the *dumbanengue* as the source of purchases for the commodities that are supposed to be rationed through the NSA. For yellow maize flour, 81.8 percent of the product was purchased from the *dumbanengue*

Table 2 — Share of Cardholder and All Households Consuming Commodities Distributed Through the NSA and the Source of Products Consumed

Commodity	Share of All Households Consuming Product	Share of Consuming Households by Source of Product					
		Dumbanengue Only	Loja Only	NSA Only	NSA and Other Sources[a]	Other Sources[b]	Total
	Percentage	Shares in Percentage					
Yellow maize grain							
Cardholders	37.1	39.5	21.4	19.8	8.1	8.8	100.0
All	34.3	47.2	20.1	13.8	5.6	13.3	100.0
Yellow maize flour							
Cardholders	45.7	70.7	9.0	6.2	5.4	8.7	100.0
All	44.1	73.3	9.5	4.1	3.6	9.5	100.0
Rice							
Cardholders	92.7	47.6	14.9	5.6	19.4	12.5	100.0
All	90.5	54.9	15.3	3.7	12.9	13.3	100.0
Sugar							
Cardholders	96.6	56.6	13.6	5.7	13.4	10.7	100.0
All	95.0	61.9	14.7	3.8	8.8	10.9	100.0

[a] These include NSA in combination with one or more of the following: dumbanengue, loja, gifts, and own-production.
[b] These include any combination of two or more of the following: dumbanengue, loja, gifts, and own-production.

(Table 3). Out of the four commodities, the share of sugar purchased through the NSA is the highest, being 8.9 percent. With the exception of yellow maize flour without bran, the *loja* is the second most important source of aggregate consumption. It is also worth noting that other sources, primarily gifts, remittances and wage payments, are an important source of NSA food products. This is especially true for maize grain, where 9.1 percent of the quantity consumed is from these "other" sources.

While explaining this extraordinarily low use of the NSA is difficult, we did collect some qualitative information which provides considerable insight. For maize grain, 29.0 percent of the households said that they did not try to purchase their quota through the NSA because they knew there was no commodity available (Table 4). Another 11.8 percent stated that the maize grain was depleted from the shop by the time they attempted to make a purchase. Nearly one-quarter of the households, however, said that the reason for not purchasing their entire allotment was due to a lack of sufficient money to make purchases in the quantities that rationed goods were being sold.[11] The other two major reasons for not purchasing maize grain were that the household was not interested in consuming the product (11.6 percent) and that the price was the same outside the NSA (9.3 percent). A similar pattern emerges in the case of yellow maize flour, although a larger share, 34.8 percent, stated that they did not even try to make the purchase because they knew that the product was not available.

The reasons given for not purchasing the quota for rice and sugar through the NSA stand in contrast to those for yellow maize products. In the case of rice, 30.7 percent stated that the reason for not buying the monthly quota was a lack of cash on hand to purchase the ration, and in the case of sugar, the same reason was given by 29.2 percent of the households. Also, in comparison with maize, a smaller share of households said they did not try to purchase rice and sugar because they knew ahead of time that the product was not available. Thus the large share of households that responded that they knew the product was not available at all, or had already been depleted at the NSA shop, imply a scarcity of product in the ration system.

The poignant finding from the above analysis is that in terms of aggregate statistics, the NSA has been marginalized as a source of consumption. Two possible caveats apply, however. The first is that for maize grain and flour, the purchases from the *loja* outside the NSA ration scheme involved transactions where the price paid was comparable to the official NSA ration price. In those cases, the combination of *loja* and NSA as a source of product is not always

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[11] Often the poor have severe liquidity constraints, forcing them to purchase small quantities of staple grains on a daily basis. This type of market behavior was not easily accommodated within the NSA structure, and suggests that at least for some households, free distribution or a cash subsidy to purchase the good might have been warranted.

Table 3 — Share of Households Consuming, Mean Quantity Consumed and Mean Expenditure per Household, and Aggregate Quantity and Expenditure Share for All Households, by Commodity

Commodity/Source	Share of All Households Making Purchases/Acquisition from Source	Mean Quantity Consumed Per Household[a]	Aggregate Quantity Share for All Households
	Percentage	Kilograms	Percentage
Maize grain			
NSA	6.7	10.8	7.6
Loja	7.9	28.1	23.4
Dumbanengue	18.6	30.1	58.7
Field	0.7	17.8	1.2
Other	3.9	22.4	9.1
Maize flour			
NSA	3.4	8.8	3.0
Loja	5.6	16.8	9.4
Dumbanengue	35.7	22.8	81.8
Field	0.0	10.0	0.1
Other	3.2	17.4	5.7
Rice			
NSA	15.0	8.5	6.3
Loja	20.6	21.0	21.7
Dumbanengue	65.3	19.6	64.3
Field	0.8	26.1	1.0
Other	8.6	15.4	6.6
Sugar			
NSA	11.9	5.1	8.9
Loja	17.4	7.1	18.0
Dumbanengue	68.9	6.4	64.2
Field	0.4	11.5	0.7
Other	9.0	6.2	8.1

[a] These means refer to households purchasing the commodity from the particular source.

Table 4 — Reasons for Not Purchasing NSA Ration Last Month among Cardholders by Commodity

	Wanted Smaller Quantity	Same Price Outside NSA	Did Not Want Product	Impossible to Get to NSA Shop	Knew Product Not at NSA	Not Enough Money	Product Finished by Time Attempted Purchase	Other	Total
Maize grain	3.18	9.25	11.59	1.21	28.97	21.87	11.78	12.15	100
Maize flour	3.02	9.50	9.41	1.15	34.81	18.65	11.46	11.99	100
Rice	5.23	12.92	8.21	1.54	13.13	30.67	13.44	14.87	100
Sugar	4.87	11.73	7.95	1.49	15.81	29.22	14.31	14.52	100

trivial, especially for maize grain.[12] Secondly, while aggregate consumption figures suggest a much smaller role of the NSA (and the *loja* in the case of maize products) than expected, the distributional implications are not clear. It is to this question that we next turn.

DISTRIBUTIONAL CHARACTERISTICS OF THE RATION SYSTEM

The distribution of the off-take from the ration system by per capita expenditures quintiles is shown in Table 5. The results indicate that 30.2 percent of the purchases of yellow maize grain through the NSA were made by the lowest expenditure quintile, a figure that declines to 9.9 percent for the fourth quintile, only to rise marginally for the upper expenditure group. Yellow maize flour did not show as progressive a distribution in off-take, although, the top 40 percent of the income distribution purchased only 29 percent of the product from the NSA. Contrast the distribution of the maize products sold through the ration scheme with sugar and rice where the distribution was relatively equal across expenditure quintiles.

Finally, Table 6 contains the share of the total household budget (food and nonfood) dedicated to NSA expenditures, for the four NSA commodities. For no commodity, and for no expenditure group, does the budget share exceed 1 percent. A comparison across commodities indicates that the budget share to rice purchased through the NSA was highest, at 0.48 percent, while the share is lowest for yellow maize flour at 0.05 percent. For each of the commodities, the shares declined with expenditure levels. In total, the budget share for NSA expenditures was 1.30 percent for households in the lowest expenditure quintile, declining to 0.52 percent for the highest quintile. While these figures understate the total value of subsidized goods, given that *loja* off-ration purchases of maize products were generally sold at the official price, the fact remains that the ration system was largely trivialized by the emergence of the parallel market.

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[12] As discussed above, the prices of rice and sugar sold in the *loja* outside the ration system are much higher than through the NSA, and do not include any subsidy from state intervention. Nevertheless, the *loja* is an important source of these products as well.

Table 5 — Shares of Total Quantities Purchased Through the NSA across Per Capita Expenditure Quintile

Per Capita Expenditure Quintile	Yellow Maize Grain	Yellow Maize Flour	Rice	Sugar
	Percentage			
1	30.2	23.5	19.6	18.6
2	28.0	22.4	22.4	20.6
3	19.1	25.2	21.1	20.1
4	9.9	13.4	21.6	23.2
5	12.8	15.6	15.3	17.6
All	100.0	100.0	100.0	100.0

Table 6 — Budget Shares for Purchases Made at the NSA by Commodity and Per Capita Expenditure Quintile

Per Capita Expenditure Quintile	Budget Shares									
	Yellow Maize Grain		Yellow Maize Flour		Rice		Sugar		Total	
	Through NSA	Total	Through NSA	Total	Through NSA	Total	Through NSA	Total	Through NSA	Total
	Percentage									
1	0.20	4.04	0.08	5.90	0.68	6.89	0.34	4.33	1.30	21.16
2	0.15	1.92	0.06	4.02	0.65	9.47	0.31	3.73	1.17	19.14
3	0.07	1.65	0.04	2.71	0.46	8.48	0.21	3.44	0.78	16.26
4	0.04	0.82	0.03	1.34	0.38	8.71	0.21	2.81	0.66	13.68
5	0.03	0.35	0.02	0.54	0.26	5.53	0.21	1.70	0.52	8.12
All	0.10	1.77	0.05	2.90	0.48	7.82	0.24	3.24	0.87	15.73

5. CONCLUSIONS

In this paper we have explored the nature of the three tier food markets in Maputo, and the effectiveness of the food subsidy program designed to provide a minimum food ration to the poor. In practice, we found that access to ration cards is slightly greater for lower income households and for households where the head has more education and has resided in Maputo, and in their current domicile, for a longer period of time. Given that the NSA ration price for yellow maize grain and flour, and usually rice, was substantially lower than the open market, one would expect the approximately one-third of the household's without cards to have clamored to gain the privilege of being enrolled in the rationing scheme. In practice, however, this was not the case. Quite simply, there was a lack of interest among those without cards in getting them, a direct reflection of the fact that the NSA appears to be breaking down. Specifically, the level of off-takes from the rationing system was low, as consumers, rich and poor alike, were primarily dependent upon the nonrationed market sources, the *lojas* and *dumbanengues*, for their purchases. Practically speaking, the parallel markets have become the main source for the food aid products, supposedly destined for the NSA ration scheme, which are instead being diverted to open markets. This fact suggests that the de facto dissolution of the ration scheme should be made de jure policy, and that the costs of its abandonment will be minimal for some, and imperceptible for most households owing to their being already primarily reliant on the parallel markets.

The compelling arguments for the elimination of the NSA, however, should not be viewed as arguments for the elimination of food aid. In particular, it is clear that the food aid, although not reaching the intended beneficiaries through the NSA, is nonetheless feeding them through the parallel market channels. The implication of the paramount importance of the *dumbanengue*, supplied largely through the illegal diversion of food aid, is that the continuation of the provision of food aid remains essential given the supply shortfalls that are a consequence of the internal conflict and shortage of foreign exchange earnings for commercial imports. However, the continuation of food aid should also be tied to a rationalization of the system through which the commodities are marketed, with specific attention being given to eliminating the rents that accrue to those procuring the food aid at low official prices, and selling them at the parallel market price instead of the official price. This suggests adapting a strategy such as auctioning the food aid, or similar mechanism that will facilitate unification of the market where prices do the clearing.

Such efforts at rationalizing markets, and eliminating all pretense that the rationing system equitably distributes food, will also facilitate achieving other related food policy objectives. Of greatest concern is the extraordinary price instability observed in food markets. This instability, is manifest in dramatic temporal price fluctuations. The welfare losses that follow from adjusting, or trying to adjust, to the uncertainty in prices from week to week are undoubtedly great. This is especially the case for poor consumers with their higher price elasticities of demand and greater responsiveness to price signals.

While the causes of the instability in market prices requires more analysis, the major factors are irregular and unpredictable food aid arrivals, the lack of market information and the noncompetitive elements of the food distribution system that are a consequence of government involvement and related rent seeking activities. Under the present system, informed arbitraging over time that would normally tend to smooth out fluctuations is precluded. While donors can work to rationalize food aid arrivals, the modality of government intervention in the domestic marketing of food aid must also change, including recognizing the fallacy of continuing to rely on the disintegrating and obsolete NSA as a means of protecting the interest of the poor.

The overriding food policy challenge in Maputo is therefore to restore a semblance of order, efficiency and fairness to food markets. Doing so will certainly have significant and immediate positive effects on food security. This implies working to unify markets and improve their spatial and temporal integration. In order to achieve this objective, the basic principle is to work toward prices clearing markets, with all traders having equal access to good information, and with a system of food aid distribution that is privatized, fair and open. In moving toward a competitive market, however, a remaining issue is whether, and what form targeted interventions can, and need to be designed and implemented to raise the consumption of the lower end of the income distribution. This need, however, should not be used as an excuse to slow the pace of market reform.