Staff Paper

EFFECTS OF FOOD SUBSIDY ELIMINATION IN KENYA: AN ANALYSIS USING REVEALED AND STATED PREFERENCE DATA

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EFFECTS OF FOOD SUBSIDY ELIMINATION IN URBAN KENYA: AN ANALYSIS USING REVEALED AND STATED PREFERENCE DATA

In the sphere of agricultural policy, few decisions have as much potential impact on urban real incomes and political stability as the elimination of consumer food subsidies. The recent wave of structural adjustment programs in many developing countries has put pressure on governments to eliminate costly subsidies on key food staples. However, concerns have arisen regarding the social costs of subsidy removal, particularly the impact on low-income consumers. While the database on consumer behavior is particularly sparse in many developing regions, informed public decision making nevertheless depends on meaningful utilization of available information to gauge expected consumer response to policy-induced changes in market conditions (Pinstrup-Anderson; Alderman; Timmer, Falcon and Pearson; Laraki).

The purpose of this paper is to determine how elimination of the subsidy on refined maize flour in Kenya has affected access to food among various urban income groups, and to assess the implications of these findings for food security policy. A selectivity model is developed to assess how consumption of refined and unrefined maize flour differs by income and other household attributes. The model is applied to cross-sectional household survey data in Nairobi, Kenya, incorporating both revealed and stated preference information. This approach is relevant to situations, commonly found in developing countries, where panel data on observed consumption behavior is limited, but where information on expected behavioral responses is necessary to meaningfully inform future policy options.

Results indicate that, in the case of Nairobi, Kenya, the benefits of subsidies on refined maize flour were inversely related to household income. Subsidy elimination is estimated to have raised expenditures on maize by less than 1% of household incomes for the urban poor, due to their propensity to substitute less expensive unrefined maize flour for refined flour. The results suggest that low-income consumers' access to food in Kenya could be more cost-effectively ensured by encouraging cost-reducing investments in decentralized grain marketing and processing rather than subsidizing competing products through a relatively high-cost controlled marketing system.

Background

Maize flour is the dominant food staple throughout Eastern and Southern Africa. There are two main types: a highly-refined sifted flour processed by large-scale urban roller milling firms (usually linked to the state food marketing channel), and an unrefined whole maize flour, processed by small-scale private mills. Unit processing costs for whole flour are less than half those of the refined sifted flour (Stewart; Bagachwa). Yet government subsidies have been typically applied to sifted flour marketed through the official marketing channel, thereby reducing its price relative to whole flour marketed through parallel marketing channels.

Sifted flour is actually a relatively new product. The roller mills that produce sifted flour were not established on any scale before 1955 (Stewart). At that time, maize flour was produced almost exclusively by small hammer mills and hand pounding. However, within 25 years, maize meal consumption in urban Kenya was primarily in the form of sifted flour. This substantial shift is, no doubt, explained by a combination of factors such as inherent taste and cooking attributes of sifted flour compared to whole flour, government policies affecting relative price and accessibility, and advertising. The relative importance of these factors has received little research attention, yet would have important implications for the development of strategies to promote access to food by vulnerable households in an environment where food subsidies are no longer sustainable. In particular, if urban consumers are found to demand primarily sifted flour and are not responsive to price differences between various types of flours, then the removal of sifted flour subsidies would be expected to adversely affect food security. On the other hand, if low-income consumers would readily purchase whole flour at some price discount relative to sifted flour, then market reform programs that involved the elimination of sifted flour subsidies and concomitant measures to raise the efficiency of private distribution system may not adversely affect (and may even improve) household food security. The following sections examine these issues empirically.

Data

Analysis is based on data from a random sample of 344 households in Nairobi in October 1993. The sample was derived from the Central Bureau of Statistics Income and Expenditure sampling framework, which is designed to achieve representativeness with respect to population and average household income for each of Nairobi's 30 estate areas (see CBS for details).

All of the households in the sample regularly purchased maize flour. All were familiar with both kinds of flour. Of the total sample, 69% of the respondents stated that they consistently purchased sifted flour over the previous year, 31% consistently purchased whole meal, and 3% consumed a different kind of maize product that was not examined here. Almost all households typically consume only one type of maize flour; only nine households indicated they purchase both sifted and whole flour. The average quantity of maize flour consumed per adult equivalent (AE) was 7.22 kgs per month. Expenditure on maize flour as a percentage of total income ranged from 16 per cent for the poorest 20% of the households to 1.3 per cent for the richest 20%.

As is frequently the case in developing countries, cross-sectional survey data were the only information available on individual consumption decisions. The cross-sectional data contains no variation in the controlled price of sifted flour, and very little spatial variation in the price of whole meal. Without price variation, identification of price coefficients in demand functions is not possible. Yet expected consumer response to future policy-induced changes in price is often critical to guide the policy process.

To overcome this problem, survey respondents were asked to state which maize flour they would purchase under hypothetical price scenarios. We refer to the data from this type of survey question as stated preference (SP) data. In contrast, we refer to survey respondents statements about their actual market purchases as revealed preference (RP) data. By combining the two kinds of data, we can uncover the effects of prices on product choice. In analogous situations, revealed and stated preference data have been combined in environmental economics (Adamowicz, Louviere, and Williams), in transportation economics (Ben-Akiva and Morikawa, and Hensher and Bradley), and in marketing (Swait and Louviere). Rubey and Lupi use stated preference methods to predict the effects of removing market restrictions on whole flour in Zimbabwe.

Prior to the stated preference question, respondents were asked about the quantity of maize flour they consumed in a typical week. They were also asked to break this quantity down into whole and sifted flour. Then, consumers were presented with different sets of hypothetical prices reflecting plausible price scenarios following the elimination of subsidies on sifted flour. For each price scenario, consumers were asked how they would reallocate their total weekly consumption across sifted and whole flour. Both products were available on the market and familiar to respondents, and pre-test evidence suggested that respondents did not have difficulty reallocating their maize flour in response to price changes. Respondents were not asked to re-adjust their total quantity of flour in response to price changes. Pre-test results indicated that many respondents found this difficult and confusing. Thus, it was felt that survey results would be more reliable if total quantity were held constant. This was not deemed to be a major problem, since available information on Kenya and other East African countries indicates very low own-price elasticities of demand for maize as an aggregate (Pinckney; Gerrard). Additional details on the data and survey instrument are contained in Mulinge and Jayne.

The model

We are first interested in estimating the overall demand for maize flour regardless of meal variety. To do so, we specify the demand for maize flour as

$$Q_i = \beta x_i + \delta y_i + \varepsilon_i \qquad (1)$$

where Q is the quantity demanded for flour, y_i equals one if the household i consumes whole flour and zero if the household consumes sifted, and x_i is a vector of household characteristics including income, household size, and ethnic group. We hypothesize that attributes such as the price of the product and the refinedness of the flour will affect the quantity demanded. A mentioned above, however, there is no cross-sectional variation in prices, so product price is perfectly collinear with other product attributes such as level of refinedness. The dummy variable y therefore captures the net effects on quantity demanded of all the attributes of the product chosen, including price.

Because the choice of maize flour is endogenous, in estimating equation (1), we must treat y as endogenous. To do so, we use a selectivity model that is commonly referred to in the literature as a "treatment effects" model (see Maddala or Greene 1993). This model has been widely used to analyze programs where participation, measured by some dummy indicator variable, represents the effect of the treatment or program (e.g., returns to education). The issue of selectivity surrounds the endogeneity of program participation (Greene 1993, p. 713). As Greene (1992, p. 609) points out, this approach can also be applied to models with endogenous dummy variables. In our case, each household's choice of flour type, whole or sifted, determines the value of the dummy variable in the equation predicting the total quantity of maize meal demanded. The selectivity model takes this into account during estimation so that the resulting parameter estimates of β and δ are consistent.

The basic structure of the selectivity model we will estimate is

$$\begin{aligned} Q_i &= \beta x_i + \delta y_i + \varepsilon_i \\ y_i^* &= \gamma z_i + u_i \qquad y_i = 1 \ \textit{if} \ y_i^* > 0, \\ &\qquad\qquad\qquad\ y_i = 0 \ \textit{if} \ y_i^* \leq 0. \\ (\varepsilon_i, u_i) &\sim \textit{bivariate} \ N(0, 0, \sigma_\varepsilon, 1, \rho) \end{aligned} \qquad (2)$$

where z are independent variables and may include variables that are also found in x. The variance of ε is σ_ε^2, and ρ represents the correlation between ε and u. The variance of u cannot be identified and is normalized to one as is the usual procedure for probit models.

The full set of variables for the discrete model of meal refinedness choice included a constant, *INCOME* (the log of household income), *AE* (the log of adult consumer-equivalents), *REGION* (equalling one if the household hails from the western regions of the country, and zero otherwise),[1] *PSIFTED* and *PWHOLE* (the logged prices per 2 kg bag of sifted and whole flour), *HMILLS* (the number of hammer mills within five kilometers of residence), and *WIFEJOB* (a dummy variable equalling one if the wife was engaged in full or part-time employment and zero otherwise). In the continuous model of meal demand, the explanatory variables include all those in the discrete model except for the price terms. In addition, the continuous model includes the dummy variable *Y* which equals one if whole meal was chosen.

The model in (2) is estimated simultaneously by Maximum Likelihood Estimation using a total of 777 observations. The observations consist of two stated preference and one revealed preference observation for each of 259 respondents. The estimated parameters are presented in Table 1. The parameters for the discrete choice model reflect the effect of a particular variable on the probability of choosing whole flour instead of sifted flour. All the variables explaining the discrete choice are significant at 5% except the price of whole flour. Higher incomes and lower sifted prices decrease the probability of choosing whole flour. As expected, households from the western regions, family size, and the number of hammer mills in the area of a household, all increase the probability of choosing whole flour. Contrary to expectations, households with wives who work outside that home are also are more likely to choose whole flour.

In the equation for the quantity of maize flour demanded, the parameters on all the variables are significant at 1% except for the parameters on *HMILLS* and *WIFEJOB* which are not significant at 10%. Income has a negative effect on the quantity of maize flour demanded. Family size increases the expected quantity of maize flour demanded. The dummy variable indicating households who choose whole flour, *Y*, is positively related to the quantity of maize flour demanded. Interestingly, the estimate of ρ is not significant, indicating that the errors from the two models are not correlated. Thus, in this case, we could have estimated the discrete choice probit model and the continuous demand model separately rather than jointly. However, the only way to determine whether this was in fact the case was to estimate the selection model.

In specifying the model, we tested the possibility that some of the demographic variables in the equation for quantity of flour would have different coefficients depending on the outcome of the discrete choice. We did so by including a full set of interaction terms between y and all the variables in x. None of the interaction terms were significant individually, and using a likelihood ratio test we could not reject that all interaction terms were zero at a 10% level of significance.

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[1]In the 1979 census, only 5% of the Nairobi population was locally born (Freeman); we hypothesize that regional differences in consumption may persist even after relocation to urban areas.

Table 1. Maximum likelihood estimates of selection model

	Discrete choice (*Y*)			Continuous demand (*Q*)		
Variable	Coefficient (γ)	t-ratio	Prob $\|t\|>x$	Coefficient (β)	t-ratio	Prob $\|t\|>x$
Constant	-7.799	-2.01	0.045	5.740	3.22	0.001
INCOME	-0.416	-6.36	0.000	-0.945	-4.42	0.000
PSIFTED	2.702	2.04	0.041			
PWHOLE	-0.096	-0.11	0.914			
AE	0.768	5.85	0.000	5.800	12.85	0.000
REGION	0.811	8.04	0.000	1.127	3.34	0.001
HMILLS	0.111	3.33	0.001	0.115	1.19	0.234
WIFEJOB	0.297	2.51	0.012	0.667	1.55	0.122
Y				0.974	3.00	0.003
σ_ϵ				3.879	46.35	0.000
ρ				-0.117	-1.05	0.296

Note: The Log-likelihood value is -2,591.4.
The hypothesis H_0: $\beta,\gamma=0$ has a χ^2 statistic of 126.18 and is rejected at the 1% level.

Testing for Differences in the SP and RP Data

A potential criticism of stated preference questions is that people may not respond to them in the same way that they react to market choices. This criticism can be made of any survey-based instrument, whether it applies to SP or RP data. Evidence in support of the reliability of SP methods has been demonstrated in numerous applications. In a comparison of stated demand for strawberries with actual choices, Dickie, Fisher, and Gerking did not find any statistical difference between the parameters of demand functions estimated with the two kinds of data. Other authors have found evidence of different parameters in discrete choice models estimated using the two kinds of data. However, when the variance in the two types of data were allowed to differ, differences in the estimated parameters were no longer significant (Adamowicz, Louviere, and Williams, Ben-Akiva and Morikawa, Hensher and Bradley, and Swait and Louviere).

Because the model is estimated using both revealed and stated preference data, we tested for any differences in the parameters based on responses from the two distinct types of questions. One way to test for structural differences between the preference information contained in the stated preference and revealed preference data would be to estimate two separate models using the two types of data, and then compare the estimated parameters to the parameters from a pooled model (Dickie, Fisher, and Gerking, Ben-Akiva and Morikawa). Such a comparison can easily be made with a likelihood ratio test. However, as mentioned above, there is no way to identify price parameters in the product choice stage using only the revealed preference data. Therefore, in our case there is no way to separately estimate the discrete choice models and still include price terms. Instead, we performed a variety of other tests.

First, we estimated the discrete choice model using both the RP and SP data, allowing the slope terms to differ by data type for every variable in z except the price variables. Specifically, we created a dummy variable, D, indicating whether the data came from RP or SP questions. We interacted D with all the variables in z except the prices. None of the interactions were significant individually, and the likelihood ratio test that all the interaction terms were zero could not be rejected. Second, we estimated the discrete choice model with these interaction terms and allowed for a form of groupwise heteroskedasticity that permits a different variance for the SP and RP data. The heteroskedasticity took the common multiplicitive exponential form: $\text{var}(\epsilon_j) = \exp(\alpha D_j)^2$. Allowing for this type of heteroskedasticity in a probit model is similar to permitting the scale factor to differ within logit models (Ben-Akiva and Morikawa, Swait and Louviere). The interactions and the heterogeneity term were never significant individually or as a group. Third, we omitted the price terms, and estimated separate models on the SP and RP data. Again using a likelihood ratio test, these separate models were not significantly different than a joint model without the price terms. In summary, we could not find any evidence that there were differences in the estimated parameters across the SP and RP data. In all cases, tests were evaluated at the 10 percent level of significance which is a weak criteria favoring the hypothesis that there were differences in the data.

Elasticity estimates and simulation results

We use the model results to derive income and price elasticities of demand for whole and sifted maize flour. We also predict changes in expenditures for maize flour following elimination of the sifted flour subsidy. We do this by decomposing the overall demand for maize into the demand for the two separate type of maize flour, whole and sifted. The demand for specific types of maize is expressed as

$$\begin{aligned} E(Q_i^{w}) &= E(Q_i \mid y_i = 1)\, Pr(y_i = 1) = [\beta x_i + \delta + \rho\sigma_\varepsilon \lambda(\gamma' z_i)]\, \Phi(\gamma' z_i) \\ E(Q_i^{s}) &= E(Q_i \mid y_i = 0)\, Pr(y_i = 0) = [\beta x_i - \rho\sigma_\varepsilon \bar{\lambda}(\gamma' z_i)]\, \Phi(-\gamma' z_i) \end{aligned} \tag{3}$$

where the superscripts w and s represent the quantity of whole and sifted maize flour, respectively. In (3), $\lambda(\gamma' z_i) = \phi(\gamma' z_i)/\Phi(\gamma' z_i)$, and $\bar{\lambda} = \lambda(-\gamma' z_i)$. Also, $\phi(.)$ and $\Phi(.)$ represent the standard normal pdf and cdf, respectively. The income elasticity of demand for whole flour is given by

$$\begin{aligned} \frac{\partial E(Q_i^{w})}{\partial I} \frac{I}{E(Q_i^{w})} &= \frac{\partial E(Q_i \mid y_i = 1)}{\partial I} \frac{I}{E(Q_i \mid y_i = 1)} + \frac{\partial \Phi(\gamma' z_i)}{\partial I} \frac{I}{\Phi(\gamma' z_i)} \\ &= \frac{\beta_I - \gamma_I \rho \sigma_\varepsilon [\gamma' z_i \lambda + \lambda^2]}{\beta x_i + \delta + \rho\sigma_\varepsilon \lambda} + \gamma_I \lambda \end{aligned} \tag{4}$$

where it is understood that λ is evaluated at $\gamma' z$. The own and cross price elasticities of demand for whole flour are given by

$$\frac{\partial E(Q_i^w)}{\partial P^j}\frac{P^j}{E(Q_i^w)} = \frac{\partial E(Q_i|y_i=1)}{\partial P^j}\frac{P^j}{E(Q_i|y_i=1)} + \frac{\partial\Phi(\gamma' z_i)}{\partial P^j}\frac{P^j}{\Phi(\gamma' z_i)}$$

$$= \frac{-\gamma_{p^j}\rho\sigma_\varepsilon[\gamma' z_i\lambda + \lambda^2]}{\beta x_i + \delta + \rho\sigma_\varepsilon\lambda} + \gamma_{p^j}\lambda \tag{5}$$

where $j=w$ for the own price elasticity and $j=s$ for the cross price elasticity. In equations (4) and (5), the first expressions are true in general while the second expressions hold only for the case where income (price) enters both x and z in log form.

Similarly, the income elasticity of demand for sifted is given by

$$\frac{\partial E(Q_i^s)}{\partial I}\frac{I}{E(Q_i^s)} = \frac{\beta_I - \gamma_I\rho\sigma_\varepsilon[\gamma' z_i\bar{\lambda} - \bar{\lambda}^2]}{\beta x_i - \rho\sigma_\varepsilon\bar{\lambda}} - \gamma_I\bar{\lambda} \tag{6}$$

again, $\bar{\lambda} = \lambda(-\gamma' z_i)$. The own and cross price elasticity of demand for sifted is given by

$$\frac{\partial E(Q_i^s)}{\partial P^j}\frac{P^j}{E(Q_i^s)} = \frac{-\gamma_{p^j}\rho\sigma_\varepsilon[\gamma' z_i\bar{\lambda} - \bar{\lambda}^2]}{\beta x_i - \rho\sigma_\varepsilon\bar{\lambda}} - \gamma_{p^j}\bar{\lambda} \tag{7}$$

where $j=s$ for the own price elasticity and $j=w$ for the cross price elasticity.

Table 2 presents income, own-price and cross-price elasticities derived from MLE estimates of (2), evaluated at the mean values of z and x for the income group they represent. Results indicate that sifted flour is a normal good, but with a very low income elasticity; whole meal is an inferior good through all income strata, with an average income elasticity of -0.59. Own-price elasticities for whole flour are low and increase slightly with household income; own-price elasticities for sifted flour are relatively elastic, especially for low-income consumers. The results suggest that low-income households would be more likely to reduce purchases of sifted flour when its price rises. An increase in the price of sifted has a large positive effect on the expected demand for whole meal. But a change in the price of whole meal is expected to have little effect on the demand for sifted.

These findings show that the subsidy on sifted flour was regressive. Over half of the low-income groups were already consuming the less-expensive whole flour, even with the subsidy on sifted flour. If the subsidy were to be removed, the results indicate, ceteris paribus, that the majority of consumers actually paying higher prices for sifted flour would be in the higher-income categories.[2] While the intent of the subsidy was not necessarily to improve food access at minimal leakage to unintended recipients, it is clear that the subsidy was captured disproportionately by higher-income urban consumers.

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[2]These findings are consistent with recent findings elsewhere in Africa (Jayne et al 1991; MOA/MSU 1994; Rubey and Lupi 1995).

Table 2. Elasticity estimates for sifted and whole flour

Income Quartile (average Ksh per hh)	Income elasticity		Own-price elasticity		Cross-price elasticity	
	sifted	whole	sifted	whole	Q sifted wrt P whole	Q whole wrt P sifted
1 (2,375)	0.17	-0.50	-1.90	-0.09	0.07	2.41
2 (5,867)	0.09	-0.59	-1.44	-0.11	0.05	2.98
3 (9,909)	0.05	-0.64	-1.24	-0.12	0.04	3.28
4 (21,345)	0.05	-0.72	-0.88	-0.14	0.03	3.90
Average (8,583)	0.09	-0.59	-1.41	-0.11	0.05	3.03

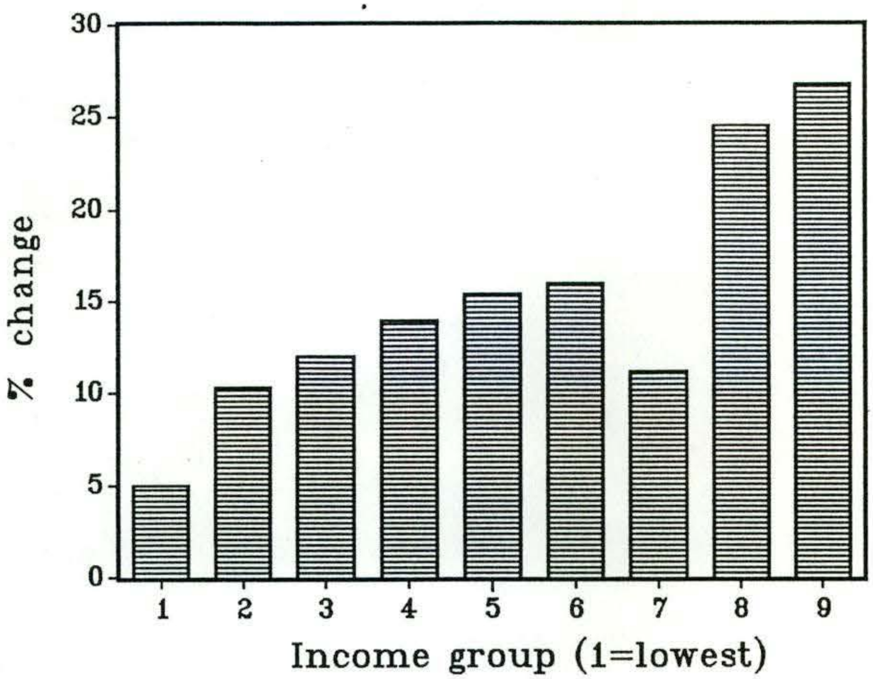
In January 1994, the Kenyan government eliminated the subsidy on sifted flour, causing its price to increase by 53%. Strong concerns were voiced as to whether low-income consumers could maintain their access to food under such a sudden and large surge in the price of the major staple. However, to the authors' knowledge, no systematic information has been collected to assess the effects of subsidy elimination on commodity substitution by low-income consumers, either before or after the reform.

Using the formulae in (3), we simulated the net change in expected consumer expenditures on maize products by income group. For the pre-reform expenditure levels, the baseline expected demands (3) were evaluated at the prices which prevailed prior to reform, Kenyan Shillings (Ksh) 16.32/kg for sifted and Ksh 13.5/kg for whole flour. The post-reform expected expenditures were evaluated using the prices prevailing three months later in March 1994, Ksh 25/kg and 14/kg for sifted and whole flour, respectively. These quantities were calculated for each of nine income categories. For each income category, all other household variables are evaluated at their mean within that group.

On average, the removal of the subsidy leads to a 14% rise in expected expenditures on maize flour (Figure 1). But for the lowest two groups, the increase in expenditures on maize is expected to be only 8% of total maize expenditures and less than 1% of household incomes. The relatively small impact on the poor is because of their higher baseline consumption of less-expensive whole meal and because of a greater expected shift to whole flour when the price of sifted rises. This contrasts to a 25% increase in expenditures on maize flour for the highest income group. The expected change in maize expenditures relative to income is less than one percent for all income groups. This compares with a saving to the public treasury of over Ksh 1.4 billion per year, or 2% of Kenya's GDP, from the elimination of the subsidy.

These results may appear surprising in light of strong concerns among some policy makers that the elimination of the subsidy would create great hardship for urban consumers. Substantial adversity to low-income consumers would indeed be expected if consumption habits were rigid. For example, consider the change in expected expenditures if substitution was not taken into account. Holding the proportions of sifted and whole flour purchases within each income group fixed at pre-reform levels, the change in maize expenditures after subsidy elimination would have been expected to be 37% on average, and 25% and 45% for the lowest and highest income groups, respectively. Here the change in expenditure for the highest income group is almost as large as the 53% change in the price of sifted because most of the households in this group consume sifted flour. The change in expenditures for the lowest income group

Figure 1. **Percentage change in expected total expenditure on maize flour by income group, based on estimates from (2).**



Note: Results based on March 1994 (post-reform) prices of sifted flour and whole meal compared to December 1993 (pre-reform) prices.

would be over-estimated by a factor of five. This example clearly illustrates the importance of allowing for potential product substitution *within* a particular commodity group.

Conclusions and Policy Implications

A contribution of this study is to show how revealed and stated preference information can be combined to uncover anticipated price and substitution effects in situations where cross-sectional variation on prices is lacking. While stated preference data, alone and in combination with revealed preference data, has been used extensively in environmental and health economics, market research, and other areas, this article suggests potentially useful applications in estimating *ex ante* behavioral response to future structural change where information on observed behavior does not exist. Especially in situations where the products of interest are available in the market and familiar to respondents, the combination of revealed and stated preference data can provide meaningful policy-relevant information that would otherwise be unobtainable in an environment where detailed panel survey data is limited or non-existent.

These techniques may be particularly important in the case of anticipating the effects of food subsidy elimination in developing countries. Removal of food subsidies, commonly implemented under donor pressure, has sometimes led to urban riots and the downfall of governments. Policy makers' demand for useful and timely information on expected consumer response to alternative policies is no less strong in situations where detailed food balance tables and revealed preference panel data are limited or non-existent. This article presents a selection model that combines available revealed and stated preference data to estimate the effects of subsidy elimination on sifted maize flour, the dominant staple among urban consumers in most of Eastern and Southern Africa.

Results indicate that this subsidy was untargeted and that its benefits were actually inversely related to household incomes. A 53% increase in the price of sifted flour, ceteris paribus, is estimated to have increased maize flour expenditures by 7% for the lowest household income-quartile in Nairobi, as compared with 25% for the highest income-quartile. This is because low-income consumers have a greater likelihood of consuming less expensive whole maize flour, and (for those that do purchase sifted flour) appear more likely to shift to whole flour when the price of sifted rises. Removal of the subsidy is predicted to raise expected household maize flour expenditures by an amount less than one percent of household income for all income groups. Perhaps as a result, the elimination of the subsidy has produced virtually no resistance or noticeable effect on urban food security after 15 months.

A specific aspect of the Kenya case that might distinguish it from other countries is that subsidy elimination occurred in an environment in which a reasonably well-functioning private maize trading and processing system already existed. Over the past decade, controls on private trading and milling had been gradually, albeit haltingly, eliminated, which had increased the density of small-scale private mills selling maize for custom milling in urban areas. This enabled an immediate consumer response to cushion the impact of subsidy elimination on staples distributed through the official marketing system. This situation is in contrast to other countries where historic food policies have served to depress the development of a decentralized private marketing system that otherwise could have absorbed much of the shock of large food price surges in the official marketing system. In such cases, the adverse social and nutritional effects of food subsidy elimination have been more accentuated.[3]

Through longstanding subsidies, government policy in much of Eastern and Southern Africa has encouraged the consumption of highly refined, expensive, and less nutritious maize flour compared to informally-produced whole meal. Public policies and investments designed to improve the functioning of alternative marketing channels may be a more cost-effective way of improving food access to low-income consumers than a return to untargeted subsidies on refined products involving substantial cost to the treasury.

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[3]e.g., Zambia, see Kumar 1988.

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