Demand for Dairy Products in Malawi

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Introduction

The health benefits of the consumption of milk and dairy products are well known facts. Despite this, the per capita consumption of milk in Malawi is very low. Tebug (2012) estimated it at 4-6 kg/capita/year, which is well below the African average of 15 kg/capita/year, and significantly lower than the 200 kg/capita/year recommended by the World Health Organisation.

Key to increasing the demand for milk is to understand what determines it. The literature on the demand for food products (particularly on dairy) in Malawi is scarce and an exception is the paper by Ecker and Qaim (2011) which used information collected by the second Integrated Household Survey (IHS2) 2004-05. This paper updates some of those results using the third Integrated Household Survey (IHS3) 2010-11.

Data

Estimation of the demand for dairy products was carried out using data from IHS3 conducted by the National Statistical Office of Malawi over the period of March 2010 to March 2011. The sample size (12,271 households) is representative at national, district, urban and rural levels.

The consumption data were collected as part of the household questionnaire, together with information on socio-demographic and economic characteristics of individuals living in the household. Table 1 presents the description of the data.

Table 1: Dairy products, weekly consumption (kg/person) and conditional expenditure shares

Variable	Observations	Mean	Std. Dev	Shares
Fresh milk	12271	0.619	14.415	0.32
Powdered milk	12271	0.123	5.507	0.38
Butter & Margarine	12271	0.105	5.332	0.22
Cheese	12271	0.009	0.936	0.01
Chambiko	12271	0.204	9.539	0.03
Yogurt	12271	0.161	7.560	0.05

Methodology

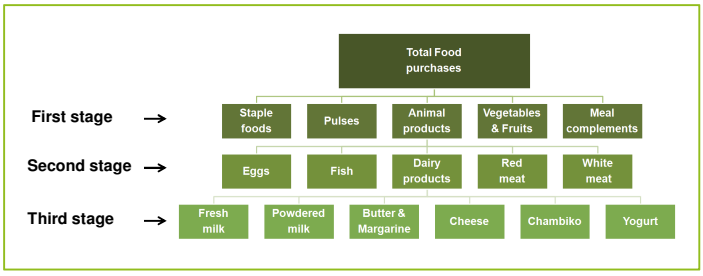
A three-stage Almost Ideal Demand System (AIDS) was estimated with budget share for good i given by (1). p_{jt} is the price of commodity j, x_t is total expenditure and p_t^* is the Stone's price index defined by (2):

$$w_{it} = a_i + \sum_{j=1}^{n} \gamma_{ij} lnp_{jt} + \beta_i ln\left(\frac{x_t}{p_t^*}\right) \quad (1)$$

$$lnp_t^* = \sum_{k=1}^{n} w_{kt} lnp_{kt} \quad (2)$$

The demand properties were imposed during the estimation. To overcome the zero expenditure problem for some food groups, the two-step approach proposed by Shonkwiler and Yen (1999) was used. The unconditional" elasticities were computed using the Carpentier and Guyomard (2001) formulae. The food categories/products considered in each one of the three stages are shown in Figure 1.

Figure 1: Partitioning of food groups in the three-stage model



Results

Tables 2 to 4 present the average Marshallian and expenditure elasticities. Elasticities and their statistical significance were computed using bootstrapping.

Table 2: Unconditional Marshallian and expenditure elasticities for main food categories

Products	Marshallian elasticities					Expenditure elasticities
	Staple foods	Pulses	Animal Products	Vegetables & Fruits	Meal complements	
Staple foods	-0.791*	-0.046*	-0.120*	-0.057*	-0.044*	1.058*
Pulses	-0.113*	-0.781*	-0.060*	0.023*	0.098*	0.832*
Animal products	-0.077*	-0.020*	-0.765*	0.011*	0.064*	0.785*
Vegetables & Fruits	-0.138*	-0.015*	-0.076*	-0.940*	-0.034*	1.205*
Meal complements	-0.049*	0.020*	0.012*	0.007	-1.009*	1.019*

* Statistically significant at 5%

Table 3: Unconditional Marshallian and expenditure elasticities for animal products

Products	Marshallian elasticities					Expenditure elasticities
	Eggs	Fish	Dairy products	Red meat	White meat	
Eggs	-0.211*	0.070*	-0.090*	-0.168*	-0.334*	0.638*
Fish	-0.015*	-0.874*	-0.013*	-0.242*	0.032*	1.088*
Dairy products	-0.053*	-0.034*	-0.854*	-0.254*	-0.080*	1.283*
Red meat	-0.010*	-0.308*	0.081*	-1.518*	-0.160*	2.651*
White meat	-0.111*	0.088*	-0.044*	-0.289*	-0.682*	1.002*

* Statistically significant at 5%

Table 4: Unconditional Marshallian and expenditure elasticities for dairy products

Products	Marshallian elasticities						Expenditure elasticities
	Fresh milk	Powdered milk	Butter & Margarine	Cheese	Chambiko	Yogurt	
Fresh milk	-0.848*	0.122*	0.075*	-0.018*	-0.053*	0.081*	1.456*
Powdered milk	0.058*	-0.786*	-0.013*	-0.031*	0.121*	-0.034*	1.120*
Butter & Margarine	0.031*	-0.049*	-0.737*	-0.014*	0.068*	-0.006*	0.965*
Cheese	0.028*	0.029*	0.069*	-0.829*	0.148*	-0.117*	1.232*
Chambiko	-0.059*	0.253*	0.105*	0.072*	-1.266*	0.101*	0.328*
Yogurt	0.276*	0.223*	0.204*	-0.045*	0.151*	-0.838*	2.627*

* Statistically significant at 5%

Conclusions

- All the dairy products are price inelastic except chambiko and the own-price elasticities show that dairy products are normal goods.
- Expenditure elasticities show that consumption of milk in Malawi increases with income.
- Powdered milk (mostly imported) is a substitute for fresh milk (domestically produced).
- Results show that to expand the consumption of milk it is important to keep dairy prices relatively low or maybe to subsidise consumers.
- However, a more sustainable way of securing lower prices could be by both expanding the domestic supply of milk and monitoring the marketing margins along the supply chain

References

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