Intra-Household Resource Allocation Decisions, Gender and Household Food Consumption in Selected Rural Districts of Kenya

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Abstract

This paper examined intra-household resource allocation decisions, power relations and its influence on household food expenditure shares in selected rural areas of Kenya. The study directly tests whether the socio-economic factors and power effects as measured by ownership of assets have significant influence on expenditure shares on food. Data from Baringo, Nakuru and Vihiga districts collected by the Kenya integrated household budget survey 2005/2006 was used for the analysis. A household decision-making model was used. It focused on bargaining between spouses, the earning power of women, education, asset ownership and their subsequent influence on food consumption decisions. The OLS results of the model on per capita cash expenditure is consistent with conventional Engel's curve findings, where a marginal increase in permanent income results in a marginal decrease in the share of food expenditures. However, this study found that differential in education levels was more important than earnings. Households where women have much bargaining power, have higher expenditures on food. This suggests that financial management may be a valuable complement to education in efforts to improve nutrition in poor rural communities. Employment status of other family members and investment allocation decisions towards crop and livestock have a positive influence on food expenditure shares. This demonstrates the potential for more direct efforts to model and measure intra-household decisions in bid to improve household livelihoods.

Key Words: Food consumption, Gender, Intra-household allocation, Poverty, Power, Resource.

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Introduction

Households in rural Kenya depend on agriculture for their livelihoods, in generating incomes, food security and employment. Most of this income is spent on household consumption. Approximately 80 percent of Kenya's population lives in rural areas (GoK, 1997). The rural areas play an important part in promoting economic growth through agricultural production and consumption. Rural households are thus central to governments' effort to alleviate poverty. The production and consumption sides of the economy lead to a fundamental dilemma for development policy makers: how to protect the nutritional welfare of poor households while at the same time motivating increased agricultural production.

Many policy decisions focus on rural households which function as producers, risk managers, consumers, and investors in human and physical capital. Many resources are allocated within households, and the effects of many policies depend on the dynamics of household decision-making (Doss et al., 1996). Decisions about allocation of food among individual household members may determine who benefits from programmes to improve health, nutrition, or welfare. Household composition and allocation of responsibilities to different family members is important in farm management decisions just as the division of family chores by gender and preferences.

Rural households are often large, comprising several couples and their children. Household members are engaged in a multiplicity of income-generating activities, such as farming, livestock, crafts, trade, and services, either individually or in collaboration with others. The chores are time-consuming and overwhelming particulalry on women. There are many children who spend less time in school but more in helping with the chores (Binswanger and McIntire, 1987; Rosenzweig and Wolpin, 1985).

Wilbers (2003) identified the role and bargaining power of women in resource allocation to be seen within the rural household, where decisions have to be taken on the sale of products, land, animals, and the production process itself. These among others need to be critically assessed to determine how households make allocation decisions between production and consumption and therefore, determining their poverty status. This paper examines the intra-household resource allocation decisions, the socio-economic factors that include the power relations within the households and its influence on household food expenditure shares in selected rural areas of

Kenya. The intra-household approach in this perspective focuses on how households allocate their resources and how they are distributed among men and women, the nature and decisions that determine the use of resources that can potentially bridge the gap between economics of households and of development. In this paper we examine decisions about the allocation of resources within the household. The allocation decision pertains to consumption and asset allocation, but the main focus here is on allocation decisions regarding food consumption.

Materials and Methods

The data for analysis were obtained from the Kenya integrated household budget survey 2005/06 which covered the whole country. The districts selected specifically for this study were Nakuru, Baringo and Vihiga (Figure 1). Nakuru district lies in the Central Rift Valley. The district has an area of 7,418 km^2. It has an estimated population of 1,187,039 and 296,450 households (Statistical Abstract, 2003). The area has an approximate altitude of 1800 m asl in lower zones and 2400 m asl in higher zones. The district receives an average rainfall of 1270 mm per annum. Mixed cropping is practiced in the area. Baringo district also lies in Central Rift Valley. It covers an area of 8,809 km^2, and has a population of 264,978 and 56,663 households (Statistical Abstract, 2003). The district is mostly semi-arid and, therefore, livestock keeping is the major economic activity. Vihiga district lies in Western Province and measures 563 km^2. It has an estimated population of 493,883 and 105,701 households (Statistical Abstract, 2003). Rainfall is bimodal and ranges from 1,800 to 2,000 mm per year. Mixed cropping is practiced in this area.

The study design was based on the National Sample Survey Enumeration Programme (NASSEP) frame. A total of 120 households were sampled to broadly represent the rural households. Each district had 40 households randomly selected. The data set contained detailed expenditure information for both food and non-food items and monthly income information for all members of the household. In addition, the data also contained demographic information on the household's age and sex composition, as well as a detailed enumeration of the occupation of the members of the household.

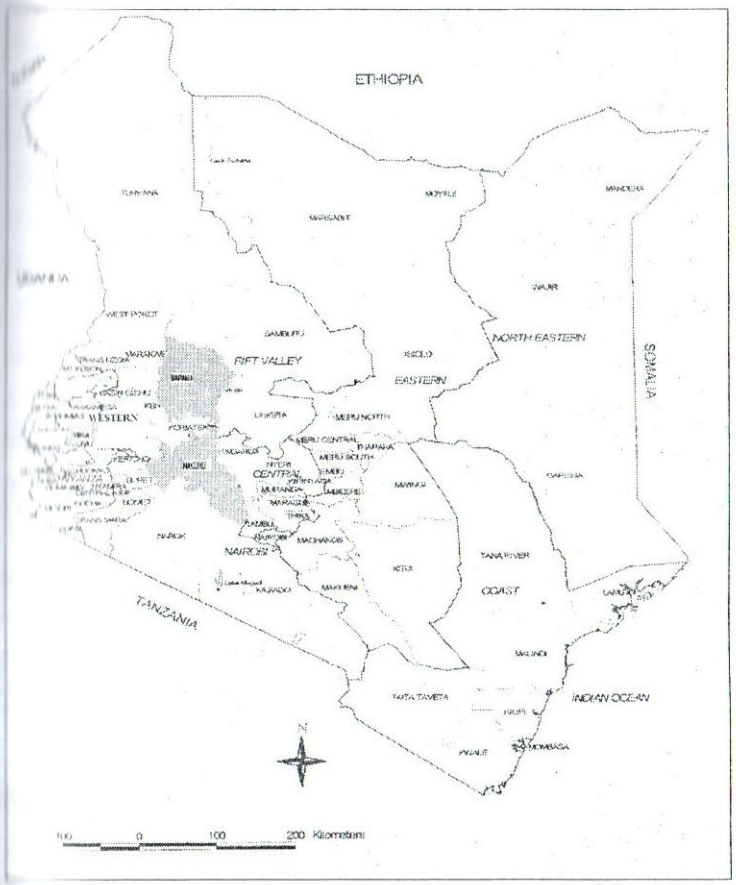

Figure 1. Map of Kenya showing the study Districts of Baringo, Nakuru and Vihiga. Source: Nakuru District Development Plan 2002-2008

Model Specification

Conventional economic analysis of household spending is based on bargaining models, in which different members of a household are thought to have conflicting opinions on how household resources should be spent, although these opinions do not always stand up to empirical analysis

(Simister, 2002). A household model integrates production, consumption and labour decisions. A budget share equation of the farm household model is defined by the linear relationship between the share of expenditure on goods and the total expenditure and is given below.

The general budget share equation is specified as:

$$w_i = \alpha_i + \beta_i \ln(\frac{Y}{n}) + \eta_i \ln(n) + \sum_{kk=1}^{k-1} \gamma_{ik} \ln(\frac{n_k}{n}) + \varepsilon_i \quad \text{.....(1)}$$

Where: w_i = the i^{th} budget share devoted to good *i*. The goods considered are food and non-food items consumed in household *i*;
Y= the total household income;
n=is the size of the household; the number of people in age-gender Class *k* is n_k, where there is K such age-gender classes in total.

The socio-economic variables are added to the general budget share model in the empirical model for estimation.

Empirical Model

The households exhibit heterogeneity. The base case is a reduced-form representation of the New Household Economics expenditure share Model. From equation (1), the basic econometric model to estimate budgetary allocations therefore takes the following form:

$$\begin{aligned} W = {} & \alpha + \psi_1 LOGPCEXP + \psi_2 LOGHSIZE + \psi_3 DEM1 + \\ & \psi_4 DEM2 + \psi_5 DEM3 + \psi_6 DEM4 + \psi_7 AGEH + \\ & \psi_8 GENDER + \psi_9 EDUC\_HSB + \psi_{10} EDUC\_SP + \\ & \psi_{11} LINCM\_SP + \psi_{12} ASTOWN\_M + \psi_{13} ASTOWN\_F + \\ & \psi_{14} REGN + \psi_{15} RELGN + \psi_{16} EMPFM + \psi_{17} Z_i + \mu_i \end{aligned} \quad \text{.....(2)}$$

Where W is the share of expenditure on food (composite food items). The non-food items are like schooling or housing improvement. Food expenditure includes an imputed value for home-grown produce;

$W = \frac{\sum y_i}{Y}$, so that Y is the total expenditure on all food and non-foo

y_i the expenditure on good category i(either food or non-food),

LOGPCEXP is the log total per capita cash expenditures;

LOGHSIZE is the log of total household size;

EDUC_M is the educational level of the husband or male household head

EDUC_F is the educational level of the female household head;

LINCM_SP is the log income of the spouse (female);

ASTOWN_M is the asset owned by male household head;

ASTOWN_F is the asset owned by the spouse (female);

DEM1 is proportion of demographic group 1 (0-5 yrs) in the household;

DEM2 is proportion of demographic group 2 (6-15 yrs) in the household;

DEM3 is proportion of demographic group 3 (15-65 yrs) in the household

DEM4 is proportion of demographic group 4 (>65 yrs) in the household;

EDUC is the educational level of the household head.

RELGN is the dummy variable for household head religion.

AGEH is the age of the household head (power variable).

GENDER, is the gender of the household head;

REGN is the dummy for region of residence.

Z_i is the decision to invest in either crop, livestock or both. This influe consumption decisions.

EMPFM is the dummy variable for employment status of any one of the family members living within the household excluding individuals under of 5 years and the household head.

μ_i is the error term, and α and $\psi_{1...14}$ are coefficients.

LOGHSIZE is included since the number of family members at home influence the share of food expenditures. Dummy variables on the housel

demographic structure are also included, since the number of small children might influence the level of share of food expenditures as well as the non-food. Household decomposition (DEM 1 to DEM 4) is done for each sex - males (ml) and females (fl).

Table 1. Attributes and levels used to determine effects of socio-economic and demographic factors on resource allocation

Attributes Dependent	Description and levels	Expected sign
variable **W**,	Is the share of the total expenditure on food (K. sh.)	
Logpcexp	Is the log total per capita cash expenditures (K. sh.)	-
Loghsize	Log of total household size (number per head)	+
Lincm_sp	Log income of the spouse (female)	+
Educ_hsb	Number of years in school of the husband	+
Educ_sp	Number of years in school of the spouse	+
Astown_m	Asset owned by male household head	+
Astown_f	Asset owned by the female household head	+
Dem1	Proportion of demo. group 1 (0-5 yrs) in household	
Dem2	Proportion of demo. group 2 (6-15 yrs) in household	
Dem3	Proportion of demo. group 3 (>15yrs) in household	
Dem4	Proportion of demo. group 4 (>65 yrs) in household	
Ageh	Age of the household head (years)	+
Gender	Gender of the household head (male = 1, female = 0)	+
Baringo	Region of residence (Baringo = 1, otherwise = 0)	
Nakuru	Region of residence (Nakuru = 1, otherwise = 0)	
Vihiga	Region of residence (Vihiga = 1, otherwise = 0)	
Empfm	Employment status of 1 of household members living within the household (1 = employed, 0 = unemployed)	+

Note: Household demographics will be disaggregated into males and female household members.

Results and Discussion

Determinants of Rural Household Food Expenditure share

The results of the regression are reported in Table 2. The ordinary least squares estimation of the food expenditure share equation R^2 is 0.3514.

Table 2. Determinants of food expenditure share

Ordinary least squares (OLS) expenditure share estimates			
Variable	Coefficient	Standard error	P>|t|
Logcexp	-0.0604	0.0111[a]	0.000
Loghsize	-0.0148	0.0443	0.739
Lincm_sp	0.0012	0.0044	0.790
Educ_hsb	-0.0004	0.0019	0.851
Educ_sp	0.0248	0.0132[c]	0.063
Astown_m	-0.0072	0.0249	0.774
Astown_f	-0.0109	0.0246	0.659
Dem1m	0.0416	0.0245[c]	0.092
Dem1f	0.0195	0.0195	0.321
Dem2m	0.0178	0.0145	0.222
Dem2f	0.0097	0.0137	0.483
Dem3m	0.0230	0.0130[c]	0.080
Dem3f	-0.0212	0.0155	0.174
Dem4m	0.0269	0.0480	0.577
Dem4f	0.0063	0.0365	0.863
Ageh	0.0003	0.0010	0.778
Gender (female)	-0.0045	0.0277	0.870
Nakuru	0.0242	0.0235	0.307
Vihiga	-0.0094	0.0246	0.703
Empfn (unemployed)	-0.0255	0.0206	0.219
Zc	0.0089	0.0478	0.853
Zl	0.0582	0.0523	0.269
Zb	-0.0297	0.0571	0.604
Cons	0.9514	0.2023[a]	0.000
Dep. var.= wi	Prob > F = 0.007	R^2 = 0.3514	√MSE = 0.1806

([a]) significant at 1%, ([b]) significant at 5%, ([c]) significant at 10% levels

The results intend to show whether the direct tests of socio-economic factors and power preferences as measured by ownership of assets have an influence on food expenditure shares. Food was used in this study as a broad aggregate of several commodities (vegetables, cereals, flour, meat, milk, sugar, etc.) on average, consumes 32% of the household budget in the three study districts. The coefficient of the log household size is negative and is not significant on the food expenditures share indicating that smaller households spend a larger share on food. The expenditure share declines considerably with an increase in household size. This implies that the larger households have lower food

expenditure share. An extra member in the household is associated with a drop in expenditure share of about 5 percent. Fafchamps and Quisumbing (1999) found similar results that the share of expenditures on food was negatively related to household size. They further clarified that larger households may benefit from economies of scale regarding food expenditures, probably due to increasing returns on activities with large fixed costs, such as cooking, although they could not confirm this directly because their data pertained to food purchases, and not the combined expenditure on food and time spent by households in food preparation.

The coefficient on log of wife's income (Lincm_sp) is positive and not significant. This is inconsistent with Engel's law, which identifies that rising income results in a decrease in the percentage of income allocated to food. The reason has been suggested by Schmeer (2005 that the effect of women controlling their income depends on the percent of household income they earn. A woman tends to be more powerful if she earns a large fraction of total household income (Ott 1992), and therefore able to allocate more income to food consumption. However, when that income accrues to women, the decline is slower and marked by notably lower coefficients.

Educations is proxied by the number of years of education of both male and female household heads. The male household head coefficient is negative and insignificant. However, the female household head coefficient is positive and significant at ($P<0.1$), implying that more years that are spent in school have positive correlation with income. The smaller share of household expenditure is likely to reflect not only an income effect but also substitution to other expenditures associated with high incomes from high paying off-farm jobs, in view of the fact that higher education levels are associated with high paying off-farm white collar jobs. This supports the notion that male preference for food expenditure is less than female preference. Thus, increasing male education, as a proxy for power, would decrease food expenditure. The more education a woman has, the higher her level of authority within the household and thus spending on foodstuffs takes precedence.

Among the rural households in the three districts, land is their predominant physical asset holding, and their primary economic activity is smallholder agriculture. The asset ownership (Astown_fl and Astown_ml) coefficients are negative and have little effect on the share of food in total expenditures. Asset ownership is intended to show some bargaining and power effect in the household allocation of food. Insofar as there are systematic preference

differences in food allocation across men and women in the household's, then these additional asset ownership terms (Astown_fl and Astown_ml) identifies whether the relative power of women matters to the expenditure share outcomes. Asset control measure has been used in other studies Doss (1997) and Quisumbing and Maluccio (1999) as a measure of conjugal power.

Household demographic structure was decomposed into four small number age groups of 0-5, 6-14, 15-64, and those above 65 years of age for both male and female members. The small number age groups was to detect gender biases in intra-household allocation, as it depended upon examining whether the presence of individuals of similar ages but of opposite sexes affected key areas of household spending differently. The validity of this argument is apparent from the results, which shows that there are gender differentials in consumption at certain ages and not at others. Most of the demographic groups have positive coefficients, but do not have any significant impact on food expenditures except Dem4f which has a negative coefficient; this outcome suggests at least no gender bias in household food expenditure decisions. However, the coefficients of demographic groups of males; Dem1m 1 (0-5 years) and Dem3m (15-64 years) were positive and statistically significant at 10% confidence interval. This implies that the number of males in the household is most likely to influence allocation of food. It further shows that, young boys consume more food than girls of the same age. For instance, Das-Gupta (1987) found out that girls in India are most vulnerable to shocks to their family incomes in the age range 0-2. Results also depict older men consume a lot more food than females of similar age group. On the other hand the males have much financial control of the household income.

Age of the household head coefficient is positive and not significant. This means that decisions concerning food allocation have little relationship with age. Gender of the household coefficient is negative and insignificant. Husbands and wives in these households widely recognize the dominance of husbands in decision-making on financial matters. Since the gender variable is negatively related to food expenditure share and on the other hand, the log of wife's income having a positive relationship with food expenditure share, it means that greater allocations would occur when income is accrued to or when financial power is bestowed in female household heads. This is in agreement with Thomas (1993) in the study of allocation outcomes in Brazilian urban household budget data. Similar results have been empirically established by studies from Sub-Saharan Africa (Doss 1997; Hoddinott and

Haddad 1997) and Taiwan (Thomas and Chen, 1994). Otherwise, the existence of identical food share preferences among men and women has been used as a possible explanation for non-significant effects of female power indicators on food expenditure shares (Quisumbing & Brière, 2000).

The coefficients on regional dummy for districts of residence (Bar, Nak and Vih) of the household head variables do not have any significant effect on the share of food expenditures. The dummy variable (Bar) was dropped due to collinearity. The employment (Empfn) of any one of the family members variable was insignificant but had a negative relationship with the food expenditure share, which is unexpected. The number of unemployed members would certainly influence how food is allocated within the household. If majority of the household members are employed they would contribute some of their incomes for food and by doing this they would have power in bargaining in the household allocation decisions. The separate investment decisions on crops (Zc) and livestock (Zl) had positive and insignificant coefficients. The investment towards both enterprises (Zb) had a negative and insignificant coefficient, implying that investment in both enterprises competed with food allocations for the meagre resources available within the household.

Conclusions and Recommendations

A number of specific policy conclusions were drawn from the results. The study found that the logarithm of the total expenditures negatively influenced the expenditure share; this is in line with the conventional Engel's curve, thus proved the validity of the findings. Age-gender differences were evident from the results, in that the males consumed more food than the female members of similar ages. This does not imply that there is bias in the expenditure allocation of food towards the males but the difference arises from the need in that the male members usually consume more food.

The intra-household bargaining power variables that were measured by the land ownership (asset ownership), number of years in school (education) and the employment status of other family members contributed a lot in determining the food expenditure share patterns.

It is also apparent from the results that improving female education would certainly improve the households' welfare and on the other hand help in reducing poverty in the rural areas. The household investment decisions in

crops and livestock is linked with the food allocation decisions, since food allocation decisions and the investment decisions made in regard to crops and livestock are made concurrently. These decisions were basically influenced by the total expenditures on food.

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