Explaining Growth in Household Real Food Consumption Expenditure in Cameroon: 2001-2007

Ebenezer L. Wirba, Boniface N. Epo & Francis M. Baye*

Abstract

This study attempts to explain growth in household real food consumption expenditure in Cameroon between 2001 and 2007. Specifically, it assesses the relative importance of household real total expenditure in explaining household real food consumption expenditure; evaluates the direction of change of the marginal propensity to consume between the two periods, and investigates the role of access to endowments and returns to endowments in explaining growth in household real food consumption spending. To achieve these objectives, use is made of a micro-econometric analysis of household real food consumption functions, a Shapley-Oaxaca-Blinder decomposition of growth in household consumption spending and the 2001 and 2007 Cameroon household consumption surveys. Results show that the marginal propensity to consume declined significantly between 2001 and 2007; real total spending predominantly explains real food consumption spending and its growth; and returns to endowments overwhelmingly account for the negative growth in real food consumption spending. These results show that well-being marginally improved between 2001 and 2007. These findings are important and have implications for household buffering food crisis in rural household and developing mechanisms to fight against issues related to food insecurity in Cameroon.

Keywords: food consumption expenditure, marginal propensity to consume, Shapley-Oaxaca-Blinder decomposition, Cameroon.

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1. Introduction

The proportion of food consumption expenditure in total household expenditure can be considered as an important criterion for gauging welfare levels. Melek (2012) corroborate this view by indicating that food expenditure is a compulsory element of household total expenditure, and can thus be used in determining the level of household economic welfare. Deaton (1997) further highlights the important role food consumption plays in the determination of household welfare by revealing that food consumption often represents the largest portion of total household expenditure in developing countries, especially amongst low income countries like Cameroon. These poor households spend about three-quarters, or more of their total budget, on food (Haq et al., 2008). Thus, any slight variation in household spending patterns may affect household welfare and poverty status. One of the value additions of this paper is to gauge such variations by investigating the direction of change of the marginal

* Faculty of Economics and Management, University of Yaoundé II, Cameroon: ebeno17@yahoo.com, epongahb@yahoo.fr and bayemenjo@yahoo.com

propensity to consume of household consumption expenditure between the two periods, and how this relates to household welfare.
Effective evaluation of food policy issues requires enough information on household food consumption patterns. Household consumption is preferred to income as a measure of household economic welfare because literature has proven that income as a proxy for welfare, especially in Sub-Saharan Africa, has many flaws (Datt & Jolliffe, 1999; Datt & al, 2001; Atkinson, 1987). Recent shifts in the purchase of food items have reveal a good number of changes in the consumption patterns for food items around the entire African continent. A good number of driving forces account for these changing patterns, but growth in total household expenditure (proxy for income) is thought to be the most important amongst these factors. Nonetheless, despite the considerable growth in food consumption expenditure in the recent decades, the goal of adequate food for all is still an issue that many governments need to resolve. Food security and poverty alleviation are high priorities of international donors and many governments throughout the world. Concerning the fight against hunger/malnutrition, governments and international organizations have put in place several policies; with one of them based on raising the incomes of the poorest percentiles (Grimard, 1996).

A strand of literature also suggests that when households suffer from idiosyncratic shocks, most of them turn to the share of food expenditure and use part of the money allocated for food for other needs (Dimitris et al, 2011). Hence, any these shocks affecting household consumption patterns can be hazardous to welfare. Therefore, without a thorough understanding of the sources that explain changes in food expenditure and how they evolve over time, it will be difficult to design policies that can effectively resolve the food crisis issue and improve food security over the broad range of heterogeneous low-income households.

Food security is one of the main goals of the government of Cameroon as indicated in the 2009 Growth and Employment Strategic (GESP) document. To increase the country's access to food, the GESP proposed policies to enhance agricultural production in the country. The main problems identified that inhibit the agricultural sector were poor coverage of the rural areas with infrastructures, such as agricultural feeder roads, store warehouses and markets. The 2009 GESP projected that by 2014 there will be 1000km of agricultural feeder roads, construction of 50 storage warehouses, and 20 rural markets.

Despite this objective, the second and third Cameroon household consumption surveys (CHCS II and CHCS III) indicate that food consumption expenditure both for 2001 and 2007 was highly dominating the total budget of households in both urban and rural areas. However, according to these two surveys, there is a rural-urban disparity in the share of food consumption expenditure, with the food consumption

share in rural areas higher than that in urban areas for both periods. Corroborating these trends, the World Bank report on Cameroon states that in 2001 the per capita household consumption (in constant 1995 US dollars) was $496; and private consumption grew at an annual rate of 3%. Approximately 33% of household consumption was spent on food, 8% on fuel, 2% on health care, and 9% on education. The richest 10% of the population accounted for approximately 36.6% of household consumption, and the poorest 10% approximately 1.9 % (World Bank, 2011).

Furthermore, the Government also acknowledges enhancing welfare as a main objective because food expenditure relates to welfare through human capital mechanisms. In Cameroon, between 2001 and 2007 poverty stagnated around 39.9%, with inequality (Gini index) marginally falling from 0.404 in 2001 to 0.390 in 2007 (NIS, 2007). This fall in values were witnessed more in urban than rural areas (NIS, 2007). More still, since the attainment of the HIPC initiative completion point in 2006, effects are still not felt by some regions in Cameroon despite an average growth rate of 4.5% of GDP between 2000 –2002, and a fall to 3.2 from 2003 to 2007 (National Institute of Statistics, 2005). These observations points to the need to investigate household consumption patterns given the large share of the latter on household expenditure, and therefore household welfare. We attempt to shade light on these matters in paper.

To better understand growth in household food consumption expenditure in Cameroon, our main research question is: what are the determinants of growth in household food consumption expenditure in Cameroon? The corresponding main objective is to explain growth in household food consumption expenditure in Cameroon. Specifically, the paper seeks to: (i) assess the relative importance of household total expenditure in explaining household food consumption expenditure; (ii) evaluate the variation in marginal propensity to consume at the household level between 2001 and 2007; and (iii) investigate the role of access to endowments and returns to endowments in explaining the growth in household food consumption expenditure. These questions and objectives are guided by the claims that: total expenditure is the predominant variable explaining household food consumption expenditure; the marginal propensity to consume increased between 2001 and 2007; and access to endowments is more likely to account for growth in household food consumption expenditure than returns to endowments.

The rest of the paper is structured as follows. Section 2 reviews literature on food consumption, section 3 dwells on the methodology and data presentation, section 4 presents the empirical results, and section 5 submits the concluding remarks.

2. Literature Review

Household food consumption is an important component of household total expenditures. Poor households consider food as a necessity, and spend about 75% of their total expenditure on food consumption. Engel (1821-1896) was the first to investigate the relationship between food consumption and income. Based on a survey of spending pattern of families, Engel (1857) found that the income elasticity of demand for food was relatively low, giving rise to the well-known Engel's law. This law indicates that as income increases, the share of expenditure devoted for food declines, demonstrating that the income elasticity of food consumption is less than unity.

Another interpretation of consumption was introduced by Lord Keynes (1936) in his psychological law, otherwise known as the absolute income hypothesis (AIH) in his book entitled: *General Theory*. The Keynesian theory is based on the assumption that consumption depends only on income, *ceteris paribus*. The Keynesian consumption function has two technical attributes: the marginal propensity to consume (MPC), and the average propensity to consume (APC). The marginal propensity to consume falls with income, as well as the average propensity to consume, but at a lesser proportion than the former.

With his relative income hypothesis, Dueseberry (1949) argued that the average propensity to consume (APC) of a family depends on the family's level of income relative to the income of the neighbourhood with which it identifies itself or belongs. Friedman (1957) propounded the permanent income hypothesis (PIH), which stipulates that consumption is a function of permanent income rather than current disposable income. He distinguished between a normal level of income that people expect over their lives, which he called permanent income, and the positive or negative deviations from that level, which he termed transitory income. In the same token, Friedman also made the distinction between permanent consumption and transitory consumption. To him permanent consumption is that part of consumption that is planned and steady, while transitory consumption comes from irregular spending such as unexpected medical bills or temporary college tuition expenses. Friedman argues that permanent consumption is proportional to permanent income.

Modigliani and Brumberg (1954), in the life cycle hypothesis (LCH), postulated that an individual plans his/her consumption and savings over a long period of time, that is, over one's entire life time. In this case, all resources available to the consumer are relevant to consumption decisions. The consumer allocates her/his income so as to maximize satisfaction over her/his lifetime, while saving is to enable one to secure the most desirable level of consumption in old age.

The effect of the 2008/2009 world financial crisis on food consumption spending among households in Jamaica was examined by Myrie and Robinson (2013). They found out that income level and area of residence are consistently significant determinants of food consumption in Jamaica. Ebru and Melex (2012) investigated the determinants of household consumption expenditure in Turkey using a micro-econometric analysis of the Engel consumption function. They found out that the age variable increases the consumption expenditure in general and for urban areas, while correlating negatively with consumption for rural areas.

Chen and Wallace (2009) explore household food consumption in Jamaica by estimating the Engel curve, which reflects the relationship between food consumption and household income using the 2001 Jamaica Survey of Living Conditions. They find that household income has a significant negative effect that increases with societal income deciles. In a similar endeavour, Ahmad and Arshad (2007) investigate the household consumption pattern for 12 food and 10 non-food consumption items in urban and rural Pakistan. They observe that the elasticities of these commodities were positive for all income sources except for wheat. Thus, wheat was considered as an inferior commodity in the middle-income class of urban households.

In Africa, few studies have been carried out on food consumption expenditure. Dawoud (2014) analyses the changes in food expenditure patterns over time in Egypt, and find that food consumption expenditure patterns have changed over the five consecutive survey periods as a result of economic changes, with significant variation between the urban and rural expenditure elasticity for some food commodities. Kuma (2010) investigates the phenomenon of changes in food consumption expenditures in urban Ethiopia, and find that urban household consumption patterns have started to shift from staple food grains to high value food products. Donkoh et al. (2014) investigate the determinants of household food expenditure in Ghana, and finds that households reduce the percentage share of their food expenditure as they become richer.

This paper seeks to contribute to this literature in two ways. First, even though a few studies have been carried out in other African countries concerning the determinants food consumption (Ajewole & Omonona, 2006), this is the first of such a study—to the best of our knowledge—in Cameroon. Secondly, we use pooled data from the two most recent Cameroon household consumption surveys (CHCS II and CHCS III) and a Shapley-Oaxaca-Blinder decomposition framework to assess growth in household food consumption spending in the period 2001-2007.

3. Methodology and Data

3.1 Methodology

The methodology involves a micro-econometric specification of the determinants of the household food consumption functions for 2001 and 2007, and a variant of the Oaxaca-Blinder decomposition framework explaining growth in household consumption between 2001 and 2007.

3.1.1 Micro-Econometric Consumption Function
Model Specification
Literature shows that the share of household total expenditure devoted to household food consumption can be approximated as a log-linear function of socioeconomic and geographical household characteristics. In the present effort, we allow total expenditure to enter the household consumption generation function in log form. However, before running the regressions for each period, we first verify the behaviour of the marginal propensity to consume between 2001and 2007 using pooled survey. The sign and significance of inter-temporal effect will help us to know the nature of the marginal propensity to consume between 2001 and 2007. The model used was estimated using the pooled household record from the 2001 CHCS and 2007 CHCS .

$$logC_h = \alpha_0 + \gamma_1 d_{2007} + \alpha_1 logTE_h + \gamma_2 d_{2007} * logTE_h + Z\phi + \varepsilon_h \quad (1)$$

Where C is the household food consumption expenditure per head expressed in CFA francs; d_{2007} is a year dummy that takes the value 1 if observation is from 2007 and 0 from 2001; TE is total household expenditure per head expressed in CFA francs; $\alpha_0$is the intercept for 2001; $\alpha_0+\gamma_1$is the intercept for 2007; α_1 is elasticity of consumption with respect to total expenditures proxy for the marginal propensity to consume for 2001; $\alpha_1+\gamma_2$ is the marginal propensity to consume for 2007; γ_2 measures the change in marginal propensity to consume between 2001 and 2007; ϕ is a vector of coefficients of the other household characteristics; and Z represents a vector of other individual and households characteristics. The values α_0 for 2001 and $\alpha_0+\gamma_1$ for 2007 represent the intercept of the consumption axis and considered as autonomous consumption under the consumption theory.

The econometric specification for each year, without the year dummy, can take the following form:

$$logC_{h,t} = \beta_{0,t} + \beta_{1,t} logTE_{h,t} + Z_t\delta_t + \varepsilon_{h,t} \quad (2)$$

Where, $logC_{h,t}$ is the log food consumption expenditure for household h for year t; $logTE_{h,t}$ is the log of household total expenditure (proxy for income); $\beta_{1,t}$ is the elasticity which is a rough estimate of the household marginal propensity to consume (MPC) for year t, to be more exact we multiply it by the average propensity to consume (APC); $\beta_{0,t}$ is the constant term; t is the time period (2001 or 2007); h denotes households; and $\varepsilon_{h,t}$ is the random error term.

3.1.2 Explaining Growth in Household Food Consumption Expenditure
Explaining growth in household food consumption expenditure between 2001 and 2007 using the Shapley-Oaxaca-Binder decomposition technique consists of breaking down growth between the two periods into an explained component (accounted for by the temporal differences in household characteristics), and an 'unexplained' component (accounted for by the temporal differences in the

efficiency by which households are able to convert these characteristics into outcomes). Below is an outline of the decomposition framework.

The first step of this regression based decomposition technique is to specify and estimate the models that relate to household food consumption expenditure and household characteristics for both periods. Equation 2 can be represented as in equations 3 and 4 without loss of generality:

$$logC_t = X_t\beta_t + \varepsilon_t \quad (3)$$

$$logC_{t+1} = X_{t+1}\beta_{t+1} + \varepsilon_{t+1} \quad (4)$$

Where $logC_t$ is the log of household food expenditure per head for 2001 and $logC_{t+1}$ is the log of household food consumption expenditure for 2007; β_t and β_{t+1} are vectors of coefficients that determine the effects of factor endowments on household food expenditure for each year; X_t and X_{t+1} are the vectors of household endowments for the corresponding years.

Since the regression goes through the mean values of X and C, estimating and taking the mean of the above two regressions, and dropping out the error term, we have:

$$\widehat{\overline{logC}_t} = \bar{X}_t\hat{\beta}_t \quad (5)$$

$$\widehat{\overline{logC}_{t+1}} = \bar{X}_{t+1}\hat{\beta}_{t+1} \quad (6)$$

Equations 5 and 6 signify that the mean food expenditure is predicted using the mean endowments (characteristics); and $\hat{\beta}_t$ and $\hat{\beta}_{t+1}$ are vectors of the estimated coefficient for 2001 and 2007.

The growth in food in food consumption expenditure between 2001 and 2007 is thus given by:

$$\Delta\widehat{\overline{logC}} = \widehat{\overline{logC}_{t+1}} - \widehat{\overline{logC}_t} \quad (7)$$

Adding and subtracting $\widehat{\overline{logC}_{OF}}$

$$\Delta\widehat{\overline{logC}} = \widehat{\overline{logC}}_{t+1} - \widehat{\overline{logC}}_{OF} + \widehat{\overline{logC}}_{OF} - \widehat{\overline{logC}}_{t} \quad (8)$$

Where $\widehat{\overline{logC}}_{OF}$ is a reference log food consumption structure, which could be assimilated to the initial or terminal period food consumption structure in the standard Oaxaca-Blinder decomposition approach.

To resolve the critical issue of having to define *a priori* a reference structure in the standard Oaxaca-Blinder framework, we consider both the structure of 2001 and 2007 as the reference structures; then take the average. This can be referred to as the Shapley Value-based Oaxaca-Blinder or Shapley-Oaxaca-Blinder growth accounting approach.

By substituting equations 5 and 6 into 8 applying both reference structures and averaging for all the endowments, the following decomposition of the growth in food expenditure between 2001 and 2007 is obtained:

$$\Delta\widehat{\overline{logC}} = \sum_{z}^{Z} 0.5(\hat{\beta}_{t+1,z} + \hat{\beta}_{t,z})(\bar{X}_{t+1,z} - \bar{X}_{t,z}) + \sum_{z}^{Z} 0.5\,(\bar{X}_{t+1,z} + \bar{X}_{t,z})(\hat{\beta}_{t+1,z} - \hat{\beta}_{t,z}) \quad (9)$$

Where z = 1, 2… Z indicates the number of endowments considered for each household.

From Equation 9, the overall growth $(\Delta\widehat{\overline{logC}})$ is decomposed into two components. One of the portions attributed to the differences in characteristics (first term on the right-hand-side) between 2001 and 2007, while the other portion is attributable to the returns of the characteristics (second term on the right-hand-side). By making the difference between the explained growth effect (growth due to endowments) on the one hand, and on the other hand the unexplained growth effect, equation 9 is thus a solution to the problem of setting the base and the final years of the analysis beforehand.

3.2 Presentation of Data and Variables

The data used for the study is secondary data from the second Cameroon household consumption survey (CHCS 2001) and the third Cameroon household consumption survey (CHCS 2007). The CHCS (2001) was carried out from September to December 2001 by the National Institute of Statistics. This survey targeted about 11,553 households, of whom 10,992 were actually contacted. The aim of the second household consumption survey was to correct the mistakes of the first household consumption survey, and provide a new methodology for the setting of poverty lines (NIS; 2002a, 2002b).

The CHCS (2007) was undertaken between May and July 2007; and comprised of 11,391 households. Its aim was to upgrade knowledge on poverty and welfare status in Cameroon by providing indicators that capture the living standards of the local population as a follow-up of efforts made towards the implementation of the Poverty Reduction Strategy Paper (PRSP), and the realization of the millennium development goals (MDGs) (Epo et al., 2011). The CHCS (2007) was conducted with the objectives to: (i) ameliorate the poverty profile both at the national and regional levels and establish a correlation between the different poverty dimensions (monetary poverty, poverty in terms of potentials and subjectivity); (ii) study poverty dynamic between 2001 and 2007, with the aim of evaluating the incidence of macro-economic policies on households welfare; (iii) evaluate the demand for human capital and their principal determinants; (iv) investigate household consumption patterns; and (v) evaluate internal tourism and provide data on child labour in Cameroon.

The sampling techniques employed by the NIS were of two types depending on the residential zone. In Yaoundé and Douala, the major cities, the two-stage sampling frame was used; while in the other residential areas, the three stage-stage random sampling technique was employed following the sequence city-primary sampling unit-household. Twelve (12) households were surveyed in each primary sampling unit in the main cities of Yaoundé and Douala, and 18 households in each primary sampling unit in the other residential areas. The primary sampling units were chosen on the basis of the number of individuals living in a particular area. For the urban areas, the primary sampling units were numbered 001 to 699, while the numbering was 700 –900 for the rural areas.

The following variables were selected for the study. The dependent variable is household food consumption expenditure per head derived by dividing the household total food consumption by the number of individuals within the household. We assume the absence of economies of scale in the household consumption pattern. This justifies the use of household food expenditure rather than the adult equivalence measure. The independent variables considered include: household total expenditure per head (proxy for income), which constitutes all the expenses of the household; household size, represented by the number of individuals living in a particular household at a given point in time; gender of household head, which indicates the sex of the head of the household (male or female); age indicates the age of household head at the time of the survey; and educational status measured by the number of years of schooling. The geographical variable considered is the residential area with modalities urban and rural. To account for temporal price variation in this paper, we use real values of food and total expenditures instead of nominal values.

To render the CHCS II and CHCS III comparable, the two data sets were harmonised using consumer price index (CPI) to convert the 2001total expenditures in terms of 2007 prices, while the food price index was used to express the 200 food prices in terms of the 2007 food prices. These CPIs for 2001 and 2007 are 174.8 and 196.2, respectively; while the food price indexes are 195.9 and 218.1 for 2001 and 2007, respectively. Both the CPIs and the food price indexes were computed by the NIS with the base year 1993.

4. Empirical Results

4.1 Descriptive Statistics

Descriptive statistics of the pooled data set indicate that the mean value of the log of food consumption expenditure per head is 11.478F CFA. Statistics equally show that the food share in total expenditure is 0.935. Further, results reveal that 53.6% of the surveyed households are 2007 households. Of the total number of households interviewed, 35.1% were urban households. Between 2001 and 2007 the pooled shows that 18.3% of household heads work in the formal sector.

Table 1: Summary of Descriptive Statistics

Variables	Mean	SD	Min	Max
log of real food expenditure per head	11.478	0.636	5.913	14.819
log of real total expenditure per head	12.291	0.701	9.773	16.655
year dummy (1=2007 & 0 otherwise)	0.536	0.49	0	1
Household size	6.853	4.101	1	43
Age of household head	44.911	14.074	11	95
Years of Education of household head	6.682	5.499	0	20
Region (1=urban & 0 otherwise)	0.351	0.477	0	1
Formal sector (1=yes & 0 otherwise)	0.183	0.387	0	1
House Ownership (1=yes & 0 otherwise)	0.703	0.457	0	1
Gender (1=male & 0 otherwise)	0.803	0.398	0	1
Predicted Value of Log of real food expenditure per head	11.382			
Share of log of real food expenditure in log of total expenditure	0.934			

Source: Computed by authors using STATA 11 and the CHCS 2001 and CHCS 2007 pooled data

While 70.3% of the households were found to be house owners, 80% of the households were headed by men. The average number of years of schooling of household head is 7 years. The average number persons living per household is 7 persons. On the average, the age of household head is 45 years.

4.1.2 Descriptive Statistics for CHCS 2001 and CHCS 2007

Descriptive statistics indicates that an average log of food consumption expenditure of 11.51F CFA in 2001 and 11.45F CFA for 2007 households. The food share in total

expenditure stagnated around 93% between the two periods. According to the 2001 survey, the average number of persons living per house was 7 persons, as compared to 6 persons in 2007. The 2001 survey reveals that the average age of household head is 46 years against 44 years for the 2007 household heads. The number of years of schooling on the average for 2001 household heads is 6.56 years, as to 6.79 years for the 2007 household heads. Descriptive statistics report that, of the total number of households interviewed in 2001, 34.8% were urban households; while in 2007, 35.3% of households surveyed were urban. 22.4% of the 2001 households work in the formal sector as to 14.8% of the 2007 households. On the average, 71.5% of the households surveyed in 2001 are house owners, whereas 69.3% of households in 2007 were house owners.

Table 2: Summary of Descriptive Statistics for 2001 and 2007 Surveys

	2001 Survey				2007 Survey			
Variables	**Mean**	**SD**	**Min**	**Max**	**Mean**	**SD**	**Min**	**Max**
Log of real food expenditure per head	11.51	0.68	7.69	14.82	11.45	0.60	5.91	14.56
Log of real total expenditure per head	12.27	0.71	9.77	16.65	12.31	0.69	11.07	16.13
Household size	7.29	4.19	1	38	6.48	3.99	1	43
Age of household head	45.63	14.02	13	95	44.29	14.09	11	95
Years of education of household head[1]	6.56	5.52	0	20	6.80	5.48	0	20
Region (1=urban & 0 otherwise)	0.35	0.48	0	1	0.35	0.48	0	1
Formal (1=yes & 0 otherwise)	0.22	0.42	0	1	0.15	0.36	0	1
House ownership (1=yes & 0 otherwise)	0.72	0.45	0	1	0.69	0.46	0	1
Gender (1=male & 0 otherwise)	0.82	0.37	0	1	0.79	0.41	0	1
Predicted value of log of real food expenditure per head	11.536				11.454			
Share of log of real food expenditure per head in log of total expenditure	0.938				0.930			

Source: Computed by authors using STATA, CHCS 2001 and CHCS 2007.

4.2 Regression and Decomposition Results

4.2.1 Regression Results

To explain the household consumption functions, we use survey regressions rather than ordinary least squares method to control for sample design used in the data collection process. Survey regression takes care of three important sample characteristics: sampling weights, clustering, and stratification (Stata Corp., 1999). Failure to include sampling weights gives estimations that are biased and affect standard errors of the estimates. Furthermore, because of the sampling design, observations in a cluster are not independent; and using the ordinary least squares will give very small standard errors. Accounting for clustering is, therefore, necessary to adjust the standard errors for design effects. The Cameroon household consumption survey data collection procedures do not use purely random sampling methods. Instead, different groups of clusters are sampled separately. Since sampling is done independently across strata, the resulting standard errors will be smaller

[1] Refer to footnote 1.

than normal. Therefore, applying the survey regression techniques to the Cameroon household consumption survey data produces the correct standard errors.

Table 3, hosting the survey regression results, indicates that the pooled model is significant with an R^2 of 0.675 and a corresponding Fisher's statistics of 865.25. Estimates reveal that the year effect is significant. Results show that the interaction variable – year dummy multiplied by the log of total expenditure correlates negatively with food consumption expenditure. Thus, indicating that the inter-temporal effect of marginal propensity to consume between 2001 and 2007 is negative. In addition, pooled estimates reveal that variables such as log of total expenditure per head, age, gender and ownership associate positively with food consumption, while education, age squared, region and formal sector correlate negatively with the dependent variable log food consumption expenditure.

Table 3: Survey-Based Regression Results: Determinants of Real Food Consumption Expenditure

Variables	Pooled Survey	2001 Survey	2007 Survey
Log of total expenditure per head	0.921***	0.930***	0.806***
	(62.69)	(56.74)	(58.21)
Year dummy (1=2007 & 0 for 2001)	1.204***		
	(6.27)		
Year dummy x log total expenditure per head	-0.105***		
	(-6.84)		
Household size	-0.0003	-0.002	0.002
	(-0.19)	(-0.82)	(0.85)
Age of household head	0.004***	-0.006***	0.010***
	(2.64)	(-2.83)	(5.14)
Age of household head squared	-0.0001***	0.00003	-0.0001***
	(-3.53)	(1.30)	(-5.15)
Years of education of household head	-0.017***	-0.022***	-0.012***
	(-15.07)	(-14.95)	(-8.36)
Region (1=urban & 0 otherwise)	-0.256***	-0.255***	-0.254***
	(18.83)	(-14.27)	(-13.80)
Formal sector (1=yes & 0 otherwise)	-0.027**	-0.056***	-0.005
	(-2.22)	(-3.32)	(-0.33)
House Ownership (1=yes & 0 otherwise)	0.039***	-0.007	0.069***
	(3.68)	(-0.46)	(5.18)
Gender (1=male & 0 otherwise)	0.017*	0.070***	-0.021*
	(1,95)	(5.32)	(-1.69)
Constant	0.320*	0.509**	1.433***
	(1.80)	(2.45)	(8.81)
R-Squared	0.675	0.746	0.607
Fisher	865.25	637.39	639.20
Number of observation	22307	10944	11363

Source: Computed by authors using STATA 11, CHCS 2001 and CHCS 2007. Values in brackets are student statistics. ***, ** and * represent 1%, 5% and 10% significance levels respectively.

The variable total expenditure appears to be the predominant variable explaining food consumption expenditure for both samples, even though between 2001 and 2007 this value marginally decreased. Their respective coefficients, indicating the marginal propensity to consume, decreased within the period under review. This result is similar to findings by Lokshin and Yemtsov (2001) for Russia, and

Dawoud (2014) for Egypt who found that the marginal propensity to consume decreased over time.

The pooled regression estimate for the age variable indicates that it associates positively with the dependent variable food consumption expenditure, while the age squared variable correlates negatively with food consumption expenditure for both years. This is in line with the life cycle hypothesis, which explains that higher earning capacity comes with age. However, results each year indicates that the variable age swaps signs from negatively related to the dependent variable in 2001, to positively relating to household food expenditure in 2007. This may be translated as a change in consumption patterns as made evident by the fall in average age of household head between 2001 and 2007.

We found that the variable education was significant and negatively affects per capita food consumption expenditure. This can be supported by the idea that the years of schooling of household head increases household head income. This increase in income encourages households to spend more on luxuries and less on necessities such as food. The results corroborate those obtained by Ebru and Melex (2012) in Turkey indicating that food consumption decreases as the level of education increases. In Africa, these results are same with those obtained by Donkoh et al (2014) in Ghana, and Kuma (2010) in Ethiopia.

The findings indicate that the urban-regional dummy has a negative and significant effect on household food consumption per head. As urban households are perceived to be richer than rural households, they spend more on non-food items. This might also be due to the expectation that rural households have more food requirements as they do more physical activities. These results are same as those obtained by Hassan (2012) for Bangladesh, and Ajewole and Omonona (2006) for urban/rural households in Nigeria.

The study also found that the dummy variable formal sector negatively associate with food consumption expenditure per head. This can be interpreted by the idea that household heads working in the formal sector have certain and high earnings that pushes them to spend more on non-food items. Results indicate that another factor positively affecting household food consumption expenditure is ownership of a household. This is due to the observation that in Cameroon, owning a house does not necessarily indicate that the household head is rich, and that most Cameroonians are owners of low quality houses. Results reveal that male-headed households affect food consumption positively for the pooled data.

However, for the separate years we find that whereas this variable related positively to household food consumption expenditure in 2001, in 2007 we rather note a negative correlation between gender and food consumption. This may translate that in addition to the decrease in number of households headed by men, increase in mono-parental households headed by women and hardship may push household heads (the men) to shift from purchasing food to purchasing other commodities.

4.2.2 Oaxaca-Blinder Decomposition Results

Table 4 shows that Cameroon registered negative growth in food consumption of 0.9763 between 2001 and 2007. The endowments component contributed in narrowing this negative growth, while the returns to endowments component rather contributed in deepening the negative growth in food consumption expenditure. Variables that contributed in deepening this gap in food consumption expenditure were; log of total expenditure per head, age-squared, region and gender (column 3). Among these variables that registered negative values, the log of total expenditure per head overwhelmingly accounted for the growth in food consumption expenditure. This was followed by the variables age squared, gender and region. Variables that mitigated this negative gap were age, education, ownership of a house, household size and formal sector employment.

Table 4: Decomposition of Growth in Real Food Consumption Expenditure between 2001 and 2007

Variables	Access to Endowments	Returns to Endowments	Total contribution of variables
Log of real total expenditure per head	0.0373	-1.5238	-1.4865 (152.26%)
Household size	-0.000018	0.0248	0.0248 (-2.54%)
Age of household head	-0.0027	0.7194	0.7167 (-73.41%)
Age of household head Squared	0.0042	-0.2885	-0.2844 (29.13%)
Years of education of household head	-0.0040	0.0668	0.0628 (-6.43%)
Region (1=urban & 0 if not)	-0.0013	0.0004	-0.0009 (0.09%)
Formal sector (1=yes & 0 if not)	0.0023	0.0095	0.0118 (-1.21%)
House ownership (1=yes & 0 otherwise)	-0.0007	0.0535	0.0528 (-5.41%)
Gender (1=male & 0 otherwise)	-0.0006	-0.0731	-0.0737 (7.75%)
Growth in food consumption expenditure	0.0347	-1.011	-0.9763 (100%)

Source: Computed by authors using results from Table 4.2 and 4.3. Values in brackets are the percentage contributions of each variable to growth in food consumption expenditure.

Concerning the behaviour of endowments (see column 1), the endowment component (explained component) registered a positive growth in food consumption expenditure of 0.0347. The log of total expenditure per head was predominant in explaining overall access to endowments. Age squared and formal sector employment accounted marginally in fuelling the endowment effect. All the other variables contributed in registering negative endowment effects. The

returns to endowments are globally responsible for the negative growth in food consumption expenditure of 1.011 (column 2). Variables such as household size, age, education, region of residence, formal sector and house ownership help in mitigating the negative growth in food consumption expenditure. Variables that rather registered negative returns to endowment effects were gender, age squared and log of total expenditure per head.

5. Conclusion and Policy Recommendations

The specific objectives of this paper were to:

1. Assess the relative importance of household total expenditure in explaining household food consumption expenditure.
2. Examine the variation in marginal propensity to consume at the household level between 2001 and 2007.
3. Investigate the role of access to endowments and returns to endowments in explaining the growth in household food consumption expenditure.

In order to verify these objectives, we applied a micro-econometric analysis of the consumption generating functions for a pooled survey of two periods. To identify the sources of growth in food consumption expenditure, we used the Oaxaca-Blinder regression-based decomposition framework.

From the pooled regression results we found that, the inter-temporal effect of the marginal propensity to consume was negative, thereby refuting the hypothesis that the marginal propensity to consume increased between 2001 and 2007. According to Keynes (1936), the marginal increase in the marginal propensity to consume implies that the well-being of Cameroon households was enhanced marginally; and also slightly decreased in poverty between 2001 and 2007. This implication is in line with the result of CHCS III (2007). Regression results shows that total expenditure per head is the predominant variable explaining food consumption expenditure for both periods. The results of the study identified education, region of residence, formal sector and age squared to have a negative and significant effect on household food consumption expenditure, while male headship and ownership of a house has a positive and significant impact on food consumption expenditure.

The Oaxaca-Blinder decomposition results show that Cameroon witnessed a negative growth in food consumption expenditure of 0.9542 log points between 2001 and 2007. The effect of returns to endowments over-accounted for the negative growth thus leading us to the refutation of the third hypothesis. Further, the study revealed that total expenditure per head was the most important source of growth in household food consumption expenditure. Based on these findings, the following policy options were considered to better the lives of Cameroonians.

The government of Cameroon is urged to improve access to adult learning, especially for rural households, to enable them enjoy the benefits of education, which include better employment and household food security. Second, given that households tend to reduce food expenditure when faced with idiosyncratic shocks or downturns, especially in rural areas, the government could put in place special organs that could assist poorer households in rural areas acquire food items at cheaper prices during hard times, or when faced with idiosyncratic shocks.

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