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CAN EDUCATION CONTRIBUTE TO HOUSEHOLD FOOD SECURITY? THE CAMEROON EXPERIENCE

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Abstract:
So many factors have affected the welfare of households such as environmental hazards, changes in agricultural production, price fluctuations and population growth which have prompted researches to ameliorate the situation of households. This research paper however seeks to investigate the effect of education on food security among households in Cameroon. Using the ECAM IV survey data collected by the National Institute of Statistics in 2014 from 10,303 households in Cameroon and the food security index was measured using a polychoric principal component analysis (PCA). A Two-Stage Instrumental Variable (IV) technique was used to establish the relationship between education and food security. The Average Household Educational Attainment (AHEA) was calculated by calculating the average length of time that household members above the age of 18 years have spent in school. The normalized index and AHEA were regressed and the results obtained showed that AHEA was very significant in influencing household food security. Also, education was observed to have a positive and very significant variable in building the welfare index of the households. It was recommended that household members should pursue longer years of education as a means to guarantee the food security of their households.

Keywords: food security, education, Cameroon, household welfare

1. Introduction

It has been shown repeatedly, particularly in the developed economies that growth depends on raising factor productivity. Increasing factor productivity requires investment in human and physical capital and new technologies. Increased labor productivity raises long-term growth in household incomes. The increased capital expenditures in the late 1970s and the early 1980s are reflected in Cameroon's improvement in social indicators of human capital and infrastructure. Yet poorly conceived investment policies can result in unproductive or idle resources (Goufo, 2014). Today, Cameroon's greatest desire is to carry out economic transformation and increase economic growth and development. But policymakers need more empirical input and guidance to carry out rational economic decisions since there are few studies on Cameroon's economy to provide reasoned insights and guidance to policy. The ultimate aim of drastically reducing the poverty level, which has sharply increased because of the economic crisis cannot be accomplished without rapid economic growth (Amin, 2002).

Farming communities are prone to low wages. Such low wages have a dramatic effect on the supply of labor as well as the efficiency of labor in the farms. This has resulted in frequent migration especially the youths to the city in search of other jobs with high wages. This helps to worsen the employment situation in the rural areas. These low wages are enforced by the absence of the formal labor market in these rural areas. The low wages could mean that the cost of inputs to the farms is also low, hence discouraging the supply of labor to the farms (Maffra, 2017).

The commercialization of agricultural products is punctuated with so many merchants (Middle men/ "Buyam and Sellam") who tend to extort the producers surplus. These result in farmers receiving very low prices for their product and hence discourages production. It is therefore vital to design agricultural policies that will restore producer surpluses and will serve as a motivation to increase farm sizes and national production.

Cameroon is a developing country and identifies itself as an agriculturally dominant economy. A developing country with such status is expected to be food sufficient and even exports more of the agricultural products, and imports more of tertiary and capital goods. Unfortunately, this hasn't been the case with some products such as rice. Rice is a grain that is consumed most often by every house in Cameroon. Studies have shown that, on average, rice is consumed at least once in a two days menu of an average household in Cameroon. This shows that the importance placed on rice by the Cameroonian households (Horwitz, 2014).

Most farming activities are labor-intensive activity and households adjust their productive time to be spent either in the farms or leisure or other non-farming jobs. The local farming communities are experiencing a high degree of rural-urban migration. With the increase in this rural-urban migration, there is a drop in labor supplied to the farms and this leads to increase auto consumption (Dewbre, 2008).

2. Problem Statement

Households welfare is greatly improved either though financial capital, human capital or social capital. Financial capital is directly linked to access to credit. Most farming households in Cameroon are faced with the problem of access to credit. The absence of agricultural credit facilities encourages low production and hence food insecurity. Also, in the absence of functional cooperatives for farmers, where they can build their skills through networking, households are faced with an unending trap for lack of education on farming skills, marketing outlets, and even sources of reliable information on food-related subjects. This facilitates the asymmetry of information in households hence having a devastating effect on the food security status of the household (Nsoh, 2012).

The level of education in some farming households is very low. Education which is being acquired formally through the level of education or informally though experience and sharing of peer information within social groups. Many households directly involved in food production in Cameroon don't take education as a means of improving the food security status of their households. The low level of education also helps to reduce the possibility of occupying a position in an association that goes a long way to reduce to the household's social capital and hence food insecurity.

Others have proposed financial liquidity, social capital, and education as ways to reduce the potential pressure of food security to the household, but some households in Cameroon are sinking into this food insecurity and action needs to be taken if Cameroon has to maintain its position as a food sustainable and sovereign nation. In addition to the financial capital required by households to improve household welfare, households have sorted to other means of improving welfare by adjusting some special characteristics of the household such as its level of social capital build-up and educational attainment of the household. These household characteristics, altogether with the financial and human resources influences the food security status of the household.

Most households also face additional feeding challenges resulting from difficulty accessing cultivable land, large household sizes, and a rise in agricultural prices. As a result of these food insecurity challenges, households seek educational qualifications that can help to guarantee the food security status of their households. This study, therefore, calls for more investigation on the peculiarity of education in ameliorating the food security status of households in Cameroon.

3. Conceptual Issues

3.1 Educational Attainment

Education is a concept that can be viewed from a varied perspective. According to John Dewey (1916), Education is a process of living through, a continuous reconstruction of experiences. On the other hand, other educationists see Education as the activity of developing a sense of good and evil so that an individual can choose the good and reject the evil.

In this study, education of a household will be seen as the average household education attained which will be calculated as the total number of years of education by the household, divided by the total number of household members above the age of 18 years. This definition excludes household members below 18 years because their education is at the basic level has nothing to contribute to the food security status or welfare of the household.

3.2 The Concept of Food Security

Food security is a concept that has had varied definitions by various international bodies and authors around the world. Food security according to World Food Summit (1996) defined food security as "*nutritional state that e exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life*."

The concept of food security was further widened in Amartya Sen's book, "Poverty and Famines" which came out in 1981. His book made the point that the starving are often denied access to food rather than suffering because food is unavailable and in so doing introduced the idea of entitlement to food: "*Starvation is the characteristic of some people not having enough food to eat. It is not the characteristic of there being not enough food to eat.*" (Sen, 1981). The effect was to move the whole issue of food security out of the realm of the essentially agricultural and place it in a broader context of poverty and lack of development. This resulted in the FAO in 1983 adding the factor of access to those of production and price stability: "*Food security should ensure production of adequate food supplies; maximizing stability in the flow of supplies; and securing access to available supplies.*" (FAO, 1983). Although access is an important factor in food security it can only prevent hunger if accompanied by stability.

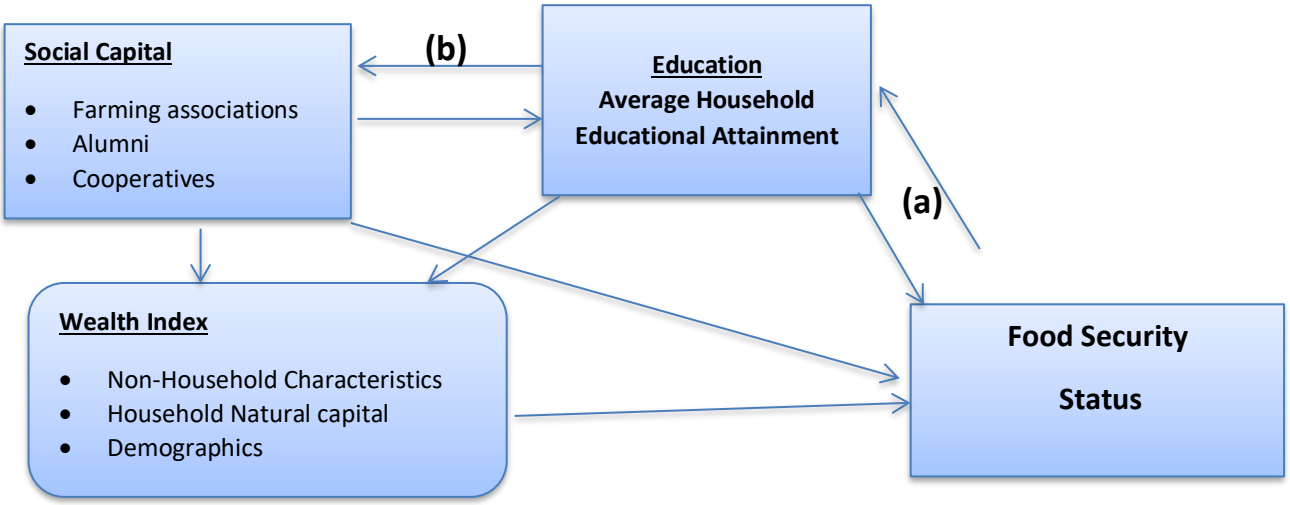
3.3 Conceptual Framework

Education and food security don't exist in isolation. The two are linked in a complex way and to some extent, feed each other. In other words, food security also promotes or assists education.

The framework shown on figure 1 shows the interlink between food security and Education. The framework postulates that two major directions to the relationships. The direct effects of Education on Food security (a) and the effect of education on food security through social capital (b).

Education (b) contributes to social capital by providing household members with the capability to occupy posts of responsibilities in associations. Occupying these posts of responsibility goes a long way to build up more social capital that can influence household food security. A more direct relationship between education and food security is expressed through the use of advance farming techniques through education (in rural areas) as well as the possibility of obtaining a well-paid job if you are highly educated (in urban areas). The income received from the employment will help improve on the food security status of the household.

Figure 1: The link between Food Security, Social Capital and Education



Source: Drawn by the author (2020).

In this study, education of a household is seen as the average household Education Attained which will be calculated as the total number of years of education by the household, divided by the total number of household members above the age of 18 years. This definition excludes household members below 18 years because their education is at the basic level has nothing to contribute to the food security status or welfare of the household.

The study in effect views food insecurity as the inability of households to meet up with basic feeding of all individual in a household in terms of having at least three meals daily every day, to eat cereals or tubers every day, to eat vegetables every day, to eat meat or fish at least every three days, to take a good meal on feasting days (Sunday, ceremony, etc.) and also have a psychological perception of being able to meet the provision feeding minimum needs of your household in the nearest future.

4. Theoretical Literature

4.1 Approaches to Food Security

There is a commonly accepted definition of food security; the dimensions (factors) stressed are often so diverse to highlight different views on the meaning of the "food security" term. It is important to understand the different approaches, which have drawn attention to different components of food security, and, in turn, have contributed to modify and extend the definition. Hence the five approaches to food security includes; food availability, income-based, basic needs, entitlement and sustainable livelihoods. This follows a chronological and logical order moving from the oldest and narrower vision of food security to the most recent and advanced ones.

4.1.1 Entitlement Approach to Food Security

For a long time, the debate on hunger and famine has been heavily affected by the food availability approach rooted in Malthus' thought. Only at the beginning of the 1980s

Amartya Sen's entitlement approach contributed to challenge this perspective and shifted the focus from national food availability to people's access to food. "*The entitlement approach concentrates on each person's entitlements to commodity bundles including food and views starvation as resulting from a failure to be entitled to any bundle with enough food*" (Sen, 1981).

The entitlement approach contributed to re-address the problem of hunger and famine by diminishing the role of aggregate food supply and giving more relevance to the socio-economic conditions of people. "*Starvation is a matter of some people not having enough food to eat and not a matter of there being not enough food to eat*" (Sen 1981). Therefore, it has significantly affected the notion of food security, by adding the access dimension. The influence of Amartya Sen's work is visible in two important food security definitions: "*All people at all times have both physical and economic access to the basic food they need*", and "*Access by all people at all times to enough food for an active, healthy life*" (World Bank, 1986).

Having enough food per capita at the national level is a necessary but not sufficient condition for food security. Therefore, to make a food security assessment, we need to extend the informational basis. Variables related to people's endowments, such as productive and non-productive assets, with particular emphasis on employment and non-tangible resources such as education or at least a member of your family belonging to an association, as well as information on wage, and other prices of food and non-food items should be adequately taken into account.

4.1.2 A Human Development and Capability Approach to Food Security

The capability approach to food security was primarily elaborated in 1989 by Jean Dreze and Amartya Sen in the pioneering book; Hunger and Public Action. Although the authors do not make any reference to the concept of food security, they develop a general analytical framework, based both on the capability approach of Sen (1999) and his entitlement approach, for studying hunger –chronic or transitory– and all related aspects: undernourishment, malnutrition, famines, etc. A puzzling question about the book and the proposed framework is that, notwithstanding it is much broader and far-reaching than the entitlement approach, it is much less known, discussed and utilized, both by scholars and practitioners.

Dreze and Sen explain why access is not sufficient and utilization is crucial. The object, in this view, is not so much to provide a particular amount of food for each. Indeed, the relationship between food intake and nutritional achievement can vary greatly depending not only on features such as age, sex, pregnancy, metabolic rates, climatic conditions, and activities but also access to complementary inputs (Dreze and Sen, 1989). In the book, they cite several fundamental complementary inputs: health care and medical facilities; clean drinking water; sanitation; eradication of infection epidemics; basic education. However, this is not (and it could not be) an exhaustive list.
One of the main reasons why the capability approach to food security has not been commonly utilized after 1989 in the food security studies and policies by researchers and policy-makers consists probably in lack of significant efforts to develop guidelines to

operationalize it. The ambitious and risky objective of the next section is to start sketching such guidelines. The works of Sen (1987) and Dreze and Sen in 1989 had enough literature on the three dimensions of food security (i.e. availability, access, and utilization) in line with the World Food Summit of 1996. But the write-ups lacked guidelines to operationalize the concepts. This study will operationalize the capability approach for food security in Cameroon.

4.2 Empirical Literature

4.2.1 Food Insecurity and Household Characteristics

Abdullah et al. (2017) researched the factors affecting household food security in Rural Northern Hinterland of Pakistan. A random sampling technique was used to collect data from 294 rural households through a face to face interview and a binary logistic regression technique was used to determine the factors that influence household food insecurity. The results of the study revealed that age, gender, education, remittances, unemployment, inflation, assets, and disease are important factors determining household food insecurity. Moreover, gender played a dominant role in food insecurity as a female-headed household were food insecure while male-headed household were food secure. The study recommended that policies should be set to promote education, and focus should be on female-headed households and also encouraged the inflow of remittances (Abdullah, 2017).

Bekele (2019) researched on the Household Income Diversification and Food Security in Rural and Semi-Urban areas in Ethiopia. The study portrayed food insecurity as a major public policy challenge in developing countries as it became severe in areas where households highly depend on undiversified livelihoods. The study examined the effect of income diversification on food security in the Ambo district, Ethiopia. A survey of rural (n = 175) and semi-urban (n = 175) households was conducted and using a Simpson's index of diversity (SID) the level of household income diversity was calculated. The study concluded that income diversification reduces food insecurity by enhancing households' access to food (Bekele, 2019).

Sani (2019) researched the household's food insecurity and its coping mechanisms in Western Ethiopia. The study analyzed households' food insecurity and its determinants along with the coping mechanisms opted against food insecurity and shortage in the Assosa zone, western Ethiopia. The study used primary data collected from 276 randomly selected households for 7 consecutive days from each sample using weighed records method. The finding of the study revealed that the incidence of food insecurity was 53.62%, with the depth and severity of food insecurity being 16.84% and 7.32%, respectively (Sani, 2019).

Yuniarti (2018) carried on a study on Food Security and dryland Nexus. The research was set out to find out the effects on livelihood assets. His studies geared towards the designing of appropriate food security strategies. Taking the case study of the dryland area in Saptosari Gunungkidul, the research examined the influence of livelihood assets (human capital, financial capital, social capital, natural capital, physical

capital), income, and family number on household food security. The research used cross-sectional survey data. The sample size was 89 households and the respondents were poor women who receive Family Hope Program (PHK). Multiple regression method was used to examine the influence of livelihood assets on household food security. The finding indicated that human capital, financial capital, and income, enhanced household food security (Yuniarti, 2018).

Mutisya (2016), worked on a longitudinal analyses on the effect of education on household food security in two informal urban settlements in Kenya. He highlighted a mixed effect of education on food security and that it remained understudied in low-income countries. Using longitudinal data collected between 2007 and 2012 in Kenya, the research investigated the effect of household education attainment on food security among poor urban households. Household food security was constructed from a set of four key items while education was the average years of schooling for individuals aged 18 years and above in a household. To determine the association between educational attainment and food security, a fitted random effect generalized ordered probit model was used. The prevalence of severe food insecurity ranged from 49% in 2008 to 35% in 2012. The ordered probit results showed a significant effect of education on food security. The probability of being food insecure decreased by 0.019 for a unit increase in the average years of schooling for a given household. The effect of education remained significant even after controlling for household wealth index, a more proximate determinant of food security in a cash-based economy such as the urban slums. The findings highlighted the need to focus on the food security status of the urban poor. The results suggested the need for programs aimed at reducing food insecurity among the urban poor and enhancing household livelihoods. (Mutisya, 2016). The research is used an ordinal scale as the measure of food security which is purely subjective to the household. The current study will use a food security index that captures all the dimensions of food security.

From the research works of Tabi and Vukenkeng (2017), the dependent variable is expenditure per head as a measure of welfare. In this research, food security will be used as a dependent variable to filter non-nutritious aspects of poverty. This research will narrow down welfare to food security. Also, the study of Haroon et al. (2017), considered only participation as a measure of social capital and a binary outcome of food security status. In this study, the food security status will be calculated as a composite index rather than using an isolated variable.

5. Research Design and Sources of Data

This survey research makes use of the Forth Cameroon National Household survey data (ECAM 4) collected from the National Institute of Statistics in 2016. The survey was conducted on 10,303 households (i.e. 46,560 individuals) in Cameroon. The questionnaire has 12 sections with structured open and closed-ended questions to capture the household variables both in urban and rural communities. The questions used from the

questionnaire targeted variables regarding the availability of food to households, the educational level of household members and the level of social connectedness of the household to their communities.

The household education considered in this study is defined as the average number of years of study by all members of the family above 18 years. A household having a higher average will mean that they are having abundance in wealth index in terms of educational endowment which will help to improve on the food security status of the household.

The Average Household Educational Attainment ($AHEA_i$) function can be stated as:

$$AHEA_i = f_i\ (edu_i) \quad \ldots\ldots (1)$$

Where:
$AHEA_i$ = Average Household Educational Attainment of the i^{th} family
edu_i = Summation of the number of years of studies of all members of the household

The model shows that the average household education is the aggregate of the total number of years of studies of all members of the household, divided by the total number of members of the household (excluding household members less than 18 years) of the i^{th} household.

5.1 Food Security and Educational Attainment

Several studies have explored the mechanism through which education and food security influence each other (Das and Sahoo, 2012; De Muro and Burchi, 2007). The findings are, however, mixed with some showing a negative effect of education on agricultural production (Amali, 2012) while the majority found a positive association (Bashir et al., 2012; De Muro and Burchi, 2007). Much of the research evidence on the effect of education on food security is based on rural populations. The existing evidence points to a two-way causal relationship between food security and education (Headey, 2013).

First, food security affects education and health. Food insecurity, especially during the early years of growth, leads to malnutrition among children; malnutrition is associated with poor cognitive growth and low educational achievement and the effects may extend to later life (Black et al., 2013).

Secondly, and the focus of this study, is the effect of education on food security among the urban poor. The human capital theories posit that human capital is a major determinant of production and later life chances of success e.g. employment and earnings (Becker 1964). These theories postulate that education, a measure of human capital, is associated with both productivity and efficiency. Education has direct and wider returns to individual and immediate members of their family and society at large in terms of increased income, improved health and better decision making (McMahon, 2009; Psacharopoulos and Woodhall, 1997). Education is indeed considered a key determinant of social mobility, by moving individuals and households out of poverty.

The mechanisms through which education influences food security differ, depending on the context, including urban versus rural. In the rural context, education influences food security through access to information on best agricultural production, nutrition, and sanitation; increased efficiency, hence increased production and better decision making as well as the pride that comes with education (De Muro and Burchi, 2007; Bashir and Schilizzi, 2013). While these mechanisms may also apply among urban households, the pathways differ. In the urban context, the effect of education is through proxies such as employment, household income, and decision making.

These proxies have effects on the access, utilization and availability dimensions of food security. Increased years of schooling are associated with better employment opportunities, working efficiency, better decision making and increased disposable income (Bashir and Schilizzi, 2013; Gebre, 2012). It is estimated that 90 % of the food consumed by the urban population is purchased and that poor households spend more than 50 % of their income on food and are more vulnerable to food price increases (Ruel and Garrett, 2004; FAO et al., 2012).

Given this, individuals and households with higher levels of education can be said to be more likely to be food secure because of their increased purchasing power (Bashir and Schilizzi, 2013). While this is true, labor participation among the urban poor is mainly in the informal sector with returns that can barely meet their daily needs.

$\boldsymbol{EDU_i = f\,(AHEA_{i,}, \Omega)}$ ………………………………………………………… (2)

Where:
$AHEA_i$ = Household Educational Attainment (AHEA) measured by an average number of schooling years within a household for adult members aged 18 years and above. (Mutisya, 2016)

The main independent variable is the average household educational attainment (AHEA) measured by the average number of schooling years within a household for adult members aged 18 years and above. That is the total number of schooling years divided by the number of individuals in the household aged 18 years and above. The variable is continuous and large values indicate higher education attainment for that household.

5.2 Econometric Model

Given the theoretical backing underlining the relationship between food security, social capital, and education, econometric relationship could be stated as follows:

$FSIi = \beta_0 + \beta_1 SCAPi + \beta_2 EDU_i + \beta_2 \text{HHsize}_i + \beta_2 Sexh + \beta_2 Age_{hh} + \beta_2 Accessland_i + \beta_2 \text{expend} + \mu$ ……………………………………………………………… (3)

Where:
$FSIi$ = Food security Index

SCAPi = Total number of household members who belong to an association
EDU_i = Education level of household (AHEA)
Household size= Household size
Sexh = Gender of household head
Age_{hh} = Age of Household Head
$Accessland_i$ = Access to cultivable land
$expend_i$ = household expenditure on food
μ_i = Uncontrolled household factors that affect food security

5.3 Reduced Form Equation for Social Capital and Education

Here, the reduced form gives the estimation of the endogenous explanatory variable in terms of the exogenous variables and the instruments identify structural equation. The reduced form is presented in the following expression:

$$EDU_i = \Omega X_i + \pi I_i + \varepsilon_i \quad (4)$$

Where X_i is a vector of economic, social and demographic variables of the household (i.e. all predetermined variables) and I_i are variables instrumental to social capital and education. The challenge was to find a suitable instrument set education. The research thereby argues that the following are conceptually suitable instruments for social capital and education: An instrumental variable is used to account for unexpected behavior between variables.

1) Time taken to the nearest tarred road measured in hours. When the time taken to the nearest road is much, it discourages household members from going to school. This will negatively affect the Average Household Educational Attainment of the household.
2) Length of time you estimate the total duration of power cuts for the past 30days. The duration of power cut is inversely related to the building of the education of household members. It is believed that the availability of electricity will create a conducive environment in learning. Long periods of electricity cuts will hinder the learning process since the household member will not be able to do an assignment at night and will not be able to use basic ICT learning tools such as computers.
3) The number of times a child is driven from school also looks at the unwillingness of the household to support education and also the financial capacity of the household to pay fees on time for the children to study. This instrument has a high correlation with the school dropout rate of household members.

5.4 Treatment of Endogeneity in the Model

The heterogeneity of food security due to the non-linear interaction of education with unobservable and omitted variables could bias the estimations of the structural coefficients. This is a control function specification which takes the following form as inspired by (Baye, 2012) and (Mwabu, 2008).

$$\text{Ln } Y_i = w_i\alpha_{y,i} + \sum \pi_{k,i} \sum X_{k,i}\, w_{k,i} + \sum \mu_{k,i} (w_{k,i} * \pi_{k,i}) + v_i \quad \text{..... (5)}$$

Where:
Y_i = Food Security Index (FISi)
$w_{k,i}$ = Fitted residual of an endogenous variable
$X_{k,i}$ = Derived from the reduced form linear model of education or social capital as expressed in the equation above
$(w_{k,i} * \pi_{k,i})$ = The interaction of the fitted residuals with the actual values of each of the potential endogenous variables
v_i = A composite error term comprising and the unpredicted part of ε_i, under the assumption that $E(v_i) = 0$; and α, π, μ and X are parameters to be estimated, where and ε_i, are the error terms of equations above

The exclusion restrictions are imposed on the above equation because the vector of instruments for the endogenous regressors is absent from the equation. The terms $w_{k,i}$ and $(w_{k,i} * \pi_{k,i})$ in the equation are the control function variables because they control for the effects of unobserved factors that would otherwise contaminate the estimates of structural parameters.

5.5 Determination of Average Household Educational Attainment (AHEA)

Education is one of the easily assessed characteristics of household members and in this study it is calculated as the stock of education endowment by every household using the Average Household Education Attainment measure which is the average of all the number of years of education of all household members above 18 years. The years of schooling was distributed as follows:

No Educational Level	= 0 year	(Total Cumulative = 0 year)
Primary Education (Class 1 -6)	= 6 years	(Total Cumulative = 6 years)
Secondary Lower (Form 1 to 4)	= 4 years	(Total Cumulative = 10 years)
Secondary upper (Form 5 to 7)	= 3 years	(Total Cumulative = 13 years)
University (BSc to PhD)	= 8 years	(Total Cumulative = 21 years)

The average household coefficients were then used as the measure of household educational attainment.

5.5.1 Mean and Standard Deviation Estimates

To have an overview of the variables used in this study, a descriptive analysis was done and presented below.

Table 1: Mean Estimates

Variable	No of Observations	Mean	Standard Deviation
Food Security Index	10,303	0.5669469	0.153958
Average Household Educational Attainment	9,630	6.560842	3.733216
Number of household members who belong to an association	10,303	0.61584	0.8488744
At least a member of your household belonging to an association	10,303	0.4350189	0.4957835
Gender of household head	10,303	0.2892361	0.4534298
The urban milieu of resident	10,303	0.530331	0.4991034
Age of household head	10,303	43.47947	15.78813
Household size	10,303	4.473454	3.117178
Household expenditure on food	10,303	0.4265954	0.1416712
Number of hours of power cuts in a month	10,303	3.858197	3.801851
Number of times children are driven from school	7,118	0.4395898	2.488064
If a member of the household has been a victim of violence for the past year	10,303	0.1465593	0.1190744
Access to cultivable land	10,297	0.5111197	0.4999006
Time taken to the nearest tarred road	9,398	.4944563	1.291583

Source: Computed by the author using ECAM IV survey data (2019).

5.5.2 Second stage regression estimate

The second regression analysis is used to verify the relationship between food security, and education. The results obtained are presented in the Table 2.

Education on the other hand also has a positive relationship with food security. This relationship was significant at a 1% level of significance (p-value = 0.000). The results revealed that the Average Household Educational Attainment (AHEA) of a household can significantly improve on the food security status of the household in Cameroon. This relationship can be explained through the influence of coping strategies, food planning techniques and the income effect of education (ability to have a well-paid job as a result of education). Education affects food security through two main channels as confirmed by the works of Mutisya (2016) and Nuzhat et al. (2016). Firstly, education helps households to be able to secure better jobs, especially in urban areas. While in rural areas, education helps to equip the local population with advanced farming and crop preservation techniques which aids in the food security of the household. Education also provides the household with coping strategies and food planning techniques.

The gender of the household head was not significantly related to the food security status of the household with a p-value of 0.78. Also, households located in urban areas are less food secure than those in rural areas. The age of household head hurts the household food security. While, household size, on the other hand, was found to be inversely related to the food security of the household.

Table 2: Regression Results of Social Capital, Education, and Food Security

	Ordinary Least Square (OLS) Regression	**Two Stage Regression Estimates**
Dependent Variable = Food security Index	Coefficients (P>|t|)	Coefficients (P>|z|)
Education		
Average Household Educational Attainment	0.0019171*** (0.000)	0.0206517** (0.018)
Social Capital		
Number of household members who belong to an association	0.0030266 (0.108)	- -
At least a member of your household belonging to an association	- -	-0.0976024 (0.121)
Control Variables		
Gender of household head	-0.0010594 (0.766)	-0.0016274 (0.780)
The urban milieu of resident	-0.0135107*** (0.000)	-0.0147156** (0.018)
Age of household head	-0.0002041* (0.053)	2.83e-06 (0.990)
Household size	-0.0002745 (0.606)	0.0024155 (0.101)
Household expenditure on food	-0.0131233 (0.265)	-0.0333625 (0.270)
Access to cultivable land	0.0023093 (0.496)	0.0386455** (0.049)
Intercept	0.5760053*** (0.000)	0.4681943*** (0.000)
Number of observations	9,622	5164
F(8, 9613)	4.80*** (0.0000)	1.46 (0.1668)
R-squared	0.0040	-0.2495
Adjusted R-squared	0.0031	0.9121
Anderson canon. corr. LR statistic		22.084*** (0.0002)
Sargan statistic		3.900 (0.2724)

Notes: *** = 1%. ** = 5% and * = 10% level of significance and values in brackets are the t-statistics
Source: Computed by the author using ECAM IV survey data (2019).

Cultivable land was also seen to contribute to food security at the household level. Owning a cultivable land will mean that the household can cultivate crops that can be consumed. The cultivable land was not significant even at a 10% level of significance. This means that the ownership of a cultivable land does not necessarily mean that it will be cultivated.

5.6 Recommendation

The number of years of education of household members should be taken as the most important channel through which the household can use to guarantee food security. The increase in the number of years of study should be progressive on the educational ladder. Increasing the number of years of education at the same level of education will not help to increase the Average Household Educational Attainment (AHEA) score. The education of household members in rural areas should take the form of training in farming techniques. Such training should include training on seed improvement, methods of farming, the use of fertilizers, farm management, food storage facilities and information on climate change and seasonal variations.

6. Conclusion

Education was seen to significantly have a direct contribution to the food security status of the household. It was concluded that education has two channels through which it affects household food security. Firstly, employment whereby, longer years of education enables the household members to easily acquire well-paid jobs hence assisting in the food security of the household. This is most common in urban areas. While on the other hand, education through training on new and modern farming techniques will help households to improve on their productivity. This is more practical in rural areas where agriculture is the main economic activity for the household.

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