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GCBER 2017
August 14-15, UPM, Malaysia
Global Conference on Business and Economics Research

Governance and Sustainability of Global Business Economics

Global Conference on Business and Economics Research (GCBER) 2017
14-15 August 2017, Universiti Putra Malaysia, Malaysia

Capital Endowments as a Path Way Out of Poverty amongst Rural Households in Nigeria

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Abstract

This paper examines the role of capital endowments in improving the economic wellbeing of rural households in Nigeria as well as change in their poverty status. The study used per capita annual household consumption expenditure as a measure of economic wellbeing. Variant difference and multinomial logit models were employed in assessing the effect of capital endowments on households' economic wellbeing and change in their poverty status respectively. The result of variant difference and multinomial logit models revealed that the initial human, physical, financial and social capital endowments of the households have a significant positive influence on their welfare as well as their poverty status. However, human capital was the most important endowment that explained welfare changes over time. Based on the findings, the study suggest that there is need for the government to initiate programs that would facilitate access of the poor households to formal education, formal credit, social capital and non-farm diversification opportunities towards eradicating of rural poverty in the country.

Keywords: Capital endowments, poverty reduction, farm household, rural Nigeria

1. INTRODUCTION

Poverty reduction has been part of the worldwide agenda since September, 2000 when the countries of the world signed the Millennium Declaration and set their commitment towards eradicating poverty and hunger in the entire world by half by the end of the year 2015. However, we are now in 2017 but yet poverty has been the major challenge facing the predominance of households living in the sub-Saharan Africa, especially those residing in the rural areas. The sub-Saharan Africa have been placed as the region with the highest poverty rates in the world, with nearly 60% of the working population living below the poverty line of US $1.25 per day (World Bank, 2010).

Numerous factors have been identified as the possible determinants of poverty and notable among them are capital endowments. Such endowments have been widely recognized as a long-term solution to poverty as it provides the household with human, physical, social and financial capital that helps in increasing productivity and income of the existing and potential labor force in the household. This helps in alleviating poverty and reducing the risk of variability in farm income (Glewwe, 1991; Grootaert et al., 1997; Ellis 1998). It is expected that a household with adequate human, physical and social capital would be able to generate substantial income from other sources apart from farming, which may play a vital role in improving his welfare. Ellis and Freeman (2004) maintain that the current understanding of poverty should place considerable attention on ownership of assets because they are the building blocks that the poor can easily convert to productive use to make their own routes out of poverty.

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Despite the potential role of household endowments in reducing poverty, there are few empirical studies that examined its impact on poverty reduction in rural Nigeria (Olaniyan, 2002; Awotide et al., 2011, Sekumade and Osundare, 2014). Hence, without adequate knowledge of the impact of household endowment on poverty it would be difficult to identify the possible factor endowments that should be considered in reducing poverty among the households. Secondly, the existing studies in the country use a discrete variable as a measure of poverty. This results in the loss of the relevant available information needed in examining the impact of household endowments on poverty reduction. Moreover, none of the past studies have examined the effect of household endowments on changes in the incidence poverty. This is dictated by the lack of panel data on household survey in the country, until the current one collected in 2011 and 2013. This makes it impossible to track changes in the poverty status of the households over time.

To improve on the existing studies, this study empirically examined the impact of initial household capital endowments on household wellbeing as well as change in their poverty status using a nationally representative panel data of rural households from Nigeria for the period of 20010/20011 and 2012/2013 to. The study used per capita annual household consumption expenditure as a measure of economic wellbeing. It also employed a variant in difference model and multinomial logit model for its analysis. The used of per capita consumption expenditure as a measure of household welfare, which is a continuous variable makes it possible for this study to utilize much of the available information that are usually lost by the previous studies that have used discrete poverty measure. The findings of this study would helped in better understanding of the nature of growth and poverty reduction among the rural households in Nigerian context. It also provided relevant policy insights beyond what is known from the current cross-sectional analysis by providing adequate information on the factors that causes or escape household from poverty. In addition, it improves upon the existing cross sectional studies by exploring the factors that directly contribute to improvements in household consumption expenditure as well as change in their poverty status over time. Hence, the findings of the study would help in suggesting sound appropriate policies that could enhance the endowments of the poor households so as to complement their own resources needed to improve their wellbeing.

To achieve the objective of this paper, the remaining work is structured as follows. Section 2 discusses the literature review. Section 3 presents econometric specification of the empirical models. Section 4 discussed the data and the measurement of the variables used in the study. Section 5 presents the empirical results and its discussion. Section 5 provides summary of the findings and conclusion.

2. REVIEW OF RELATED LITERATURE

Several empirical studies have documented the role of household endowments in reducing poverty amongst rural households in developing countries (Grootaert et al., 1997; Canagarajah et al., 2001; Ellis and Freema, 2004; Winters et al., 2007). Educational attainment of the household members is one of the most important component of human capital that has been widely reported in the literature to have a positive significance on poverty reduction, irrespective of the location of the household. Households with higher educational level have higher chances of getting better employment opportunities and well-salaried employment than less educated ones (Lucas, 1998). The level of education tends to increase level of household productivity in all the sectors of the economy and boosted mobility in the labor market.

Riggs (2006) maintains that the best means of promoting growth in less developed countries is through endowing households with adequate skills to be obtained through increase investment in education. Using the data of Fiji national living standard household survey, Xing and Gounder (2012) reveal that the educational attainment of household members plays a vital role in improving the overall welfare of the rural households by increasing their wage earning, which increases their per capita annual consumption expenditure. Similarly, Vijaya, et al, (2014) using nationally representative household level data from India reported that the educational attainment of the household has a significant positive impact on the welfare of both the rural and urban households in the country. Household size and its composition are another components of human capital that affects poverty status of households in rural areas of developing countries. Bogale, (2002) in their study of rural households in Ethiopia reported that there is a significant negative relationship between household welfare and household size. Similarly, Awotide et al., (2011) reported that the larger the household size the higher the likelihood of rice farm households falling into poverty in the rural parts of Nigeria. However, the actual effect of household size on household welfare depends on the percentage of adult and dependents in the household.

The recent study by Alem, et al., (2014) using 15 years panel data of Ethiopia reveal that households with high proportion of children are more likely to be poor than households with less proportion number of children. They also found that households with high percentage of adult employed members are more likely to sustain their livelihood above the poverty line because the members contribute actively to household consumption expenditure. Similarly, Mukherjee and Benson (2003) reported that the coefficient of proportion of children is having negative significant impact on household consumption, while that of adults is having significant positive effect on household consumption.

Financial capital is another component of household endowments that influence the household welfare. The financial capital is measured by the ability of the household to assess formal credit from the financial institutions. The financial capital serves as a source of capital for productive investment in both farm and non-farm sectors of the economy. Using quarterly data over the period of 1975 – 2011, Uddin et al., (2014) investigated the relationship between financial development, economic growth and poverty reduction in Bangladesh and concluded that financial capital tend to have a positive significant impact on poverty reduction.

3. METHODOLOGY

3.1 Econometric Model 1: Effect of Capital Endowments on Poverty Reduction

The econometric model that estimates this objective defined consumption growth as a function of initial capital endowments. In this context, consumption growth served as the proxy of household welfare. The study used initial endowments because changes in consumption in the short run is very much a function of the level of endowments prior to the changes and then the prevalent behavior of the household with respect to income generated from the current activities (Grootert et al., 1997).

Following Grootert et al., (1997), the econometrics model of consumption growth is given as

$$\Delta lnC_{it} = \beta_0 + \beta_1 K_{it-1} + \beta_2 HN_{it-1} + \beta_3 M_{it-1} + \beta_4 A_{it-1} + \Delta u_{it} \quad (1)$$

where ΔlnC_{it} denotes the growth in per capita annual household consumption expenditure between 2010 and 2012. K_{it-1} represents set of physical capital endowments owned by the household in 2010, which comprises of farm size and non-farm enterprises owned by the household. HN_{it-1} represents a vector of human capital endowments at the initial period; this comprises of head age, head gender, years of education of adult household members and the composition of adults and dependents in the household. M_{it-1} denotes financial capital, which is measured by the share of household members that have access to formal capital. A_{it-1} denotes social capital, and is measured by the share of household members that are registered with various forms of associations. The initial period capital endowments in the model rid off endogeneity problem as they are predetermined and exogenous to growth in consumption expenditure. $\beta_{it,}$ and $\Delta\mu_{it}$ denotes the coefficients of the explanatory variables and the changes in the unobservable error term respectively.

3.2 Econometric Model 2: Effect of Capital Endowments on Change in Poverty Status

The study used multinomial logit model to explore the factors that are likely to contribute to the fall of household into poverty and those that help him to escape out of poverty. The model uses the same explanatory variables that were used in Equation 5.3 to assess the effects of household endowments on the likelihood of the household to escape from poverty or fall into poverty. Thus, the multinomial regression model can be specified as

$$P_{i[,1,2,3]} = \beta_0 + \beta_1 K_{it-1} + \beta_2 HN_{it-1} + \beta_3 M_{it-1} + \beta_4 A_{it-1} + u_{it} \quad (2)$$

where $P_{i[1,2,3]}$ represents the likelihood that the household would be in one of the three exclusive groups. Group one are those households whose poverty status remains remained unchanged over the two periods (2010/211 and 2012/1013), which serve as a reference group. Group two are those households that were not poor in 2010/2011, but fall into poverty between 2012/2013. Group three encompasses households that were poor in 2010/2011 but escaped poverty in 2012/2013. Among the right hand side variables, K_{it-1} represents set of physical capital endowments owned by the household in 2010, which comprises of farm size and non-farm enterprises owned by the household. HN_{it-1} represents a vector of human capital endowments at the initial period; this comprises of head age, head gender, years of education of adult household members and the composition of adults and dependents in the household. M_{it-1} denotes financial capital, which is measured by the share of household members that have access to formal capital. A_{it-1} denotes social capital, and is measured by the share of household members that are registered with various forms of associations. The study uses the world absolute poverty line of $1.25 dollar per day deflated by 2010 consumer's price index to come up with the annual poverty line. This gives an annual poverty line of $457 dollars per annum, which is equivalent to NGN 71,292.

3.3 Data and Measurement of Variables

3.3.1 Source of Data

The data for this study were collected from the first and second wave of General Household Survey (GHS) of the nationally representative sample of rural farm households in Nigeria conducted by the Nigerian Bureau of Statistics in association with the World Bank in 2010/2011 and 2012/2013.

3.3.2 Measurement of Variables

Table 1. Measurement of variables

Variable	Measurement
Expenditure Measure	
Growth in Per capita Household consumption expenditure	The amount of increase in per capita household consumption expenditure from 2010/2011 to 2012/2013.
Human Capital Measures	
Male Adults	The proportion of males that are between 18 to 65 years in the household
Female Adults	The proportion of females that are between 18 to 65 years in the household
Dependents	The proportion of household members that are less than 18 years and those that are more than 65 years
Education	Average years of education of adult members of the household
Head Age	Years of the head of the household
Head Age Square	Square of years of the head of the household
Physical Capital Measures	
Farm Size	Hectares of farm owned by the household.
Nonfarm Enterprises	Share of household members employed in the non-farm enterprise activities
Financial Capital Measure	
Formal Credit	Share of household members that have access to formal credit
Social Capital Measure	
Association Membership	Share of household members that have access to various forms of associations.

4. RESULTS AND DISCUSSION

4.1 Descriptive Statistics

The descriptive statistics presented in Table 1 disaggregates the sample into poor and non-poor households on the basis of their poverty status. Households whose their per capita annual consumption expenditure is below the poverty line (NGN 71,292 per annum) are classified as poor while those above it are termed as non-poor households. The poverty line was constructed on the basis of the minimum requirement of consumption expenditure of $1.25 per day declared by the World Bank in 2010 deflated by the Nigerian consumer price index for the period.

The descriptive results indicate that the per capita annual household consumption expenditure for the full sample increases by 11.26% from 2010 to 2012. However, the result of the disaggregated sample revealed the mean of per adult consumption expenditure of the non-poor households increases by 17% while that of the poor households decreases by 11%. This depicts the high level of income inequality that exists between the poor and non-poor households in rural Nigeria. In the case of human capital, the descriptive statistics indicate that in spite of low level of years of education in rural Nigeria, which on average accounts for 3 and 1/2 years, the average years of adult education of the non-poor household is higher than that of the poor ones. This indicates the importance of human capital development to improvement in the household welfare.

With respect to physical capital, the result shows that the share of non-farm enterprises among the non- poor households is higher than of the poor ones. This indicates that the existence of barriers to participation of the poor farm households in high return non-farm enterprise activities. Likewise, the proportion of non-poor households with access to social as well as financial capital, outweighs that of poor households. This also signifies the importance of formal credit and social networking to investment opportunities in the rural areas. The potential effect of heterokedasticity in the model is overwhelmed by using Huber- White heterokedasticity robust estimator instead of conventional standard errors for all the parameter estimates in the selection and outcome equations, which tends to give valid standard errors, t-statistics and F-statistics.

Table 2. Descriptive statistics of the variables

Variable Description	Unit	All Households Mean	All Households SD	Non-poor Households (35%) Mean	Non-poor Households (35%) SD	Poor Households (65%) Mean	Poor Households (65%) SD	T-test (Means Difference)
Expenditures ₦(000)								
2012 Per capita household consumption expenditure		77182	81088	138898	97198	34620	29742	42562**
2010 Per capita hh consumption expenditure		70890	66998	131252	80965	37973	17101	32917***
Change in per capita hh. consumption expenditure		6292	7426	7646	5971	-3353	9237	9645**
Human Capital								
Male Adults (%)	Years	0.61	0.33	0.49	0.38	0.53	0.27	-0.04
Female Adults (%)	Years	0.39	0.18	0.51	0.23	0.47	0.29	0.04
Dependents %	Years							
Education (Adults)	Years	3.40	3.72	5.10	4.43	2.47	2.87	2.63***
Head Age	Years	49.87	15.25	49.52	15.65	50.06	15.02	-0.54
Head Age Square	Years	2119	1634	2698	1661	2731	1619	-33.00
Physical Capital								
Farm Size	Hectares	1.65	1.18	1.58	1.16	1.25	1.15	-0.33
Nonfarm Enterprises	Count	0.23	0.28	0.31	0.33	0.18	0.23	0.13***
Financial Capital								
Formal Credit	Count	0.08	0.18	0.13	0.26	0.05	0.13	0.08***
Social Capital								
Association Membership	Count	0.05	0.16	0.09	0.22	0.03	0.10	0.06***

Note: Households are desegregated into poor and non-poor households on the basis of international World absolute poverty line measurement of USD 1.25 per day deflated by 2010 Consumer's Price Index. Household consumption expenditure is in Naira (NGN). Exchange Rate NGN156 per USD1
*, **, *** denote 10%, 5% and 1% significance levels.

4.2 Capital Endowments and Poverty Reduction

The results of variant difference model for the full and the disaggregated sample of the poor and non-poor households presented in Table 3 revealed that the initial capital endowments of the households have a significant influence on the improvement in the economic wellbeing of the households. Improvement in the household welfare is measured by growth in per capita annual household consumption expenditure.

The empirical proxies of financial and social capital endowments are having a positive significant effect on the increase in per capita annual household consumption expenditure of both the poor and non-poor households. Increase in the share of households with formal credit leads to an increase per capita consumption of the poor and the non-poor households by 20% and 21% respectively. Similarly, share of social capital increases the expenditure of such groups by 2% and 3%. This portrays the importance of formal credit and social networking in improving the wellbeing of the households irrespective of their poverty status. However, the coefficients of the variables indicate that the contribution of formal credit to per capita household consumption expenditure is higher than of the social capital. This may imply the importance of formal credit in raising financial capital for non-farm businesses. The result is in line with the findings of Odhiambo (2009) and Uddin et al., (2014) on the role of financial capital in improving household welfare in Bangladesh and South Africa respectively.

Table 3. OLS estimates of the effect of capital endowments on poverty reduction
Dependent Variable: Log of Growth in Per capita Consumption Expenditure

Explanatory Variables	All Households Coefficient	Non-Poor Households Coefficient	Poor Households Coefficient
Human Capital			
Male Adults	0.49^{***}	0.12	0.38^{***}
	(0.07)	(0.33)	(0.11)
Female Adults	0.06	0.17	0.06
	(0.01)	(0.33)	(0.04)
Dependents	-0.13^{***}	-0.03^{***}	-0.08^{***}
	(0.01)	(0.01)	(0.01)
Education	0.25^{***}	0.19^{***}	0.17^{***}
	(0.07)	(0.02)	(0.02)
Head Age	0.01	0.01	0.01
	(0.01)	(0.01)	(0.01)
Head Age Square	-0.01	-0.01	-0.01
	(0.01)	(0.01)	(0.01)
Physical Capital			
Farm Size	0.05^{***}	0.07^{***}	0.02^{**}
	(0.01)	(0.03)	(0.01)
Non-farm Enterprises	$0. 36^{***}$	0.29^{***}	0.12^{**}
	(0.04)	(0.05)	(0.06)
Financial Capital			
Formal Credit	0.18^{***}	0.20^{***}	0.21^{***}
	(0.03)	(0.02)	(0.03)
Social Capital			
Associations membership	0.08^{***}	0.02^{**}	0.03^{*}
	(0.01)	(0.01)	(0.02)
Observation	3257	1150	2107
F test	64.36^{***}	16.93^{***}	44.94^{***}
R^2	0.21	0.18	0.11

Notes: Households are desegregated into poor and non-poor households on the basis of international World absolute Poverty line measurement of USD 1.25 per day deflated by 2010 Consumer's Price Index. *, ** and *** denotes 10%, 5% and 1% levels of significance respectively.
Values in Parenthesis represent Robust Standard Error.

4.3 Capital Endowments and Change in Poverty Status

The results of multinomial logit model presented in Table 4 revealed that the initial capital endowments of the households are having a significant effect on the change in their poverty status. An increase in the share of both male and female adults in the household decreases the probability of the household to move into poverty. However, the result suggests that the coefficient of share of male adults escapes only the non-poor households out of out of poverty.

As regards to initial human capital endowments, the result of the full sample indicates that an increase in the proportion of male adults as well as years of education increases the per capita annual consumption expenditure of the households by 49% and 25% respectively. However, an increase in the share of dependents decreases per capita household consumption by 13%. In contrast, the result of the disaggregated sample gives a slightly different result from that of the full sample. Regarding the estimates of years of adult education and share of dependents, the result of the full sample almost remain the same with that of disaggregated sample. The result revealed that while increase in the years of adult education increases household welfare, the increases in the share of dependents reduces household welfare drastically. This may be associated with the high lucrative labor opportunities that the educated households are having in the formal sector of the economy compared to uneducated ones. The outcome of this study corroborates with the findings of Grootaert et al., (1997) and Vijaya et al, (2014) who conducts studies on the effects of capital endowments on welfare gain in Cotedevoire and India respectively.

The result further revealed that the coefficients of capital endowments have significant influence on the increase in per capita annual household consumption expenditure. For the full sample, farm size and non-farm diversification are having a positive significant impact on per capita annual household consumption expenditure. However, for the disaggregated sample the effect of farm size and non-farm enterprises on household consumption spending is slightly higher among the non-poor households than the poor ones. Additional hectare of land raises per capita consumption spending of the non-poor households by 7% and the poor households by 2%.

Table 4. Multinomial logit results of the effect of capital endowment on poverty status

Dependent Variable: Change in the Poverty Status of the Household

Explanatory Variables	Moved into Poverty Coefficient	Escaped Out of Poverty Coefficient
Human Capital		
Male Adults	-0.42^{*}	0.69^{**}
	(0.23)	(0.29)
Female Adults	-0.08^{***}	0.06
	(0.02)	(0.03)
Dependents	0.12^{***}	-0.22^{***}
	(0.04)	(0.06)
Education	-0.45	0.33^{**}
	(0.73)	(0.06)
Head Age	-0.03^{***}	0.01
	(0.01)	(0.01)
Head Age Square	0.03^{***}	-0.01
	(0.01)	(0.01)
Physical Capital		
Farm Size	-0.03^{**}	0.04^{**}
	(0.01)	(0.02)
Non-farm Enterprises	-0.09^{**}	0.08
	(0.04)	(0.15)
Financial Capital		
Formal Credit	-0.26	0.19^{***}
	(0.30)	(0.03)
Social Capital		
Association's Membership	-0.03	0.09^{***}
	(0.02)	(0.03)
Observation	3257	3257
Wald-Test	184^{***}	251^{***}
Pseudo R^2	0.13	0.18

Notes: Households are desegregated into poor and non-poor households on the basis of international World Absolute Poverty line measurement of USD 1.25 per day deflated by 2010 Consumer's Price Index *, ** and *** denotes 10%, 5% and 1% levels of significance respectively.
Values in Parenthesis represent Robust Standard Error.

The coefficient of non-farm enterprises also revealed that an increase in the share of non-farm enterprises by 1 increases the per capita annual household consumption expenditure of the poor by 12% while that of the non-poor households by 30%. This reflects the differences in nature of non-farm enterprises that the poor and non-poor households undertake in the rural Nigeria. It also indicates the wide gap in income inequality between the poor and non-poor households in rural Nigeria. This outcome is similar with the findings of Mukherjee and Benson (2003) and Winters (2009) on the role of capital endowments in improvement of household consumption in Malawi and some selected developing countries respectively.

As expected, Table 4 revealed that an increase in the share of dependents in the household increases the probability of falling into poverty and decreases the likelihood of escaping out of poverty. This suggests that the dependents solely depend on the adult members of the household for their consumption expenditure. The result also suggests that the educational attainment of the adult household members has no significant effect on probability of falling into poverty, but it has a positive significant influence on the probability of escaping out of poverty. This may imply that education is more welfare enhancing for the poor households than the non-poor ones. The possible reason for this discrepancy is that the non-poor households have other forms of alternative investment opportunities that haves little to do with their educational attainment.

Predictably, the age of household head has a nonlinear effect on the probability of falling into poverty. The coefficient of age decreases the likelihood of falling into poverty. However, after reaching an old age, it increases the likelihood of the falling into poverty due to diminishing return to human productivity. The coefficients of formal credit and association's membership which measures financial and social capital respectively have no significant influence on the probability of falling into poverty, but they have a positive significant influence on probability of escaping out of poverty. This portrays the importance of formal credit and social networking in improving the wellbeing of the households.

5. CONCLUSION

The study uses the nationally representative data on farm households from rural Nigeria to empirically examine the effect of capital endowments on the welfare gain as well changes in the poverty status of the households. The outcome of the study revealed that the initial human, physical, financial and social capital endowments of both the poor and non-poor households plays a significant role in improving their welfare as well as change in their poverty status.As regards to the effects of capital endowments on change in the poverty status of the households, the result suggests that the poverty situation in the country is a temporary condition, which is hopeful information for poverty alleviation in the country. An increase in the share of male adults, educated adult members, farm size, and share of household members with access to financial and social capital increases the probability of the poor household to escape out of poverty. In contrast, high share of dependents and ageing heads increases the likelihood of household to fall into poverty. Hence, finding of this study is hopeful news for poverty alleviation policies in the country and it implies that the total capital endowments of the poor households are less than what is actually needed for the attainment of basic needs of livelihood. Therefore, to reduce rural poverty in the country, the policy makers need to target funds and design appropriate programs which facilitate the development of desirable forms of human, physical, financial and social capital of the poor households. Suggested targeted programs include basic and adult education; rural banking and micro finance with simple collateral; and non-farm diversification initiative scheme.

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