

Determinants of Economic Growth Differential in Rural Nigeria

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Abstract: Increasing income inequality and poverty continue to be the most challenging economic problem facing most developing countries including Nigeria. It has been observed that inequality in Nigeria is mainly through income differential. Mean earnings also differ greatly across groups defined by occupation, gender, education, experience, and other observed traits. The paper explores the extent to which a set of factors determine income growth differential in rural Nigeria between 1996 and 2004 using the National Consumer Survey data of 1996 and 2003/2004 National Living Standard Survey dataset. The two periods have sample sizes of 11,577 and 22,000 respectively. Oaxaca-Blinder decomposition approach was used to estimate the contribution of selected factors to the growth differential between the two periods. From the decomposition results, the key determinants of growth for both periods respectively were: age of household head (0.011, 0.199); house unit type (0.038, 0.032); education status (0.129, 0.141); and weekly hours of work (0.183×10^{-4} , 0.002). Others were Gender, (-0.117, -0.213); and household size (-0.044, -0.140).

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1. Introduction

As recorded by World Bank (2004a), Poverty has fallen rapidly over the past 40 years, but at different rates around the world. Asia has achieved the most rapid poverty reduction, particularly China, but also India and South East Asia. However, in sub-Saharan Africa (including Nigeria) little if any progress has been made as the number of people living on less than one dollar a day – the internationally agreed definition of absolute poverty – has doubled over the past 20 years. Many developing countries are experiencing waning per capita income and are continuing to lag behind while quite a few others have been able to achieve economic growth in either modest or ample measure (Sobhee et al , 2006).

The recent focus of development efforts such as those of HDR Nigeria reports (2009) is on achieving growth with equity. This concept refers to growth which enables the largest number of people particularly those less advantaged and poor, to participate in wealth creation and benefit proportionately more from the increased availability of public and private resources. In other words, growth with equity aims for a society whose approach is less concerned with whether or not the poor gain relatively more (or less) from the increased wealth and whether the gap between the rich and the poor either widens or narrows as a result of “orthodox” growth path.

Growth with equity therefore leads to a faster reduction of poverty and inequality, enabling more of the poor to gain access to productive and stable jobs, improved health and literacy, higher incomes and

increased opportunities to engage actively in the life of their communities. Thus, growth with equity helps a society and country to progress from merely raising incomes to achieving a higher level of human development (UNDP, 2005; World Bank, 2006; HDR, 2009).

The key objective of economic development became evident in recent times and issues like infant mortality, life expectancy, literacy and gender empowerment, have emerged as the key elements of the fundamental objectives of development. The main components of human development are today contained in the millennium development goals (MDGs). The result according to Fosu (2009) involves seeing income growth as the necessary engine (or means to an end) and human development is seen as the ultimate objective. Income growth enables improvements in key components of human development and these, in turn promotes further growth of income. Improvements in human development (through better health and more education for example) increases labour productivity which in turn raises both output and income on the one hand; while economic growth increases both private and public resources that can be applied to raise the level of human development on the other hand. The concept of economic growth suggests that, in the long run, growth is more likely to be sustainable if there is greater equity in opportunities for all segments of the population to participate in the process of generating economic growth and sharing in its benefits in a more equitable manner.

In Nigeria, since independence in 1960, the main goal of economic development has been to achieve stability, material prosperity, peace and social progress. A number of internal problems have however been militating against the attainment of these growth and development objectives. These include inadequate human development, primitive agricultural practices, weak infrastructure, uninspiring growth of the manufacturing sector, a poor policy and regulatory environment and mismanagement and use of resources (HDR, 2009).

Although Growth Performance in the country improved significantly since the return to civilian rule in 1999 with an average growth rate of about 6 per cent being recorded since then (NBS, 2005). Economic growth has however not resulted in appreciable decline in unemployment and poverty prevalence. This informs why this paper intends to look at those key underlying factors influencing inequality and growth differential within a period of time in Nigeria. The chosen period include 1996 to 2004. This will enable us to identify those factors which are responsible for the gap in income among the rural population in Nigeria.

Simple theory and empirical evidence indicate that poverty reduction can be achieved by accelerating economic growth and/or by changing the distribution of income in favour of the poor. Sustained economic growth reduces poverty. Economic growth and pro-growth policies are central to the objective of poverty reduction, but they are not enough. Progressive distributional change (or even slowing a trend toward rising income inequality) can have an important impact on the rate of growth of incomes of the poor. The income and poverty dynamics of African countries including Nigeria, illustrate this conclusion well. The 1980s and the first half of the 1990s saw continued declines in income, and despite some positive changes in the second half of the 1990s, the region closed out the century with a record of sustained negative per capita income growth (Page, 2006).

According to Nigeria HDR (2009) reports, the growth process that is most effective for raising the consumption of the poor is referred to as “pro-poor” or “shared growth”. In particular, the concept of pro poor growth captures the extent to which economic growth leads to an increased welfare for the less well-off in the society, where this group refers to those who fall below a specified poverty line for income or consumption. Sustainable human development as defined by HDR implies a development process that not only generates economic growth but distributes its benefits equitably, protects the opportunities of present generations without destroying those of future generations, and preserves the natural systems on which all lives depend. What development process does is essentially to create an environment in which

all people in a society can expand the capabilities needed to take advantage of increasing opportunities that become available.

Policies designed to maximise the rate of growth in low-income countries are likely also to be those that maximise the growth of income of the poor. Nevertheless, the poor in Nigeria are not a homogeneous group. They can be found among several social/occupational groups and can be distinguished by the nature of their poverty. For example, evidence from the World Bank poverty assessment on Nigeria using 1992/93 household survey data, shows that the nature of those in poverty can be distinguished by the following characteristics: sector, education, age, gender and employment status of the head of household (FOS,1995). Other characteristics include household size and the share of food in total expenditure.

Given the general reports that poverty is more widespread and prevalent in rural than urban areas (IFAD, 2001), and that inequality is higher in rural than urban Nigeria (Oyekale, *et al*, 2006), it becomes appropriate to identify the economic growth determinants in rural Nigeria with the aim of identifying the factors that contribute more to overall growth differential and suggesting ways of reducing rural income inequality generally. Among the indicators of inequality among rural dwellers are disparity in asset distribution, disparity in educational achievement, health attainment and access to justice. In Nigeria, a study carried out by Awoyemi (2004) using a regression-based decomposition shows that education, age and productive hours committed to primary occupation will impact positively on the level of income. It also shows that access to public services such as electricity has a lot of merit in reducing the level of inequality. In a similar study, education was reported to be positively correlated with income and therefore welfare. Household size also influenced household welfare. Expenditure-based welfare was found to be lower among house-holds which implies that the larger the house-hold size, the higher is the probability of falling into poverty. Welfare was hypothesized to rise with age. The negative relationship of the square of age with income however supports the notion that income tends to fall after retirement and when in old age. The sector of residence is also an important determinant of poverty in Nigeria and thus, being a rural dweller raises the probability of being poor (Aigbokhan, 2008, HDR, 2009).

Higher growth in per capita income is associated with higher rates of poverty reduction. The variation in poverty with similar economic growth rates reflects the degree of income inequality of countries. Poverty would increase if the adverse impact of an increase in inequality more than offsets the reduction in poverty associated with growth. For the same growth in

per capita income, poverty will be reduced more in countries with low initial equality than in countries with high initial inequality. Other things being equal, growth leads to less poverty reduction in unequal societies than in egalitarian ones (Iradian, 2005).

With such inequality, people are denied the opportunity to contribute to growth which tends not to only perpetuate poverty but also restricts the development of investment and market opportunity for the rest of the society. It is a well established fact that inequality can act as a brake on growth. For example limited access of productive assets restricts the ability of the poor people to borrow and invest which in turn diminishes economic growth. The challenge for a growth with equity development strategy then is not just to design and implement policies for accelerating economic growth, but also to ensure that the poor contribute to the growth process through increased output and rising productivity, capture a higher share of the resulting incremental growth than before.

Economic growth generates additional goods and services in the economy, which are then enjoyed by the population, even as all persons may not proportionately enjoy the additional goods and services produced. Economic growth impinges upon inequality in the society, which has important implications for poverty reduction. Inequality may increase or decrease with economic growth depending on the pattern of growth, which is itself determined by a complex set of interactions among policies, institutions, and socioeconomic processes.

The remaining parts of the paper are organized as follows. Section 2 describes the data and provides background information on the study area. Section 3 discusses the empirical results, while section 4 concludes with policy recommendations.

2.Methodology

Sampling Procedure and Sampling Size.

The study used data collected by the National Consumer Survey of 1996 and 2003/2004 Nigeria Living Standard Survey. The National Consumer Survey of the Federal Office of Statistics (Now National Bureau of Statistics) is a nationally representative survey covering about 11,577 households. A two- stage sampling design was used while the stratification criteria were based on the state of residence and the locality (urban/rural). The survey

contains detailed information on the income, expenditure and consumption of household members. The National Living Standard Survey NLSS is based on the National Integrated Survey of Household (NISH) framework. The NISH is an ongoing programme of household surveys enquiring into various aspects of households. A two-stage stratified design was employed. The population census Enumeration Areas (EAs) constitutes the primary sampling units while the housing units were the secondary sampling units. In each state, a sample of 120 EAs were selected for the survey, while 60EAs were selected for Abuja. At the second stage, a total selection of 5 housing units from each of the selected EAs were chosen. Thus, a total of 600 households were randomly interviewed in each of the states and the FCT, summing up to 22,200 households across the country (NBS, 2005).

The questionnaires were designed to obtain information from various members of the household, including husbands, wives and adult children. Topics addressed in the questionnaires include: demographic characteristics of all household members; age, sex, education, state, non-farm and off farm employment; family size, land tenure, distance from source of water, electricity supply, sources of household income etc.

Oaxaca-Blinder Decomposition

The gap in the level of income during the research period reflects a variety of factors, including differences in household characteristics and also in economic environment and policies. The Oaxaca-Blinder (1973) decomposition technique was used to identify and quantify the contributions of selected key measurable characteristics to total differential in per capita expenditure. The technique decomposed differences in mean levels of per capita expenditure into those due to different observable characteristics across the total population and those due to different effects of characteristics or “coefficients”.

Here we used the technique to analyze differences in per capita income including both labour earnings and other income. The Oaxaca-Blinder decomposition requires two steps: The first step involves estimating expenditure equations separately for inequality and growth effects.

$$\text{The equation typically takes the form } \ln(\mu_i) = a_{n_i} + \beta_{n_i} X^{n_i} + \varepsilon^{n_i} \dots\dots\dots(1)$$

Where n_i indicates the period under consideration. μ_i is a vector of per capita expenditure of individuals during the research period n_i . X^{n_i} is a matrix of individual characteristics in period n_i , a_n and β_n are the parameters to be estimated while ε is the error term. The next step is to use the regression results to decompose the difference in

mean income between the two periods. The difference in mean log per capita expenditure between these periods can be written as

$$\ln \bar{\mu} - \ln \bar{\mu}_i = (\bar{a}_\mu - \bar{a}_{\mu_i}) + (\hat{\beta}_\mu \bar{X}^\mu - \hat{\beta}_{\mu_i} \bar{X}^{\mu_i}) = (\hat{a}_\mu - \hat{a}_{\mu_i}) + (\hat{\beta}_\mu \bar{X}^\mu - \hat{\beta}_{\mu_i} \bar{X}^{\mu_i}) + (\hat{\beta}_\mu - \hat{\beta}_{\mu_i}) \bar{X}^{\mu_i} \dots(2)$$

The first term on the right hand side of equation (2) is the growth aspect. It gives the difference in growth between the two periods under study. The second part represents variation in the distribution of expenditure (i.e redistribution). The third term is the interactions between the characteristics or factors.

So far the above equations show the traditional method which compares the average of earnings in one period with the average of earnings in another. Dalton and Makepeace (1985) derive a form for the density of the distribution for such comparisons and further show that robust results could be arrived at, if the method is applied on higher-order moment like variance of the earnings instead of average of earnings. Here the use of variance will allow us to address differences in dispersions of per capita expenditure during the study period. Moreover, the use of expected utility analysis shows that an increase in variance may or may not lead to an increase in welfare depending on the attitude to risk embodied in the utility function which must not be neglected. As in equation (3) the difference in the variances is

$$\Delta \sigma_\mu^2 = \sigma_{\mu_i}^2 - \sigma_{\mu_j}^2 + (\beta_{\mu_i} - \beta_{\mu_j})' \Omega_{\mu_j}(X) (\beta_{\mu_i} - \beta_{\mu_j}) \dots(3)$$

where $\Delta \sigma_\mu^2$ is the differences in the expected variances and Ω_{μ_i} is the expected means of regressors. So, a similar decomposition can be undertaken for the variance. Thus

$$\text{var}(\ln \mu_i) - \text{var}(\ln \mu_j) = \Delta \sigma_\mu^2 + \beta_{\mu_i}' (\Omega_{\mu_i}(X) - \Omega_{\mu_j}(X)) \beta_{\mu_i} \dots(4)$$

The first term is the differences in growth effect and the second the effect of redistribution.

Household Demographic and Socio-economic Characteristics included in the analysis:

Demographic Characteristics

X₁ = age of household head, X₂ = square of age, X₃ = household size, X₄ = gender of house hold head (1= male, 0 = otherwise), X₅ = house unit type (single room, apartment or flat, whole building, duplex, others), X₆ =number of rooms.

Socio- Economic Characteristics

X₇ =education status of household head, X₈ = occupation status of household head (1=farming, 0=otherwise), X₉ =source of fuel, (1= electricity, 0=otherwise), X₁₀ =dependency ratio, X₁₁ =weekly hours of work.

3. Results.

Tables 1a and 1b present the results for Oaxaca-Blinder decomposition indicating the differential in growth pattern in 1996 and 2004 and some of the contributory factors. Household expenditure (per capita expenditure) was

used as an indicator of well being. The indicator, transformed into logarithms, was regressed on a set of determinants of poverty namely- household size, gender, age, occupation and education status of household head. Others are house unit type, number of rooms, source of fuel, dependency ratio, square of age and number of hours worked per week. The results reveal that R^2 for the initial period (1996) is 0.2739 while for the second period (2004) the R^2 is 0.3730. This means that at the initial period, the selected variables explained 27 percent of the growth in average per capita expenditure. Similarly, in the second period, the selected variables are able to explain 37 percent of the growth in per capita expenditure. These values suggest that our model is of good fit as remarked by Gunatilaka and Chotikapanich (2006) that low R^2 is reasonable for cross-sectional regressions of this sort. Leaving large proportion of the expenditure unexplained however suggests measurement errors, unobserved and omitted variables. All the regressors are significant at 5 percent level.

Table 1a Determinants of Growth Differential (Oaxaca- Blinder Decomposition) 1996.

Log per capita expenditure	Coef.	Std.Err.	T	P<0.05	[95% Conf. Interval]	
Age of household head	0.0108	0.004103	2.62	0.009	0.002725	0.018812
Square of age	-0.000078	0.000052	-1.51	0.131	-0.000179	0.000023
Household size	-0.0439	0.005472	-8.02	0.000	-0.054617	-0.033162
Gender of household head	-0.1171	0.038434	3.05	0.002	-0.192445	-0.041746
House Unit Type	0.0383	0.007674	4.99	0.000	-0.023259	-0.053348
Number of rooms	0.0226	0.006870	3.29	0.001	-0.009114	0.036053
Education status	0.1288	0.009374	13.74	0.000	-0.110416	0.147173
Occupation status	0.0177	0.013681	1.29	0.196	-0.009136	0.044506
Source of fuel	0.0064	0.009655	0.66	0.508	-0.012537	0.025322
Dependency ratio	0.8879	0.061579	14.42	0.000	0.767154	1.008605
Weekly hours of work	0.000018	0.000014	1.32	0.188	-8.97E-06	0.000046
Constant	9.42095	0.114454	82.31	0.000	9.196561	9.645339

Number of obs.(A)	= 4328
F(11, 4316)	= 149.35
Prob>F	= 0.0000
R-Squared	= 0.2757
Adj. R- Squared	= 0.2739
Root MSE	= .64503

Source: Computation from Survey Data, 2009

Table 1b Determinants of Growth Differential (Oaxaca BlinderDecomposition) 2004.

Log per capita expenditure	Coef.	Std. Err.	T	P<0.05	[95% Conf. Interval]	
Age of household head	0.0199	0.003707	5.36	0.000	0.012618	0.027151
Square of age	-0.0002	0.000038	-4.52	0.000	-0.000244	-0.000096
Household size	-0.1401	0.002620	-53.47	0.000	-0.145240	-0.134966
Gender of household head	-0.2133	0.027670	-7.71	0.000	-0.267554	-0.159071
House unit type	0.0302	0.006951	-4.35	0.000	0.016616	0.043866
Number of rooms	0.0017	0.003763	0.46	0.644	-0.005637	0.009117
Education status	0.1401	0.012421	11.34	0.000	0.116504	0.165201
Occupation status	-0.0065	0.025153	-0.26	0.796	-0.055805	0.042812
Source of fuel	-0.0321	0.021264	-1.51	0.131	-0.073825	0.009543
Dependency ratio	-0.1045	0.011295	-9.25	0.000	-0.126656	0.082374
Weekly hours of work	0.0015	0.000762	1.99	0.047	0.000022	0.003009
Constant	6.957215	0.1341227	51.87	0.000	6.694295	7.220135

Number of obs.(B) =	7204
F(11, 4316) =	390.55
Prob>F =	0.0000
R-Squared =	0.3740
Adj. R- Squared =	0.3730
Root MSE =	.7292

Source: Computation from Survey Data, 2009

Age of household head

The coefficients of age are 0.011 and 0.199 respectively. The signs are positive for both periods. It shows that age is an important factor for productivity. An active age presupposes the period when people are expected to be more responsive to development initiatives. The age of household head influences household welfare. Welfare rises with age as more human capital such as education or working experience is accumulated. A higher magnitude in 2004 could be due to education reforms of the present administration which allowed more enrolment in schools. It suggests higher human capital development which improves productivity.

Square of age

The coefficients of the square of age for both periods are -0.0001 and -0.0002 respectively. The negative signs conform with *a priori* expectation that when people are getting older, there are less returns to productivity. A negative correlation between per capita expenditure and the quadratic of age conforms to the fact that income tends to fall after retirement and when in old age. The majority of pensioners have incomes

which are substantially lower than the average incomes of other people.

Household Size

Household size for the two periods both have negative coefficients of -0.044 and -0.140 for 1996 and 2004 respectively. This implies that the larger the size of household, the lower the per capita expenditure. This shows that per capita expenditure decreases with household size. Awoyemi in (2004) and Oyekale (2006) in their respective studies found household size to be inversely related to income. This indicates that larger household sizes tend to poverty than smaller ones. Large household sizes should therefore be discouraged among rural households to reduce poverty.

Gender of household head

Gender of respondents for both periods have negative relationships with per capita expenditure (-0.117 and -0.214). This means females contribute less to per capita expenditure than males due to their low economic returns. Because women have less formal education than men they tend to be disproportionately confined to lower return and low productivity

employment in the informal economy. Consequently, their ability to escape poverty through employment is also limited (USAID, 2007). The higher magnitude in 2004 suggests that women are coming up in labour participation. They are securing more assets for income generation.

House unit type

This is also positive for both periods. The coefficients are 0.038 and 0.030 for 1996 and 2004 respectively. In other words, accommodation has a positive relationship with per capita income. One can safely say that decent accommodation also influences welfare positively. Poverty is common among households dwelling in huts than those dwelling in decent houses. Good accommodation increases productivity (Omonona, 2010). However, there is no appreciable difference in the coefficients.

Number of rooms

Closely related to the above, there is sufficient evidence to show that high number of rooms increase productivity probably as a result of better comfort. The coefficients are 0.023 in 1996 and 0.002 in 2004. Expectedly, number of rooms are closely related to household size. We are of the opinion that big household sizes are prone to overcrowding and less productivity.

Education status

In consonance with human capital theory, the study shows a positive influence of education on per capita expenditure. Education will lead to better employment which in turn will support higher income as it affords more job opportunities and enhances the earning capacity of an individual. It helps to break the barriers to high risk pay jobs and improves the well-being of households. The association between human capital and economic wellbeing is derived from the early work of Schultz which suggests that economic growth is largely the result of investment in human capital. The positive coefficients of 0.129 and 0.141 for 1996 and 2004 respectively indicate the magnitude of positive impact of education on per capita expenditure for the two periods. This can again be attributed to the positive effects of mass education policy of the present government which has been in place since 1999.

Occupation status

Unexpectedly, the impact of major occupation on per capita expenditure shows an exciting result as it shows a positive impact in 1996 (0.018) and negative impact in 2004 (-0.006). The higher coefficient in 1996 is an indication that high proportion of the population were engaged in farming activities particularly in the early sixties. However, involvement of people in non-

farm activities as a result of diversification draws more people away from farming during the later years. For example, the services sectors namely banking and finance, professional and business services and agriculture are now new sources of employment growth in the Nigerian economy (NBS, 2006). Also, there has been a significant increase in the number of private educational institutions ranging from primary schools (public and private) to university and equivalents. All these provide employment opportunities for different categories of staff. Provision of basic infrastructure in the rural areas will help enhance livelihood diversification into non-farm activities, which has implication for increasing household income. A redistributive policy that would ensure the provision of basic infrastructure in the rural areas would therefore help to alleviate poverty.

Source of fuel

The importance of energy in the household consumption makes the study to examine the importance of various sources of fuel to the farming household. The study revealed a mixed result of positive influence in 1996 (0.006) as opposed to negative in 2004 (-0.032). This result suggest that electricity which is the main source of energy seems to be more regular and stable in the earlier years than in the present time of erratic or epileptic electricity supply. During the second period (2004) however, the negative relationship with per capita expenditure is an indication of spending too much on energy which increases poverty and reduces per capita expenditure. Apart from the fact that only a small proportion of Nigerian rural dwellers have access to electricity as a source of energy, it is evident that only few people have the means to use it. The current deregulation policies of the government which has led to high prices of petroleum products such as kerosene which is a common source of fuel for rural people can also cause people to spend much on energy.

Dependency ratio

The coefficients are 0.889 and -0.105 in 1996 and 2004 respectively. It is defined as the ratio of the number of household members who are more than 65 years and less than 14 years old (≤ 14 years and ≥ 65 years) to household size. In other words, it is the population of the young and the old as a share of the working age population. Dependency ratio has positive value in 1996 showing a direct relationship with per capita expenditure meaning spending more on the young and old. The period corresponds to the time when economic reform programmes of the present government were not yet in place. The negative value in 2004 means the ratio has fallen probably due to child labour activities which made children to be less

dependent on their parents. It could also mean older population are getting income from pension, remittances etc. to take care of the lapses. The gap in the dependency ratio between the two periods could also be attributed to the positive effects of economic reforms of the present administration which enabled more people to be involved in economic activities.

Weekly hours of work

It is evident that the number of hours spent on productive activities in a week contribute positively to per capita expenditure. The coefficients are however 0.018×10^3 and 0.002 in 1996 and 2004 respectively. The coefficient is higher in the latter year meaning that the longer people work, the better the pay. In the formal sector, the more the number of hours put in, the higher the sales.

4. Conclusion and Recommendations

Given the fact that poverty in most Sub-Saharan African countries especially in Nigeria is a rural phenomenon, this study examines the change in poverty levels among rural population in Nigeria over a period of time. Two different periods are chosen. The initial period is 1996 while the final period is 2004. The study is based on secondary data obtained from National Consumer Survey of 1996 and 2003/2004 Nigeria Living Standard Survey.

The analysis of the determinants of temporal inequality and growth differential reveals that age of household head, house unit type, number of rooms, education status and weekly hours of work have positive relationships with per capita expenditure. Square of age, household size and Gender of household head have negative signs. The signs of most of the variables are in conformity with *a priori* expectations concerning their relationship with per capita expenditure.

The results of this study suggest that success of the ongoing poverty reduction efforts depend not only on the increase in per capita income but also the need to reduce the income inequality. Meanwhile, increasing poverty is an indication that something is fundamentally wrong with the development efforts. In the same light, increasing inequality signals either unevenness of growth, unevenness of the distribution, weak pathways in the spread of the benefits of growth, or the lack of anti-poverty reducing policy instruments.

It is evident that per capita expenditure decreases with increase in household size. This in turn suggest that increasing incentives to reduce fertility (mainly lower child mortality, more and better female education and work options, and probably family planning information) among the poor could be a policy option.

Formulation of policies and programmes that empower rural women must be encouraged to facilitate their access to self-employment, wage employment and other non-farm income activities. This will enhance rural women access to the rural non-farm labour market. This becomes necessary as this study shows that women contribution to household per capita expenditure in the country is low.

It seems the study agrees with the notion that human capital endowment is an important factor contributing to high income earning capacity. There is the need for mass education campaign to be intensified in the rural communities

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