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The Microeconomic Determinants of Educational Inequality in Nigeria

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Abstract

This paper analyses the determinants of educational inequality across the regions in Nigeria. Using Household data from the World Bank 'Living Standards Measurement Survey' of Nigeria, it examines how variations in household characteristics as well as in educational attainment affect educational inequality. The regression and decomposition analyses conducted reveal the complexity of the interaction between household characteristics and education. Educational attainment and income per capita seem to curb the increase in educational inequality. The results further indicate that urbanization and household size have negative and positive impacts on educational inequality respectively. The findings emphasize the role of household characteristics in explaining educational inequality and substantial improvements of those characteristics will improve educational distribution. Therefore, investing in programs that ensure equal access to education and support for the poor households to send their children to school will be a very helpful strategy. The findings will guide policy makers to target areas that may contribute immensely in reducing educational inequalities.

Keywords: Inequality, education, household, Nigeria

1. INTRODUCTION

One of the most enduring investments a nation can have for development is the provision of education to the majority, if not all, of its populace. Indeed, education is the most important component of human capital and its even distribution presents the opportunities available for building an inclusive society. The importance of education distribution in the development process of a society and its welfare has been emphasized in the literature (Rodríguez-Pose & Tselios, 2011). Equitable distribution of opportunities such as education is a sign, not only of a well-functioning economy, but also a prerequisite for sustainable economic development. As such, reducing inequality has been a central concern for policy makers all over the world. Persistence of inequality among individuals or group of individuals within a country could have far-reaching implications not only on the development agenda of the country, but on its entire future survival as a nation. The development and stability of a nation's economy depend partly on its socio-political stability, which in turn depends on the level of equity attained by that society.

Inequality in educational opportunities can lead to other forms of inequality, especially that of income among individuals in a society (Crespo-Cuaresma, Samir & Sauer, 2012; Lorel, 2008). Similarly, Nilsson (2004) views lower inequality as intrinsically desirable because the existing socio-political unrest in most parts of the world is perceived to be the result of unequal access to opportunities and resources which are detrimental to the peaceful coexistence of a country. Galor and Moav, (2004) posit that more even distribution of opportunities such as education stimulates economic performance as well as offer a number of economic opportunities especially for

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the disadvantaged groups and later minimize the income gap within the economy. In an unequal society, the gap between the average pay earned by low-skilled labourers and their potential income is tremendous. Thus, this is a likely push factor for the destitute to partake in disruptive activities and other forms of violence that may halt the progress of the nation (Nilsson 2004, in RodrÃ-guez-Pose & Tselios, 2010).

Since the return of Nigeria to civil rule in 1999, the Nigerian government has been implementing economic reforms that shifted the economy towards market-based. A number of liberal economic policies have been introduced; which include the privatization of public owned enterprises; deregulation and public-private partnership scheme (PPP). With these new developments, extensive dimensions of economic activities were liberalized, leading to a significant higher economic growth. Over this period, the growth rate of the economy averaged about seven percent (7%) annually placing the economy among the tops growing economies in the African continent and also the biggest economy in the continent. However, despite such outstanding macroeconomic performance, the level of poverty has been increasing in the country, and wealth has been distributed unequally among individuals in the country. Thus, the country remains a heterogeneous economy with outstanding economic and social differences between its populace.

A skewed distribution of education in a particular society can lead to a substantial economic loss as many talented people may be left out in the skill and knowledge acquisition processes. Thus, more than land and machineries, an equitable distribution of education constitutes a precondition for individual productivity and ability to rise to the challenges of life and subsequently escape poverty (Lopez, 1998). Furthermore, equitable distribution of educational opportunities is desirable over a redistribution of existing assets or incomes. This is because education builds new assets and enhances social welfare by its overflow impact, without making anybody in the society worse off (Lloyd, 2009). Guaranteeing access to educational opportunity to all citizens by attending to both the supply and demand sides is a policy that supposed to be embraced by every country that wants to overcome the challenges of modern time. Thus, Policy makers have recognized the imperative of educational distribution for achieving social and political stability in a country. Yet, despite this interest, little is known about the determinants of educational inequality in Nigeria. This paper aims to address this gap in the literature by examining the role of educational attainment as well as income per capita and other household characteristics on educational inequality. The reminder of the paper is organized as follows. The next section (2) presents the theoretical underpinnings. The third section presents the variables and the model specification. The fourth section depicts the regression results of the determinants of educational inequality. Finally, section 5 summarizes and concludes the paper.

2.   THEORETICAL CONSIDERATIONS

This section aims to present the theoretical considerations on the determinants of educational inequality. There are multiple factors that affect educational inequality. The expansion of educational achievement is probably the most important one. The general theory of industrialisation suggests that, increase in the stock of education reduces educational inequality in an economy (Ram, 1990). Educational expansion narrows human capital inequalities within societies by promoting a meritocratic basis for status attainment in which the talented can achieve appropriate positions in the economy, regardless of their social background (Hannum and Buchmann, 2005). Empirical studies by Thomas, Wang, and Fan (2001) and Umar, Ismail and Abdul-Hakim, (2013), illustrate that educational inequality is negatively associated with the average years of schooling in a country.

Income is another factor that affects educational inequality. Generally, the overall impact of personal income and GDP per capita on educational inequality seems to be negative. The higher the GDP the more resources would be available to spend on public education. The same goes with individual income; the more rich people are, the higher the expenditure on education for all strata. This raises the educational opportunities for the lowest strata, which implies a lower level of educational inequality. This identifies education as a key instrument for securing equal opportunities for people and for helping to improve their life chances (Wolf, 2002). Similarly, the link between income inequality and educational inequality is unambiguous. Checchi (2000) argues that lower income inequality unties poverty trap that may subsequently increase educational distribution. The more skewed the income distribution, the larger the share of the population that is excluded from schooling and the greater the inequality in educational attainment. Empirically, some studies have found evidence that poverty and income inequality force households to keep their children out of school (Mayer, 2001; Blanden, & Gregg, 2004).

Industrialization is another important factor determining the distribution of opportunities such as education. It brings about educational expansion which, in turn, affects educational inequality. The more industrialized a society is, the better would be the economic climate in terms of income and opportunities for the government and the households, the greater the educational expansion. This implies more educational opportunities for the lower strata, greater overall educational attainment, and thus, a more even distribution of educational opportunities

(Foster & Rosenzweig, 2003). Another important factor that may impede the distribution of education is household size. Literature shows that low income households are associated with large household size especially in developing countries like Nigeria. The larger the household size, the higher the intra household educational inequality as poor households have usually less resources to pay for education of their children than the rich households do. There is no horizontal equity in education between urban and rural citizens, because the problem of lacking information is greater for individuals in lower socioeconomic groups and rural areas as information is costly to acquire due to distance or cost. Since information has a positive influence on educational attainment and educational attainment and educational inequality are negatively related, therefore low-income rural areas are likely to have not only low educational attainment, but also high educational inequality (Bettinger, Long, Oreopoulos & Sanbonmatsu, 2012).

3.   ECONOMETRIC SPECIFICATION, DATA AND METHODOLOGY

In order to estimate the determinants of educational inequality, the following econometric specification is used:
$$EdIneq_{ir} = \beta_0 EdAtt_{ir} + \beta_1 Incpc_{ir} + \beta_2 IncIneq_{ir} + X'_{ir}\beta_3 + \mu_{ir}$$
EdIneq stands for educational inequality, *EdAtt* is educational attainment, *Incpc* is income per capita, *IncIneq* is income inequality, *X* is the vector of control variables that includes household size, population ageing, industrialization and urbanization. $\beta_{0....3}$ are coefficients and μ is the composite error. The subscript *i* is denoting individuals *(i=1.....N)* and *r (r=1...N)* is the state to which an individual household belongs to. The analysis is based on data form the World Bank Living Standard Measurement Survey (LSMS). The survey provides detailed information on several socio-economic characteristics of households. The survey covers a sample of approximately 5,000 households from all parts of the country.

The Average Years of Schooling (AYS) are used to obtain the educational attainment variable (AYS) from the data set. This involves assigning some values to reflect years of schooling (YS) of each and every level of education attained by an individual, with each value somewhat reflecting the level of formal schooling involved and its contribution to the total educational stock. This is somewhat similar to the International Standard Classification of Education (ISCED) developed by UNESCO but, in this study, with some modifications to capture partial completion of a particular level of education (for example a person having primary 4 only, or JSS 3). In this case, no schooling could have a value of zero. In Nigeria, the duration of primary education is six years so also secondary education, therefore complete primary could have a value of six and lower if otherwise and the value, in such a case, will depend on the level one stops (e.g. primary 2 will have the value of 2; primary 3 will have the value of 3 and so on), complete lower secondary such as JSS 3 could have a value of nine, upper secondary could have a value of twelve, and post-secondary (i.e. sub degree qualifications such as diploma) could have a value of 14. Degree certificates and equivalents have the value of 16; Masters and PhD could take the value of 18 and 21 respectively.

To minimize the level of measurement error while determining our indicators, some effort is put in selecting the most suitable and reliable observations, by trimming down the sample size to only include the relevant age cohorts in the data set. Here, all individuals with less than 18 years of age as at the survey period were excluded. The rationale behind this decision is to reject people who did not finish their study at the time of the survey. Doing this would help to minimize the measurement errors in the education variable, since demographic patterns could vigorously influence the results. In such a case, if the proportion of school going age individuals is high in the sample, the calculated educational attainment will be lower and its dispersion will be overestimated. The threshold of 18 years is chosen because it is the standard definition of the starting point of the adulthood age as per the law in Nigeria.

To measure the extent of educational inequalities in Nigeria, the Theil measure of inequality known as Theil Index is used. The index was introduced by Theil, (1967) and extensively discussed by, among others, (Conceicao & Ferreira, 2000; Puga2002; Akita, 2003). The 'Theil index' is a member of the Generalized Entropy (GE) family of inequality measures; it has the advantage of being additively decomposable (Meschi & Scervini, 2010). This is a desirable quality for both analytical and computational reasons. Substantively, the ability to measure the contribution to a country's inequality that is attributable to inequality between and within different partitions of the observational units is the main advantage associated with this measure; therefore, it can provide a deeper understanding of a country's inequality.

Table1 shows the definition, description and sources of the main and control variables. Microeconomic variables are extracted from the *World Bank LSMS (2013)* data survey.

Table 1. Description of variables and data sources

Variable	Description	Sources
Income	household per capita expenditure	LSMS (2013)
HHsize	Total number of household members	LSMS (2013)
Popage	Age of the household head	LSMS (2013)
EdAtt	Educational attainment from 0-21 (illiterate=0,….Doctorate=21)	LSMS (2013)
Theil index	Measure of educational inequality that takes a value between 0 &1 (0=perfect equality; 1=perfect inequality	LSMS (2013)
GDPPC	States Gross Domestic product per capita	http://www.zawya.com/nigeria
Industry	Whether a household head is working in agricultural sector or not (Agriculture=1; otherwise=0)	LSMS (2013)
Urbanization	Household living in Rural or Urban areas (rural=0; urban=1)	LSMS (2013)
IncIneq	Measure of income inequality that takes a value between 0 &1 (0=perfect equality; 1=perfect inequality	LSMS (2013)

Note: Data are taken from World Bank Living Standard Measurement study (LSMS) database, Zawya (2013)

4.   RESULTS

This paper employed static regression analysis. The Ordinary least squares (OLS) method is used to analyze the data. The results obtained are shown in table 2.

Table 2. *Regression results with educational inequality as dependent variable*

Variable	Coefficients
IncIeq	.0923965***
	(.0049688)
Popage	-.0022183***
	(.0001418)
Industry	.0121722***
	(.0051877)
Urbanization	-.0242777***
	(-.0242777)
hhsize	.0067374***
	(.0067374)
EdAtt	-.0094381***
	(.0004399)
lngdpcp	-.0084644***
	(.0026647)
lnpcy	-.0296131***
	(.0062672)
cons.	.5207815***
	(.036348)
Observations	4,979
R-squared	0.2639

*NOTE: Robust standard errors in parentheses, *** indicates significance at the 1% level.*

The result shows a strong negative relationship between the level of educational attainment and the educational inequality. The coefficient on educational attainment is statistically significant at the 1% level as shown in table 2. Educational attainment plays a prominent role in curving down inequality and appears robust to the inclusion of additional variables. The income per capita and income inequality which are both indicators of income distribution are all statistically significant with the expected sign. The coefficient on income inequality (IncIeq) is significant and positive. This implies that the lower the income inequality, the lower the educational inequality. The most likely explanation is that poor people do not have the chance to send and support their wards to school, as such; a further increase in income inequality may lead to a self-perpetuating poverty trap that may in turn increase the population share excluded from certain levels of schooling (Rodriguez-Pose and Tselios 2011). Thus, rich people have higher educational opportunities than the poor people do.

The impacts of income per capita and that of GDP per capita on educational inequality are negative and statistically significant at the 1% level. The negative coefficients indicate that an increase in the income per capita of both individual households and that of a state will raise the educational opportunities of the populace implying, in most cases, greater educational inequality. This result goes in line with the hypothesis that higher income per-capita begets higher rate of taxation, thus the greater the expenditure on public education programs, and, therefore, the greater the educational opportunities of the lowest strata (Rodríguez-Pose & Tselios, 2011). Although public

education programs in Nigeria constitute the major portion of the education system, it doesn't seem to be sufficiently effective to ameliorate the inequality in educational enrolment and attainment.

The paper also tests for the role of population ageing (Popage), household size (hhsize), industry and urbanization. The impact of population ageing and urbanization on educational inequality is negative as shown on table 2. The results suggest that population ageing decreases educational inequality. Thus, states with a very young population will tend to have a lower rate of participation in the labor force and high human capital inequalities. Areas with less young population will tend to have lower inequality, because the people do not face credit constraints that prevent them from increasing their level of education (Dur, Teulings & Van Rens, 2004). The variable of urbanization is also found to be reducing educational inequality. This is not surprising because educational opportunities are more in urban areas than in the rural area. The findings on household size show, as expected, a positive relationship between the factor and educational inequality. This supports the view that a country's family structure plays a significant role in educational inequality (Berthoud and Iacovou 2004). Large household sizes are associated with inequality. The coefficient on industry is also positive and statistically significant at the 1% level. It suggests that educational inequality is higher in areas where the majority of the households are in to agriculture.in Nigeria, majority of those that are in to agriculture are subsistence farmers who prefer more the services of their children on the farm rather than to send them to school.

5.   CONCLUSION

This paper investigated the factors that determine educational inequality in Nigeria, with emphasis on the effect of educational attainment and income as well as its distribution. Additionally, various factors were also considered pertaining to the household characteristics and level of economic conditions measured by GDP per capita. Relying on household data and by calculating the average years of schooling (AYS) and the education Theil Index, the empirical analysis revealed a rich set of findings. As a whole, the results are in line with the theoretical literature and consistent with the previous empirical works that confirm the observed relationships. They also provide useful insights for policy intervention in the country. One of the main conclusions of the study is that improving access to education at all levels and the quality of education, and generally increasing educational attainment are likely to curb the increase in educational inequality in the country. Overall, efforts towards microeconomic changes in household characteristics seem to be more important in addressing the issue of educational distribution in Nigeria.

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