PRIMARY SCHOOL ENROLLMENT AND GENDER GAP OF RURAL HOUSEHOLDS' CHILDREN IN SOUTH WESTERN NIGERIA

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ABSTRACT

The study examined school enrollment and gender gap of rural household children at the primary level. A multi-stage sampling technique was used in data collection. Probit model was used in analyzing the data set. Evidence from the analysis indicated that more boys were enrolled than girls. The factors considered affect male and female children differently. Father's education variable is significant for boys. It is not significant for girls. Mother's education variable though positive in both cases is not significant. The probit model predicted a gender gap of 12.56% in favour of boys. Most of the gap is due to differences in the ways households perceive male and female children. There is thus a preference for boys over girls in the demand for schooling. Based on the findings of this study, incentives for the enrollment of more girls were recommended. These include: differential fees, free tuition, and increased public subsidies for female education .

Keywords: Gender -gap school-enrollment, farm-children, south-western, Nigeria.

Introduction

Enrollment in schools represents the largest component of the investment in human capital in most society (Schultz, 2002). Education, schooling and human capital development are often used interchangeably in the literature. The human resources of a nation are considered to be the engine of growth of the country. These must however be adequately developed and efficiently utilized. Education bestows on the recipients a disposition for a life-long acquisition of knowledge, values, attitudes, competence and skills (Aliu, 2001) Hence, rapid socio-economic development of a nation has been observed to depend on the calibre of human capital in that country. Education is thus central to the development process.

Primary education is the core of the schooling system. It builds the bedrock for human capital development (Lassibille and Tan, 2003). The pivot of education policy of the Federal Government of Nigeria is the Universal Basic Education (UBE) scheme launched in 1999. The

scheme has been extended to the junior secondary school level. Primary education is no longer considered as adequate in a fast changing high information technology (HIT) world.

The decline in economic activities since the early 1980s has made education a luxury to many Nigerians especially the rural dwellers. Enrollment in primary schools is thus of policy significance and relevance in Nigeria. This is because parents are known to invest in children according to sex, birth order or natural endowments. Under such, situation, girls and boys are not exact substitutes. The Central Bank of Nigeria (CBN), 2000)reported that primary schools enrollment increased by 5.0 percent to 24.9 million. Primary schools increased by 2.0 percent to 48,860 schools. The percentage of girls increased marginally from 48.5 to 49.0 percent in 2000.

According to CBN (2000) the gender gap in literacy rate at the rural level between boys and girls was 18.3 percent in favour of the boys overall. However, in the age group 6-9 years (primary school ages) it was only 3.9 percent still in favour of boys. This indicates that there is a gender dimension to educational attainment and development in Nigeria.

Problem Statement

There is a large literature on education in developing countries. The focus in some cases is on the market-determined value of education. This is seen as the major regulator of individual's demand for education (Handa, 1996). However, and according to Colclough,(1994), there is an equally important non-market components to the demand for education, especially for rural children. These non-market factors manifest themselves through households` characteristics that affect the time and opportunity cost of schooling. There is thus the research need to investigate the rural households` demand for schooling for its children and the factors influencing enrollment.

There is also the research need to ascertain the gender gap in school enrollment in the area of study. What is the role of household variables in children's enrollment? Are the factors affecting

enrollment the same or different for boys and girls children? What is the nature and magnitude of the gender gap in access to schooling by rural household children? These queries motivate the quest for empirical verification and quantification of the issues raised with respect to South-Western, Nigeria in general and Oyo state in particular.

Objectives of the Study

The general objective of this study is to examine primary school enrollment of rural household's children in south-western Nigeria. The specific objectives include to

- identify the factors influencing primary school enrollment of rural household children,

- estimate the gender gap in school enrollment between boys and girls children.

- assess the effects of significant and policy relevant factors on school at this level.

- examine the gender dimensions to school enrollment gap in the area of study

- make policy recommendations based on the findings of this study.

Methodology

Area of Study

Oyo State is located in south -western Nigeria is selected for this study. It lies within latitudes $7^o\ 5^{'}$ and $9^o\ 10^{'}$ N of the equator and longitudes $2^o\ 38^{'}$ E and $4^o\ 35^{'}$ E of the Greenwich Meridian. Farming is the main occupation of majority of the people in the state. The state is thus strictly agrarian and rural based.

South -western Nigeria has an admirable record in human resource development in Nigeria. Free Primary Education was introduced into the area in 1955 by the then regional government. Years later in 1979, Universal Primary Education (UPE) was launched in the area again at the regional level. In 1999, the federal government of Nigeria introduced a nation-wide education programmes called Universal Basic Education (UBE). The efforts of the past and the current impetus call for the

quantification of the effects of these programmes on children school enrollment in rural South-western Nigeria.

Method of Data Collection

A multistage random sampling technique is used in collecting the data required for this study. Oyo state is divided into eight agricultural zones. These are the Eruwa (Ibarapa), Iseyin, Kishi, Saki, Okeho, Oyo, Ibadan and Ogbomoso. These are taken as the sampling units and constitute the first stage of sampling..

In the second stage of sampling, the list of all the villages within each zone was obtained from the Oyo State, Ministry of Local Government, Secretariat, Ibadan. For Ibadan and Saki zones, 6 villages were randomly selected from the list. The case for Ibadan zone is based on its large population while that for Saki zone is based on its geographical spread. In each of the remaining 6 zones, 5 villages were also randomly selected. Forty two (42) villages were thus selected for the study.

Six (6) households were randomly selected as a third stage of sampling. Two hundred and fifty two (252) households were sampled. The sampling procedure yielded 625 primary school-age boys and 734 primary school-age girls.

Methods of Data Analysis

The Probit Model Analysis: The pobit model adopted for this study borrows from the work of Handa (1996). This is represented as

$$\Pr\left(E_i = 1 \middle| X_i\right) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{z_i} e^{\frac{ud^2}{2}} \qquad (1)$$

and

$$Z_i = b_o + b_1 X_1 + b_2 X_2 + ... + b_n X_n \qquad (2)$$

for i = boys (b) or girls (g)

The probit model can be written as

$$\Pr(E_i = 1/X_i) = \Phi(X_i B_i) \qquad (3)$$

where E_i indicates whether a child of sex i is enrolled in school, X_i, is the vector of observed individual and household characteristics, B_i is vector of coefficients and Φ is the standard normal cumulative density function.

Decomposition of the Gender Gap

The gender gap in enrollment is decomposed by using the estimated probit coefficients(Even and Macpherson ,1993) The predicted probability of enrollment of boys is   a

$$P(Xb, \hat{\beta}b) = \frac{1}{Nb} \sum_{i=1}^{Nm} \varphi(Xb, \hat{\beta}b) \qquad (4)$$

And for girls is

$$P(Xg, \hat{\beta}g) = \frac{1}{N_f} \sum_{f=1}^{Nf} \varphi(Xg, \hat{\beta}g) \qquad (5)$$

The gender gap (GAP) in enrollment predicted by equation (3) is the difference in the predicted enrollment rates for the sexes.

$$GAP = P(Xb, \hat{\beta}b) - P(Xg, \hat{\beta}g)$$

In this specification, the girls` group is the reference group. The gender gap is decomposed into three. One, is the explained portion of the gap (Exp). It is due to the differences in the explanatory variables. This is obtained by estimating the enrollment rate that girls would have if they had the boys characteristics or explanatory variables. Hence;

$$EXP = P(Xb, \beta g) - P(Xg, \hat{\beta}g) \quad 5$$

Two, the unexplained portion of the gap (UEX) is the change in enrollment that would occur if the probability of girls enrollment is determined by the boys` coefficients.

$$UEX = p(Xg, \hat{\beta}b) - P(Xg, \hat{\beta}g)$$

Three, is the residual (RES) of the total enrollment gap which forces an adding up constraint that is represented as:

GAP = EXP + UEX + RES   or

∴   RES = GAP - EXP - UEX

The residual gap indicates by how much the estimated enrollment gap would change if the boys are used as the reference group (Even and Macpherson, 1993). The value of the residual is known to be equal in size but opposite in sign when the reference group is switched.

Inference from the Interaction Terms

The inference that can be drawn from the interaction terms are: positive coefficient on the distance and parental-education variables indicates that the joint effect of the two factors act as substitutes in enrollment. Positive sign on the parental-education variables signifies that the parents' education act as complement in the enrollment decision.(Handa,1994; 1996; Thomas et al, 1991; Barrera,1990; and Strauss,1990)

Explanatory Variables

It is hypothesized in this study that age of head (X_1), father's education (X_2), mother's education (X_3), schooling cost (X_4), log per capita household income (X_5), distance to school (X_6), gender of household head (X_7), coop membership (X_8), household net worth (X_9), which is a proxy for wealth, father's-mother's education (X_{10}), father's education- distance to school (X_{11}), and

mother's education, distance to school (X_{12}). The selection of these variables is based on economic theory and as suggested by previous/ similar studies in the literature e.g. Handa (1994; 1996).

Results and Discussion

The results of the estimated probit models are presented below. The Pearson chi-square statistics and the default value (P) were used to measure the goodness of fit of the estimated models. The calculated chi-squares (χ^2) of 185.1534 for boys and 236.9865 for girls are greater than the tabular values of 135.81 and 124.340 at the 1% and 5% levels of significance respectively. The P values of 0.6113 for boys and 0.5943 for girls indicate good fit for the models. The acceptable default value is $P \geq 0.15$.

Table 1: Probit :Primary Enrolment Boys 652

Variable	Parameter	t-value
Age of Head (X_1)	-0.1768 (0.1418)	1.2468
Fathers Education (X_2)	+0.3345* (0.3004)	1.1135
Mother's Education (X_3)	+0.2507 (0.2867)	0.8744
Schooling Cost (X_4)	-0.5114** (0.1931)	2.64484
Log Per Capita Income (X_5)	+0.7053*** (0.1830)	3.8541
Distance to School (X_6)	-0.2146** (0.0915)	2.3454
Gender of Head (X_7)	-0.3089** (0.1554)	1.9878
Coop. Membership of Head (X_8)	+0.5470** (0.2585)	2.1161
Household Net worth (X_9)	+0.6432*** (0.1518)	4.2372
Father's Education- Mother's Education(X_{10})	+0.4571** (0.2275)	2.0092
Father's Education,-Distance to School(X_{11})	-0.1136 (0.0780)	1.4564
Mother's Education,-Distance to School(X_{12})	-0.1254 (0.1297)	0.9669
Intercept (K)	2.4786	-

N   = 652
Enrolled = 447
Not-enrolled   = 205
Pearson χ^2 = 185.1534
Likelihood ratio= 185.1534
Log likelihood = -313.3585
Default (P)   = 0.6113
Model's Predicted probability = 91.34

Table 1 contains the results for boys. It indicates that father's education (X_2), log per capita income (X_3), cooperative membership of head (X_8), household net-worth (X_9) and father-mother education term (X_{10}) are positive and significant at different levels. However, estimated schooling cost (X_4), distance to school (X_6) and gender of household head (X_7) are negatively significant at the 5% level.

Table 2 contains the results for the girls. The results show that log per capita income (X_5),

cooperative-membership of household head (X_8), households` net-worth (X_9) are positively significant. Cost of schooling (X_4), distance to school (X_6),gender of household head (X_7) and father-mother variable (X_{10}) are significant but negative. The estimated parameters are generally higher in the equation for boys than for the girls.

Table 2: Probit: Primary Enrolment: Girls

Variable	Parameter	t-calue
Age of Head (X_1)	-0.2013	1.4608
	(0.1378)	
Fathers Education (X_2)	+0.2467	1.5653
	(0.1576)	
Mother's Education (X_3)	-0.3251	1.0043
	(0.3237)	
Schooling Cost (X_4)	-0.5480***	3.2503
	(0.1686)	
Log Per Capita Income (X_5)	+0.6379***	2.8969
	(0.2202)	
Distance to School (X_6)	-0.4025***	4.3655
	(0.0922)	
Gender of Head (X_7)	-0.2813*	1.6925
	(0.1662)	
Coop. Membership of Head (X_8)	-0.3107*	1.8352
	(0.1693)	
Household Networth (Wealth) (X_9)	+0.5692**	2.4211
	(0.2351)	
Father's Education- Mother's Education(X_{10})	-0.3411**	2.0850
	(0.1636)	
Father's Education,-Distance to School(X_{11})	0.2348	1.3525
	(0.1736)	
Mother's Education,-Distance to School(X_{12})	0.2195	0.8948
	(0.2453)	
Intercept (K)	2.9351	-

N   = 734
Enrolled = 332
Not-enrolled   = 402
Pearson χ^2 = 236.9865
Likelihood ratio= 236.9865
Log likelihood = -386.9392
Default (P)   = 0.5943
Model's Predicted probability = 78.76

In examining the impacts of the significant variables on enrollment decisions, the signs of the parameters are used. A positive sign indicates that higher values of a variable increase the likelihood

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of enrollment. Similarly, a negative sign implies that higher values of such a factor reduce the probability of enrollment.

Over all, father's education variable is significant for boys. It is not significant for girls. The mother's education variable though positive in the models is not significant. This tends to confirm the findings by Thomas et al:(199i and Handa (1996).

Table 3: Results of the Decomposition of Gender Gap in Primary School Enrollment .

Items	Primary	
	Value	%
Gap due to X's	2.53	20.11
Gap due to Bb	9.43	74.96
Gap due to Interaction	0.62	4.93
Total	12.58	100.00

Source: Field Survey, 2003.

Table 3 contains the analysis of the gender gap in enrolment. The models predict a gender gap of 12.58. Out of this, 2.53 is explained by differences in the characteristics of the variables between the sexes. This is about 20% of the entire gap. The gap arising from the effects of the coefficients as a result of the way households treat boys and girls is 9.43 (74.96%) of the entire gap. The remaining gap of 0.62(4.93%) of the overall gap is due to the interaction effects.

In terms of gender dimensions, this result indicates a preference for boys over girls in primary school enrollment by rural households. It implies that boys are more favoured to attend schools than girls. The reasons that can be adduced for this could be found in cultural / traditional norms and beliefs of the people. Girls are seen as belonging to their husbands' household later. Boys are seen as the heir-apparent on whose shoulders rest the responsibility of continuity of the lineage.

The father-mother education variable is positive and significant in both cases This factor thus acts as complement in the school enrollment of the children. It thus has a significant complementary impact on enrollment. The father education-distance to school factor is negative and insignificant for boys and girls..

Policy Recommendations

Gender gap in favour of boys was confirmed in the enrollment of school age children. Most of this gap is explained by the ways households treat boys and girls.

There is a need to off set this preferential treatment within the household. The importance of educating the girl-child and its likely contribution to the development of the country needs to be the focus of awareness campaign in rural areas. In Nigeria the population of females is greater than for males. There is a need for subsidizing female education / the introduction of differential fees or outright free education for girls as recently done in the Gambia.

Cost of schooling is negative and significant. The implication is that the probability of enrollment decreases as this factor increases. There is the policy need to reduce this cost if enrollment is to reach the desired level.

Increase in the supply of primary for girls by deliberate government policy is recommended. The distance to school variable is negative in the models. Hence, the longer the distance the lower is the likelihood of enrollment. Distance to the nearest school is used as a measure of access (Casterline, 1987). Hence, it is recommended that schools should be located as near as possible to the users if the rate of enrollment is desired to be increased and the gender gap reduced. The shorter the distance, ceteris paribus, the higher is the probability of enrollment for the children.

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