DOES HIGHER EDUCATION REDUCE POVERTY AMONG YOUTHS IN NIGERIA?

Ukwueze Ezebuilo R.

Department of Economics, University of Nigeria, Nsukka, Enugu State, Nigeria

Nwosu Emmanuel O.

Department of Economics, University of Nigeria, Nsukka, Enugu State, Nigeria

ABSTRACT

Poverty is a serious problem in Nigeria with estimated 70.2 percent of Nigerians on less than 1$ daily. Poverty in Nigeria resembles a paradox, with her wealth; she still faces an enormous challenge in her effort to reduce poverty. The government has vigorously pursued poverty reduction policies through educational and other policies yet the issue of high rate of poverty is still problematic. This study aims at finding the impact of higher education on poverty among youths in Nigeria. We used propensity score matching and Logistic regressions to estimate the impact of higher education on youth poverty. We used data from 2004 National Living Standard Survey. We found that higher education has the capacity to reduce poverty. Those who had a higher education had the average treatment effect on the treated (ATT), an average gain in expenditure per capita by higher education receiving households, using nearest neighbor matches as N20,106.87.

Keywords: Poverty, Youths, Logit model, Probability, Propensity Score matching, treatment effect.

1. INTRODUCTION

Nigeria is about the 27th poorest country in the world, according to the United Nations Development Programme(UNDP 2001). Poverty has been rising in for some decades now, and as at 2002 more than 60% of Nigerians lives on less than $1 a day (United Nations Economic Commission for Africa, 2002); thisindicates that the incidence of poverty is extremely high. Nigeria has enormous or abundant natural and human resources, but still faces an enormous challenge in her poverty reduction strategy/effort.

Poverty in Africa in general and Nigeria in particular is often described as mostly a rural phenomenon not only because the majority of the population live in rural areas but also because of the pattern of distribution of economic activity between rural and urban areas. In Africa, rural-

urban differentials in the incidence of poverty are large and persistent (United Nations Economic Commission for Africa, 2005). Poverty and the effects on the victims are multidimensional and self-reinforcing.

Poverty is somewhat like vicious circle:poor people have low incomes and low consumption levels, and many depend for their livelihoods on (low yield) subsistence agriculture or on the informal sector. We now have the poor working class: wage-earning workers have low salaries, limited protection from shocks and frequent bouts of unemployment. The poor tend to have low education because they cannot pay for it and tend to have less health than the rest of the population (UNDP 2004).

It has become axiomatic that there is a strong relationship between basic education and poverty reduction (Akooje and McGrath, 2005). If this is true, then it is indisputably true that there is stronger positive relationship between higher education and poverty reduction. This is particularly so because at theoretical and empirical levels, it has become a sort of consensus that unemployment is central to poverty and that higher education is a key factor in job creation.

There has been much theoretical debate about the role of education in development and economic growth. This debate has focused on whether education is productive or not in real sense of it. There is much evidence that the proportion of the population with better education highly correlates with levels of economic development.

We should note that whether the levels of schooling have helped to cause the economicgrowth, or whether causality runs from income growth to educational expansion, is an empirical issue.

Higher education is one of the most powerful yet underestimated means that countries can rely on to reduce poverty and achieve social and economic development goals. Most people recognize its value for productivity and growth in developed countries, but some people inexplicably consider university education a luxury for developing countries.

It is not a luxury; it is an essential part of life. Higher education provides fundamental expertise to all sectors of society and the economy, including the key sectors that drive development – health, education, governance, private sector development and the environment.

According to Zoë Oxaal (1997),the linkages between education and poverty can be understood in two ways: (i) investment in education as a poverty reduction strategy can enhance the skills and productivity among poor households; (ii) poverty is a constraint to educational achievement both at the macro-level (poor countries generally have lower levels of enrolment) and the micro-level (children of poor households receive less education). He also asserted that education is a key factor for confronting the multiple challenges of social dislocation, environmental degradation and poverty eradication.

This assertion is that education is a vital process to attain human development goals and to place the African continent and other developing countries on a pathway of sustainability (Asmal, 2002). There is another debate on whether higher education is an important strategy to poverty reduction or not. The first argument is that higher education correlates with economic growth by supplying the necessary labour and skills (human resources) for a knowledge driven economy,

learning by doing, and by promoting access and use of knowledge. The next argument is that higher education has the potential of increasing access to education by providing higher income for them and in turn increasing the employability of those who have the skills for a knowledge- driven economy. The third argument is that higher education could play a role in supporting the educational sector development by supplying trained personnel for curriculum development of lower levels of education.

According to UNECA Report in 2002, Nigeria has at the tertiary level 62 colleges of education (with 86,000 students), 47 polytechnic institutes (120,000), and 42 universities and interuniversity centres (325,000). As the national population continued to grow, enrolments grew more than budget allocations. Faculty recruitment doubled between 1991 and 1998, but enrolment more than quadrupled, and the average enrolment per university in the federal universities rose from 8,300 in 1991/92 to 13,200 in 1998/99 (Dabalen and Oni, 2000).

There has been a mismatch between growth in university enrolment in some areas and labour market demand, while enrolment in such critical areas as medicine and administration has not grown significantly. As an example, between 1987 and 1997 the proportion of science students among university graduates dropped drastically from 29.4% to 24.5%.

Under the National Rolling Plan for 2001–2003, the federal government increased science enrolments to more than 54% of the total by 2003.The country is faced with two major problems in human resource development, namely, unemployment among the educated youth and the dwindling federal budgetary allocations to educational institutions.

Another teething problem is the growing unemployment among recent graduates, particularly at the tertiary level, which emanates in part from the mismatch between educational output and requirements of the labour market. The quality and relevance of education have declined as academic resources, whether faculty or equipment and facilities, have become increasingly in short supply. According to Nigeria Ministry of Finance, (2000a), "Nigeria's education system turns out more than 3 million secondary and tertiary graduates every year, but it is estimated that the economy can absorb only around 10% of these graduates annually".

As a result, the economy is saddled with more than 15 million unemployed or underemployed youth, a situation that is undermining living standards throughout the country. Under the National Rolling Plan for 2001–2003, the government envisaged growth in employment of 1.8 million jobs—600,000 a year—but that number was still a mere 20% of what is needed just to hold unemployment and underemployment constant among the educated youth. According to Dabalen and Oni, (2000), an increase in the number of university graduates from 15,000 in 1980/81 to 55,000 in 1998/99, in the face of slow economic growth and productivity improvement, has increased the unemployment rate among university graduates to an estimated 17–25%.

There was a peaceful demonstration match in October 2000 by the unemployed graduates at the presidential offices in Abuja to demand for the government to provide them with jobs. The urban registered unemployment rose from 4.9% in 1998 to 5.5% in 1999 due to the dwindling

public and private sector expansion (especially the private sector) and due to low absorptive capacity (Nigeria Ministry of Finance, 2000a).

This paper has the main focus to examine the situation regarding gender and higher education attainment in Nigeria. It is also of utmost importance to determine the nature of higher education and income generation among the youths; and to determine the impact of higher education on poverty among youths.

This paper has section two as the review of the relevant literature. Section three discusses the data on higher education enrolment and the output of graduates at higher institutions. Also discussed here is the analysis of propensity score matching and the logistic regression. Finally, section four concludes the research by making some recommendations.

2. LITERATURE REVIEW

Human Capital Theory, associated with the work of Becker (1975), asserts that education creates skills which facilitate higher levels of productivity amongst those who possess them in comparison with those who do not. Education, then, is costly but it brings associated benefits which can be compared with its costs in much the same way as what happens with any investment project. Those who propounded human capital theory have found evidence to support the above assertions.

First, they have found a strong, and empirically verifiable, positive relationships across all societies between the wages and salaries people receive at work and the level of education they attained.

They assumed competitive labour and goods markets, and found that those with higher levels of education seem to have, on average, higher levels of productivity. Employers usually use educational characteristics as a condition for qualification and suitability for a job, and potential productivity, of their employees.

Secondly, the earnings of the more educated not only start at a higher level, but increase more rapidly to a peak level - which happens later in life - than the earnings profiles of the less educated. Indeed, those with no education tend to have earning profiles which remain pretty flat throughout their lives.

These patterns are said to indicate not just that education makes people more productive but also enhances the ability to learn-by-doing, causing productivity, and thus earnings, to increase at a faster rate than for those with less education.

The fact, however, that the profiles peak and then decline beyond a certain age suggests that the skills created by education are prone to obsolescence and that their productive value decline when technology has outpaced them.

Early criticisms of Human Capital Theory came from a group of radical economists who argued that education was valued by employers not because of the cognitive skills which it engendered, but because of the non-cognitive qualities and attributes inculcated at different levels of the education system.

These critics argue that the non-cognitive traits encouraged by different levels of the school system correspond strongly to the features or characteristics required of employees at unskilled, middle and higher levels of the occupational hierarchy. Education is has been accepted to be responsible for reproducing the social hierarchies and classes in society in a stable and predictable way, rather more than enhancing the productive capacities of labour.

Another set of arguments assert that education is merely an attenuated selection process, where the most talented people are distinguished from the less talented. In other words, schooling identifies the most able people but does not necessarily create or enhance those abilities, or by implication, individual productivity.

In this view, the argument is that ranking procedures may not be efficient since the benefits of ten years schooling could be short-circuited by aptitude tests which might last a matter of hours or at most days rather than years.

This group of theorists argues that the associations between education and earnings adduced by human capital theorists to imply that education has productive value can be shown to be entirely consistent with its negation.

Human Capital Theory also asserts that there is a link between education and poverty in terms of education as a means of poverty reduction; this link can be drawn both at the macro- and micro-levels of poverty and on the levels of education.

At the macro-level, it is generally believed that the levels of enrolment correlate with GNP. Countries that have low per capita incomes usually have low enrolment ratios.

However, there are some exceptions to this rule. In Africa, for example, Colclough(1994) asserted that extremely poor countries such as Lesotho, Madagascar and Togo have primary gross enrolment ratios in excess of 100.

Also, among poor countries there is considerable variation, showing that low GNP does not necessarily translate into low levels of educational enrolment. Recent debates on poverty have highlighted the need to expand understanding (and measurement) of poverty beyond household income/consumption figures. This is demonstrated by the introduction in the 1996 Human Development Report of the Capability Poverty Measure (CPM) which includes female education (in the form of female literacy levels) as part of a composite poverty measurement.

In this context, education is seen not just as an instrument for poverty reduction (in the sense of increasing productivity and incomes) but also as an asset which can be realised in terms of wealth (e.g. to labour, capital, social welfare support).

According to World Bank (1995: 1), education - especially basic (primary and lower-secondary) education - helps reduce poverty by increasing the productivity of the poor, by reducing fertility and improving health, and by equipping people with the skills they need to participate fully in economy and society.

According to Organisation for Economic Cooperation and Development (2012), greater gender equality in economic opportunities contributes to stronger and more sustainable economic growth. Investing in formal education and training increases the skill-set of individuals throughout their

lives and increases employment and entrepreneurial opportunities for both men and women. In addition to the direct effects of education on economic participation or activity, education also affects other societal outcomes such as life expectancy, child mortality, fertility, personal health outcomes, and greater investment in the education and health of future generations.

In addition, gender equality is also a key driver of the degree of self-reported well-being and happiness across the world and life satisfaction increases over time as gender equality increases (Veenhoven, 2011; Veenhoven, 2012).

Growth and technological change can endogenously trigger further female education and empowerment which in turn feeds back into economic development (Doepke *et al.*, 2011).

No modern country has been able to prosper without a strong and quality higher education system. Misperceptions about the role of higher education in ensuring sustainable development have persisted for a long time.

But it is lack of adequate and sustained investment in higher education, and at all levels that continues to fail to achieve poverty reduction. It should be clear and unequivocal in the reasons why poverty cannot be overcome without the benefits of higher education while it is difficult to get on with the work of building stable, high quality higher education systems in all countries (Ramphele, 2003).

Higher education has in the past contributed to development by providing national economies with the necessary human resources but criticized for not dealing directly with poverty reduction issues (Ramphele, 2003).Education is a key in raising earning potentials of individuals and productivity of the economy.

Vener (2004) posits that a more educated workforce produces high value output, which is a necessity for economic growth and poverty reduction. It is known that education, apart from enhancing human capital, also creates social capital because it may transmit cultural messages and build social cohesion. Although the positive effect on economic growth of education investment is gradual and takes time to appear, the benefits to the individuals that receive the investment are more instant (Vener, 2004).

Many of the poverty-reducing assets discussed above, such as education, experience, and labour market association, are important correlates of poverty and the dynamics thereof. In the study by Vener (2004), he investigates the marginal impact of each individual attribute on the likelihood of a household falling below the indigence poverty line in Paraiba, Brazil, taking into account other characteristics.

The study reveals two important and remarkable findings: (a) a conditional correlation between poverty and characteristics of household heads and (b) information about groups that are particularly vulnerable in 1999.

The probability of a household being poor is analyzed based on relevant individual and household characteristics. One of the salient findings is that poverty can be attributed to the lack of income-generating assets, particularly human capital.

Another poverty study for Brazil, such as Ferreira *et al.* (1998), shows that in 1996 education was a cardinal personal attribute that can determine the possibility that a household would be subjected to poverty. Other poverty-causing factors include age, family size, race, and rural living. The link between education and poverty reduction has been discussed extensively by economists. All their discussions point to the same direction: that education reduces poverty. Education is essential to a person's development.

It also ensures the development of families, of the local and national communities, and the world at large. Education is universally necessary and has also positive effects on health, poverty reduction and elimination of hunger and gender equality. Higher levels of more relevant learning outcomes are thus both a condition for, as well as a result of, progress in other social sectors (UNESCO, 2012).

There is usually a wide disparity between the earnings of those who have bachelor degree or higher than those who drop out and this earnings differential translates into vastly different opportunities and resources for children growing up in these families (Carnevale, 2012). The assertion that education and training have short-term and long-term effects on life-course patterns, at least on the individual's career and (life) wages, is generally accepted and its correctness seems to be fairly obvious.

It is debated that the health status of the youth is also a parameter for their future life. The youthful life begins with adolescence (teenage age bracket), and thus exposes them to health, social, psychological challenges which are capable of affecting their future.

One of these challenges includes adolescence pregnancy among the young girls which could increase the rate of drop-outs. Sawyer *et al.*, (2012) said that adolescence, has been identified as a distinct life phase characterized by both sociological and biological benchmarks, and has been identified by many public health experts and policymakers as central to lifelong health and psychological wellbeing.

While literature review finds strong correlations between adolescent fertility and school drop-out, the question of causation remains far more ambiguous, as the robustness of results decrease sharply with more rigorous research methods.

Also, while fertility is often correlated with school dropout, other factors such as current school enrollment, marital status, anticipated economic returns to education, family attitudes, drive both school continuation and the likelihood of experiencing an adolescent pregnancy (McQueston *et al.*, 2012).

In addition, it is well-established such conditions produce health risks, so that policymakers believe that adolescent pregnancy can lead to poor socioeconomic outcomes such as school dropout, lost productivity, and the intergenerational transmission of poverty.

3. DATA PRESENTATION AND ANALYSIS

3.1. Descriptive Statistics

It is expedient at this point to describe the available data on education enrolment and attainment to enlighten the readers on the development of education sector in Nigeria. We will start with the enrolment in the Polythecnics, then the Universities before proceeding to the graduates.

Table-3.1. Enrolment of Poly/Mono-thecnics

Year	Total Inst.	% growth	Total Enrolment	% growth	Total Teachers	% growth	Teacher/pupil ratio	% growth
2001	163		348,016		8,472		41	
2002	172	5.52	518,421	49	17,673	109.0	29	-29
2003	178	3.49	521,889	0.67	18,199	3	29	0
2004	178	0	577,327	10.62	16,499	-9	35	21
2005	178	0	237,708	-58.83	16,499	0	14	-60

Source: National Bureau of Statistics Social Statistics in Nigeria (2005:22). Percentages calculated by the authors.

From table 3.1, we can see that the enrolment of students into Polythenics grew at a high value of 49% from 2001 to 2002. The enrolment declined to as much as 0.67% between 2002 and 2003, while it rose again to 10.62% between 2003 and 2004.

There was a serious decline in the enrolment from 577,327 in 2004 to 237,708 in 2005, thus, showing a growth rate of -58.83% between the two periods. However, NBS (2005:22) showed that the teacher/pupil ratio grew at -29% between 2001 and 2002 and did not change between 2002 and 2003. It grew to 21% between 2003 and 2004, and declined to -60% between 2004 and 2005.

Table-3.2. Enrolment in Universities

Year	Total Inst.	% growth	Total Enrolment	% growth	Total Teachers	% growth	Teacher/pupil ratio	% growth
2001	51		358,758		18,867		19	
2002	57	11.76	444,949	24	18,426	-2	24	26
2003	59	3.51	606,104	36.22	22,046	19.36	27	12.5
2004	63	6.78	727,408	20.01	23,871	8.28	30	11.11
2005	80	26.98	724,856	-0.35	23,535	-1.28	31	3.33

Source: National Bureau of Statistics Social Statistics in Nigeria (2005:23). Percentages calculated by the authors.

From the table above, we note that the total number of universities has been growing over time. The number of the universities grew at a rate of 11.76% between 2001 and 2002, whereas it declined at a rate of 3.51%. Meanwhile, it increased to 6.78% between 2003 and 2004, and grew at a higher rate of 26.985 between 2004 and 2005.

The enrolment grew at 24.0%, 36.22%, 20.01% and -0.35% over the same periods. The teacher/pupil ratio has been growing over the periods. Between 2001and 2002, the ratio grew at 26.0%, which signified a high ratio to manage. The ratio became better at the subsequent years of 2002 – 2005, with their respective growth rates as 12.50%, 11.11% and 3.33%.

Table-3.3. Graduate Output by (Faculties) Bachelor's Degree (2000/2001 – 2004/2005)
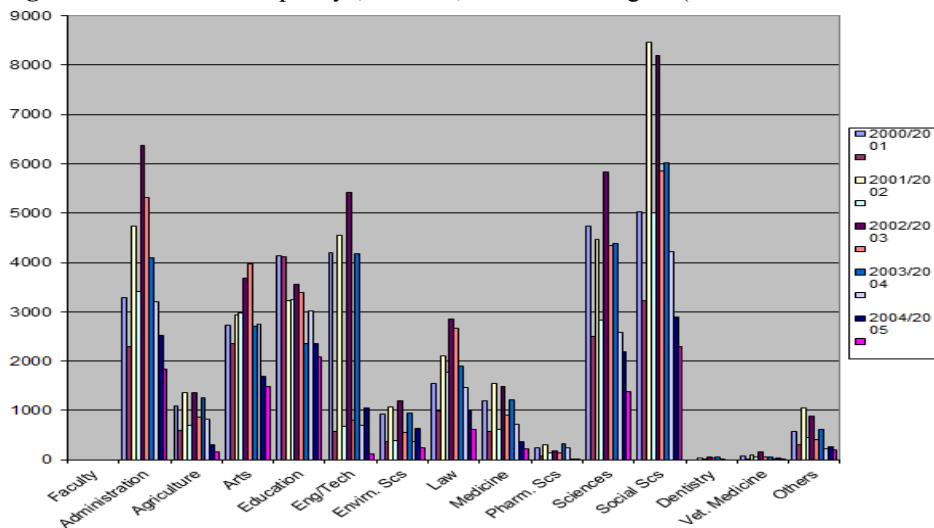
Faculty	2000/2001		2001/2002		2002/2003		2003/2004		2004/2005		
	M	F	M	F	M	F	M	F	M	F	Total
Administration	3294	2298	4727	3413	6380	5321	4089	3201	2521	1843	37087
Agriculture	1086	604	1366	705	1366	873	1268	828	299	167	8562
Arts	2732	2351	2938	2982	3672	3963	2706	2746	1687	1495	27272
Education	4129	4117	3221	3248	3560	3391	2361	3008	2352	2095	31482
Eng/Tech	4194	581	4558	679	5425	800	4182	689	1051	116	22275
Envirn. Scs	932	375	1079	395	1201	560	940	368	643	243	6736
Law	1558	990	2112	1781	2846	2664	1901	1461	1007	626	16946
Medicine	1200	568	1538	613	1489	903	1219	721	359	230	8840
Pharm. Scs	242	78	312	138	186	144	320	235	12	10	1677
Sciences	4743	2494	4461	2840	5839	4347	4390	2581	2190	1379	35264
Social Scs	5021	3223	8459	4996	8187	5856	6017	4220	2893	2296	51168
Dentistry	0	0	45	22	67	30	48	21	0	0	233
Vet. Medicine	68	19	99	47	155	54	47	21	30	6	546
Others	583	311	1059	457	879	401	617	214	273	209	5003
Total	29782	18009	35989	22316	41252	29109	30105	20314	15327	10715	252918
Grand Total	47791		58305		70361		50419		26042		

Source: National Bureau of Statistics Social Statistics in Nigeria (2005:37)

From the table above, we see that the total number of graduates has been changing from year to year. It rose from 47, 791 graduates to 58, 305 between 2001 and 2002, about 22%. Between 2002 and 2003 academic sessions, the total number of graduates increased from 58, 305 to 70,361, a growth rate of 20.68%.

However, the total number of graduates declined from 70, 361 to 50,419, rate of -28.51%; it continues declining in absolute value from 50, 419 to 26, 042, a growth rate of -70.65%. This goes to show that the Nigerian Universities have been producing graduates.

Also observed from the table is that the attainment of higher education by females is also encouraging. The female graduates have been increasing in number and with respect to discipline over the period of time. This goes to show that higher education in Nigeria is not gender sensitive.

Figure-3.1. Graduate Output by (Faculties) Bachelor's Degree (2000/2001 – 2004/2005)

From the graph above, we can see that Faculty of the Social Sciences has the largest number of graduates followed by the Faculty of the Business Administration, Faculties of Sciences, Engineering/Technology, Education, Arts, etc, in that order. The least in turning out graduates is Faculty of Dentistry/Health Sciences, followed by Veterinary medicine, Pharmaceutical Sciences, Environmental Sciences, etc, in that order.

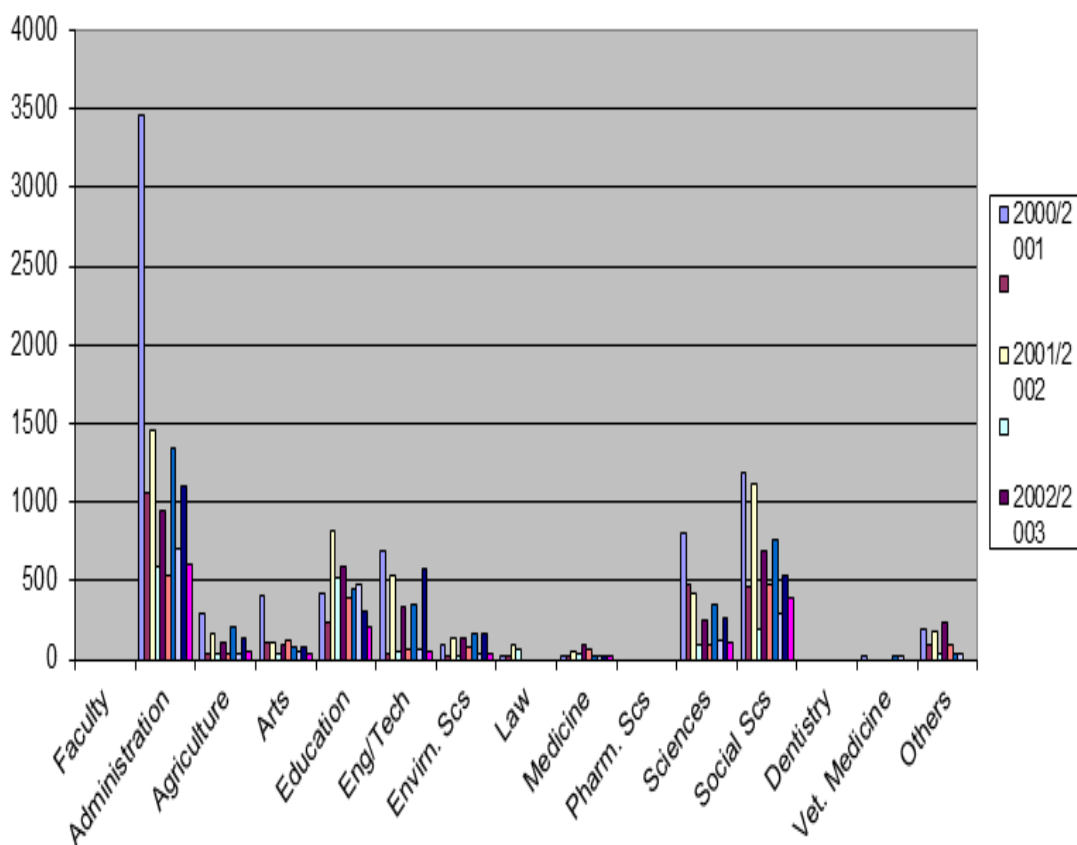**Table-3.4.** Graduate Output by Post-Graduate Diploma (2000/2001- 2004/2005)

Faculty	2000/2001		2001/2002		2002/2003		2003/2004		2004/2005		
	M	F	M	F	M	F	M	F	M	F	Total
Administration	3456	1055	1461	594	950	527	1341	701	1095	599	11779
Agriculture	287	30	169	42	101	37	214	40	136	46	1102
Arts	405	105	105	43	100	118	75	53	74	41	1119
Education	415	237	818	519	590	397	451	476	304	206	4413
Eng/Tech	693	32	534	52	329	63	346	58	570	49	2726
Envirn. Scs	96	17	129	28	129	82	162	36	159	31	869
Law	10	3	89	65	0	0	0	0	0	0	167
Medicine	15	11	51	31	100	62	25	12	22	18	347
Pharm. Scs	0	0	0	0	0	0	0	0	0	0	0
Sciences	810	475	413	98	243	90	343	123	269	111	2975
Social Scs	1188	456	1111	193	694	476	765	292	533	388	6096
Dentistry	0	0	0	0	0	0	0	0	0	0	0
Vet. Medicine	8	0	0	0	0	0	4	3	0	0	15
Others	190	95	180	42	235	87	36	39	0	0	904
Total	7573	2516	5060	1707	3471	1939	3762	1833	3162	1489	32512
Grand Total	10089		6767		5410		5595		4651		

Source: National Bureau of Statistics Social Statistics in Nigeria (2005:38)

From the table 3.4, the total number turnouts of Postgraduate Diploma followed the certain pattern of the output of graduates. The total number of turnouts continued declining over the period covered by the table. However, the Faculty of Business Administration has the highest turnouts at this level of education, followed by the Faculty of the Social Sciences and the Faculty of Education.

The Faculties of Pharmaceutical sciences and Dentistry/ Health Sciences and Law have no postgraduate Diploma and that is why they have zero values as their sum. However, at the postgraduate level the males dominate the female counterparts at the graduation time. The male graduates double the number of female graduates at the Postgraduate Diploma between 2000/2001 and 2004/ 2005 sessions.

The chart below illustrates the discussion made concerning table 3.4. It shows that the Faculty of Business Administration has the largest turnouts followed by the Faculty of the Social Sciences and Education. It also portrayed zero values for the Faculties Law, Pharmaceutical Sciences, and Dentistry.

Figure-3.2. Graduate Output by (Faculties) Post-Graduate Diploma (2000/2001 – 2004/2005)

Table-3.5. Graduate Output by Masters' Degree (2000/2001- 2004/2005)

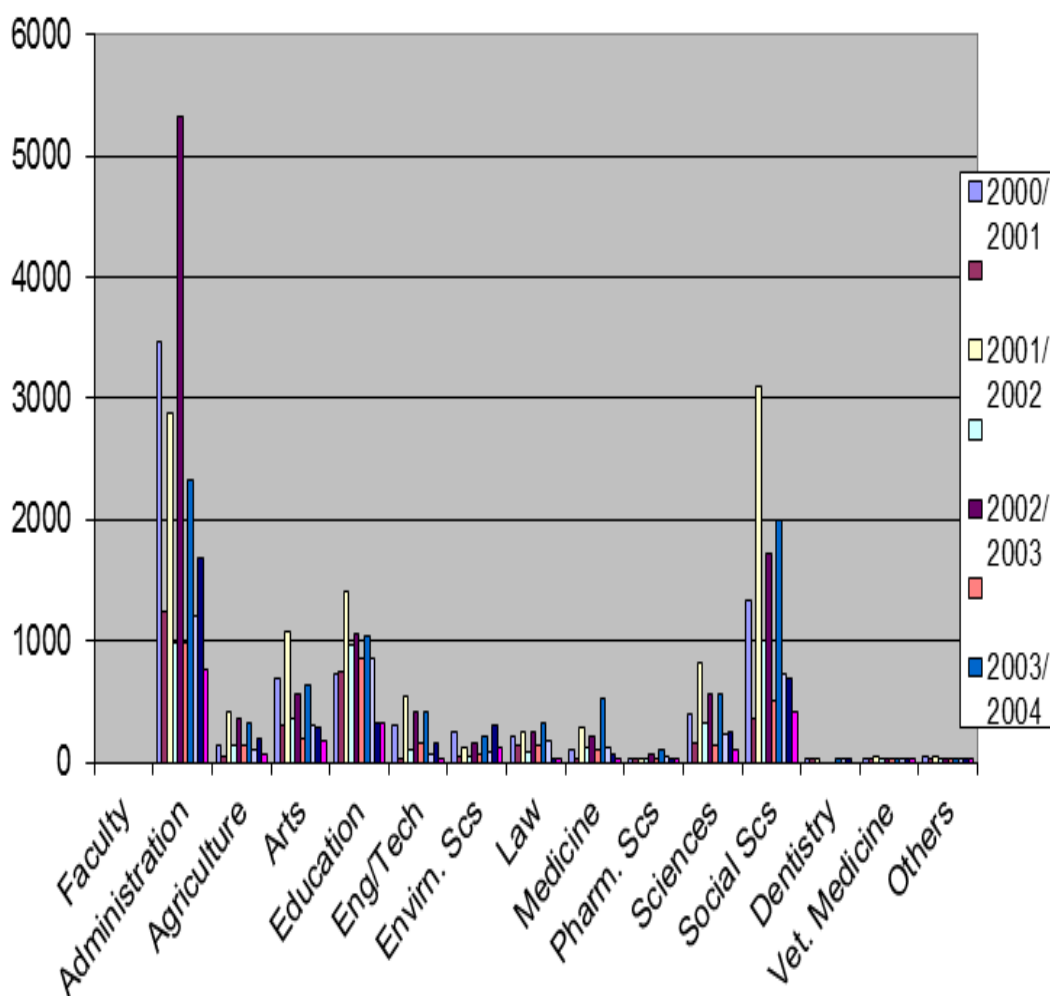| Faculty	2000/2001		2001/2002		2002/2003		2003/2004		2004/2005		
	M	F	M	F	M	F	M	F	M	F	Total
Administration	3470	1241	2879	987	5326	992	2334	1212	1676	768	20885
Agriculture	138	38	418	142	368	136	324	94	202	59	1919
Arts	681	304	1074	365	568	189	637	310	280	169	4577
Education	723	736	1406	962	1061	854	1043	849	328	317	8279
Eng/Tech	296	23	539	97	409	162	416	71	166	21	2200
Envirn. Scs	252	39	127	39	154	56	220	81	296	122	1386
Law	218	137	253	91	250	132	329	183	33	12	1638
Medicine	95	25	279	125	219	98	517	129	66	36	1589
Pharm. Scs	23	7	25	15	58	27	105	39	11	3	313
Sciences	393	165	820	322	557	145	566	239	258	106	3571
Social Scs	1327	362	3096	996	1719	500	1987	733	688	412	11820
Dentistry	21	12	1	0	0	0	9	1	2	0	46
Vet. Medicine	16	2	38	4	28	9	22	6	12	6	143
Others	53	15	39	12	31	8	20	16	6	2	202
Total	7714	3106	10994	4157	10748	3308	8529	3963	6352	2033	60904
Grand Total	10820		15151		14056		12492		8385		

Source: National Bureau of Statistics Social Statistics in Nigeria (2005:38)

From table 3.5, we still see that the Faculty of Administration has the highest number of graduates for the entire periods. The total number of Masters Degree graduates for the review periods is 20, 885, signifying the many people want to possess this professional certificate, MBA.

Many people will always want to identify with managerial position and without this certificate, it becomes doubtful if one is actually qualified to handle such positions.

   The next largest number of graduates at this level comes from the Faculty of the Social Sciences with a sum of 11, 820, followed by the Faculty of Education. The least number of turnouts comes from the Faculty of Dentistry/ Health Sciences with a sum of 46 graduates. At the Masters level, the male graduates double their female counterparts over the period reviewed. This explains that the graduate output at the Masters Degree level is biased toward the male.

Figure-3.3. Graduate Output by Masters' Degree (2000/2001- 2004/2005)
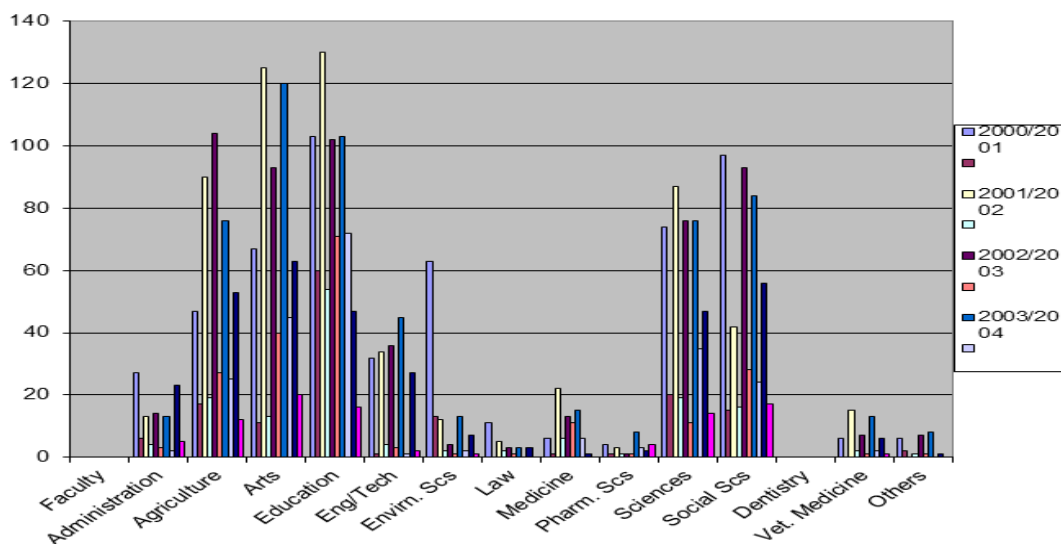

   From the chart above, we can see a clear picture of the discussion about table 3.5. It illustrates the fact that Faculty of Administration has the largest turnout at this level of education, followed by the Social Sciences and Education. The least on the hierarchy is Dentistry/Health Sciences followed by Veterinary Medicine.

Table-3.6. Graduate Output by Doctorate Degree (2000/2001- 2004/2005)

	2000/2001		2001/2002		2002/2003		2003/2004		2004/2005		
Faculty	M	F	M	F	M	F	M	F	M	F	Total
Administration	27	6	13	4	14	3	13	2	23	5	110
Agriculture	47	17	90	19	104	27	76	25	53	12	470
Arts	67	11	125	13	93	40	120	45	63	20	597
Education	103	60	130	54	102	71	103	72	47	16	758
Eng/Tech	32	1	34	4	36	3	45	1	27	2	185
Envirn. Scs	63	13	12	2	4	1	13	2	7	1	118
Law	11	0	5	2	3	1	3	0	3	0	28
Medicine	6	1	22	6	13	11	15	6	1	0	81
Pharm. Scs	4	1	3	1	1	1	8	3	2	4	28
Sciences	74	20	87	19	76	11	76	35	47	14	459
Social Scs	97	15	42	16	93	28	84	24	56	17	472
Dentistry	0	0	0	0	0	0	0	0	0	0	0
Vet. Medicine	6	0	15	2	7	1	13	2	6	1	53
Others	6	2	0	1	7	1	8	0	1	0	26
Total	543	147	578	143	553	199	577	217	336	92	3385
Grand Total	690		721		752		794		794		

Source: National Bureau of Statistics Social Statistics in Nigeria (2005:39)

Table 3.6 illustrates the total number of turnouts at the Doctorate level. The Faculty of Education has the largest turnout with 758 Doctorate Degree graduates between the review periods. The next highest is the Faculty of Arts with 597 graduates, then the Faculty of the Social Sciences with a total of 472 and the Faculty of Agriculture following very closely with 470 graduates. There was no graduate from the Faculty of Dentistry/Health Sciences for the review periods, whereas Faculty of Law had 28 Ph. D graduates. At the doctorate level, the number of female graduates is less than half of the male graduates for nearly all the disciplines (Courses) over the review period. This would imply that males have the capacity to further their education more than their female counterparts.

Figure-4.4. Graduate Output by (Faculties) Doctorate Degree (2000/2001 – 2004/2005)

3.2. Methodology and Analysis

The Propensity Score Matching Approach

Propensity score matching technique was used in ascertaining the impact of youth higher education on poverty. Propensity score matching in its simplest form involves predicting the probability of treatment on the basis of observed covariates for both the treatment and the control group samples (Rawlings and Schady, 2002). In propensity score matching, one picks an ideal comparison group from a larger survey and then matches the comparison group to the treatment group on the basis of set of observed characteristics on the predicted probability of participation given observed characteristics (propensity score) (Ravallion, 2001). The observed characteristics are those used in selecting individuals but not affected by programme participation and act as the control variables. For example, for estimating the impact of higher education of youths on poverty, two groups are identified, those with higher education (denoted as Ri =1 for household i and those without (Ri = 0). Defining youth is difficult, as a person who is neither a child nor an adult, but in between. The United Nations defines the individual in between the age 13 and 30 as a youth. Different countries and administrative regions use more narrow definitions within that age frame. However, we define youth here as people between the age of 16 and 35 years. The rationale is that at the age of 16 years, a person is qualified to attend a higher institution of learning in Nigeria. The upper boundary of 35 years is used so that the period of job search may have been taken care of; the person may have gotten a job.

Those with higher education (treated) are matched to those without (control group) on the basis of the propensity score: (probability of acquiring higher education given observed characteristics)

$$p(x_i) = prob(R_i = 1 \mid x_i) \quad (0 < p(x_i) < 1)...3.1$$

where xi is a vector of pre-higher education control variables. If the Ri's are independent over all i, and the outcomes are independent of higher education given xi then outcomes are also independent of higher education given p(xi), just as they would be if higher education were transferred randomly.

Propensity score matching is a better methodology for dealing with differences in population characterisitics. However, a few tests that have been done suggest that with good data, propensity score matching can greatly reduce the overall bias and outperforms regression-based methods (Ravallion, 2001).

The estimation of the average treatment effect on the treated (ATT) based on the propensity score matching for with and without higher education was carried out based on the following procedures:

1. Pooling of two groups of individuals, that is, the treatment and comparison group of those who receive higher education and those who do not receive higher education. After the

pooling, a logit model of higher education receiving and non-higher education receiving as a function of some socio-economic variables will be estimated. The variables to be selected are those that were not affected by receiving higher education. Some of the socio-economic variables included are Sex, household total income, Father with no education, Sector (urban as 1, otherwise 0), education with respect to South East, South South, South West, North East, North Central, monogamous marriage, Polygamous marriage, Age of first Marriage, population weight. The equation is presented thus:

$$P_i = \log \frac{P_1}{1 - P_1} = \log O_i = a_i + b_i Sex + b_2 Houtotincome + b_3 father\_noedu + b_4 \sec tor1 +$$

$$b_5 Southeast + b_6 Southsouth + b_7 Southwest + b_8 Northeast + b_9 Northcentral + b_{10} monmarriage +$$

$$b_{11} pmarriage + b_{12} agefirstmarried + b_{13} popwt + \varepsilon ....3.2$$

2. From the logit regression, a predicted value of the probability of having received higher education was created. These were the propensity scores and each individual had a propensity score.

3. For each higher education receiving household, a non-higher education receiving household that has the closest propensity score, as measured by the absolute difference in scores, referred to as nearest neighbor was obtained. For more precise estimate, the nearest five neighbors was used. Thus the nearest neighbour matching was used.

4. The mean values of the outcome indicator (per capita expenditures) for the nearest neighbours were calculated. The difference between the mean and actual value for the higher education receiving households (beneficiaries) is the estimate of the gain due to higher education.

5. The mean of individual gains is calculated to obtain the average overall gain i.e. the average treatment effect on the treated (ATT).

The result of the logit estimation for the derivation of the p-scores is presented in Table 3.7. The dependent variable for the logit was receiving or not receiving higher education coded as 1 and 0.

The result in the below shows that sex of the respondents, father not educated, education with respect to South west, North east, Monogamous marriage, Polygamous marriage, Age at first marriage, do not significantly influence higher education receiving. Household total income significantly influenced higher education receiving. Sector 1(urban), education with respect to South East, South South, and North Central are statistically significant, showing that they influenced higher education receiving.

Table-3.7. Parameter estimates of higher education receiving and non-receiving for the propensity score matching

Higher Edu	Coefficient	Std Error	Z-Stat	P-Value
Constant	-3.108082	1.353166	-2.30	0.022
Sex	0.1570613	0.4536126	0.35	0.729
houtotincome	8.65e-06	2.96e-06	2.92**	0.008
Father_noedu	-0.3499398	0.3948406	-0.89	0.375
Sector 1	1.339933	0.4480636	2.99**	0.008
Southeast	1.896026	0.8085812	2.34*	0.019
Southsouth	1.701277	0.6659233	2.55*	0.011
Southwest	1.02048	0.8772991	1.16	0.245
Northeast	-0.2163396	0.8483566	-0.26	0.799
Northcentral	1.725592	0.6575207	2.62**	0.009
Monmarriage	-0.7641238	0.9004586	-0.85	0.396
Pmarriage	-0.9496606	1.004767	-0.95	0.345
Agefirstmaried	0.0476011	0.0895648	1.20	0.229
Popwt	-0.0000117	0.0000306	-0.38	0.702

Source: Calculations from NLSS merged data file

Variables in parenthesis are standard errors

      Log likelihood = -94.407402

* indicate significant at 0.05 & 0.10 probability levels while ** indicates significant at 0.01, 0.05 & 0.10 levels

Table-3.8. Result of the propensity score matching showing the overall gain (ATT) in expenditure per capita of higher education receiving households

Method	No of treatment	No of controls	ATT	Standard error	t-value
Analytic standard error	598	3962	20106.872	8369.781	2.402
Bootstrapped standard error	598	3962	19930.523	7997.275	2.492

Source: Calculations from NLSS merged data file

Note: The numbers of treated and controls refer to actual nearest neighbor matches. ATT refers average treatment effect on the treated using nearest neighbor matches

The result showing the average overall gain in expenditure per capita due to higher education (step 5 as described in the analytical framework) after the nearest neighbour matches of propensity scores obtained after the logit analysis is presented in Table 3.8. The result shows that the average treatment effect on the treated (ATT), that is, average gain in expenditure per capita by higher education receiving households, using nearest neighbor matches is N20106.87. This shows that the higher education receiving households gained by N20106.87 after the matches. The t value (2.402) for test of difference between the expenditure per capita based on the gain between higher education receiving and non-receiving households, as shown in Table 3.8 was greater than the tabular value of 1.96 at a probability value of 0.05. This shows that the impact of higher education on per capita expenditure between higher education receiving and non-receiving households was

different. Thus using propensity score matching, the findings suggest that higher education had significant effect on poverty as the gain in expenditure per capita due to higher education was positive and significant.

4. CONCLUSION

We have seen that the Nigerian higher education has been improving for some time, as could be seen in the enrolment both at the Polytechnics and at the University levels. The student-teacher ratio has also been improving over the same period. The female enrolment has been impressive as revealed from the output of graduate females. At the first degree level, even though the male graduates are larger in number, the rate at which the female number matches that of the males is really encouraging. One can infer unequivocally that higher education, as it affects the first degree is not gender bias. But at the postgraduate level, the size of male graduates more than doubles that of the females. This is exemplified in the number of graduates at the postgraduate diploma, masters and the doctorate levels where the number of male graduates more than double that of females.

The Propensity Score Matching and the logistic regression show that higher education has impact on youth poverty. We have seen that higher education with respect to some zones is statistically significant while to some other zones and other variables are not significant. For the result of the propensity score matching, the average gain in expenditure per capita by higher education receiving households, using nearest neighbor matches is N20106.87. This shows that the higher education receiving households gained by N20106.87 after the matches. The t value (2.402) for test of difference between the expenditure per capita based on the gain between higher education receiving and non-receiving households, implying that higher education has impact of reducing poverty among the youths in Nigeria. We therefore recommend that the Federal Government of Nigeria should include higher education as one of the priority projects in the yearly budget. Funding of education should improve by adapting the benchmark of the International Agencies' suggestion that all governments should devote about 30% the Gross Domestic Product (GDP) to funding of education. This will help the education sector to grow and also improve the human capital development. The national policy on education should be such that funding and emphasis laid on higher education research and training that would position the graduates for gainful employment and career life.

REFERENCES

Akooje, S. and McGrath S, 2005. Post-basic education and training and poverty reduction in South Africa: Progress to 2004 and vision to 2014, Post-basic education and training, working paper series - No.2, Centre of African Studies, University of Edinburgh.

Asmal, K., 2002. Education, Development and poverty reduction, being a paper presented by Professor Kader Asmal, MP, Minister of education (South Africa) during the

national assembly debate on the world summit for sustainable development, Cape Town.

Becker, G.S., 1975. Human capital: A theoretical and empirical analysis, with special reference to education. 2nd Edn., New York: National Bureau of Economic Research.

Carnevale,A. P., 2012. For a middle-class life, College is crucial. Available from http://www.nytimes.com/roomfordebate/2012/03/01/shouldcollege-be-for-everyone/for-a-middle-class-life-college-is-crucial.

Colclough, C., 1994. Under-enrolment and low quality in African Primary Schooling: Towards a gender-sensitive solution, IDS Working Paper, 7, Brighton: IDS.

Dabalen, A. and Oni B., 2000. Labour market prospects of university graduates in Nigeria. Paper prepared for a world bank–sponsored study on tertiary education in Nigeria.

Doepke, M., M. Tertilt and A. Voena, 2011. The economics and politics of women's rights, National bureau of economic research, Working Paper,17672, Forthcoming.

Ferreira, F., P. Lanjouw and Neri M., 1998. The urban poor in Brazil in 1996: A new poverty profile using PPV, PNAD and census data. World Bank, Mimio.

McQueston, K., Silverman R and Glassman A., 2012. Adolescent fertility in lowand middle-income countries: Effects and solutions, Center for global development, Working Paper, 295.

National Bureau of Statistics, 2005. Social statistics in Nigeria, Federal republic of Nigeria.

Nigeria Ministry of Finance, 2000a. National rolling plan, 2001–2003. Abuja.

Organisation for Economic Cooperation and Development (OECD), 2012. Gender equality in education, Employment and entrepreneurship: Final Report to the MCM, C/MIN 5.

Ramphele, M., 2003. The role of higher education in reducing poverty and promoting prosperity, Speech delivered to the conference, Policies and models for international co-operation in higher education Bergen, Norway.

Ravallion, M., 2001. The mystery of the vanishing benefits: An introduction to impact evaluation. The World Bank Economic Review, 15(1): 115-140.

Rawlings, L. and N.R. Schady, 2002. Impact evaluation of social funds: An introduction. The world Bank Economic Review, 16(2): 213-217.

Sawyer, S.M., Afi fi R. A., BearingerL. H., Blakemore S. J., Dick B., Eze A. E. and PattonG. P., 2012. Adolescence: A foundation for future health,centre for adolescent health,Royal Children'sHospital,Parkville, VIC,Australia, Series, Adolescent Health 1, The Lancet, 379: 1630-1640.

United Nations Development Programme (UNDP) 2004. Human Development Report: Cultural liberty in today's diverse world. New York.

United Nations Development Programme(UNDP) 2001. Human development report: Nigeria 2000/2001 millennium edition. Lagos.

United Nations Economic Commission for Africa (2002).EconomicreportonAfrica: Tracking performance and progress, Addis ababa, Ethiopia.

United Nations Economic Commission for Africa (2005). Economic report on Africa: Meeting the challenges of unemployment and poverty in Africa, Addis Ababa, Ethiopia

United Nations Education, Scientific and Cultural Organization(UNESCO)., 2012. Education and skills for inclusive and sustainable development beyond 2015: Thematic think piece, UNESCO, UN task team on the post 2015 UNN development agenda.

Veenhoven, R., 2011. Social development and happiness in nations 1990-2010, Presentation atconference taking stock: Measuring social development, International Institute of Social Studies,December, 14-15

Veenhoven, R., 2012. World database of happiness, Erasmus universiteit rotterdam, The Netherlands.

Vener, D., 2004. Education and its poverty-reducing effects: The case of paraíba, Brazil, World bank policy research, Working Paper, 3321.

World Bank, 1995, Development in practice: Priorities and strategies for education, Washington D.C: World Bank

Zoë Oxaal, 1997. Education and poverty: A gender analysis, report prepared for the gender equality unit, Swedish international development cooperation agency (SIDA), Institute of development studies, University of Sussex, UK.