Journal of Economics and Sustainable Development
ISSN 2222-1700 (Paper) ISSN 2222-2855 (Online)
Vol.6, No.22, 2015

The Public Returns to Educational Attainment in Nigeria

Habibu Mohammed Umar Nana Mohammed Fatima Binta Yusuf
Department of Economics, School of Arts and Social Sciences, College of Education Azare, Bauchi State

Abstract
This paper investigates the public (social) returns to education using cross-sectional analyses of states in Nigeria. The study focuses on the impacts on productivity (i.e. GDP Per Capita) of the different levels of education (primary, secondary/vocational and tertiary). The paper utilizes the most recent Household Survey data on Nigeria (LSMS 2012/2013). The regression results show that secondary and vocational education have higher social returns than the tertiary level of education. The results suggest the need for the governments to increase investment in the secondary and vocational education. The findings continue to support sharing of costs between governments and the beneficiaries at tertiary education level.

1. Introduction

Education is always regarded as one of the most important factors for economic development in any country, especially in a developing country like Nigeria where trained manpower is required to match the technological advancement. Education provides new skills and knowledge that increase productivity. This increase in productivity makes resources available for the creation of new technologies, new businesses, and new wealth, eventually resulting in increased economic growth. Similarly, education provides enamours individual returns as people with more education receive higher wages in the labour market. Hence, education can be seen as both a "public good" as well as a 'private good' in that society as a whole and individuals as well benefit from increased education. However, financing the education system is a crucial decision facing the modern governments all over the world. Today, many governments are moving towards cost sharing in the provision of education most especially higher education.

The idea of recovering some costs of tertiary education from the students emanates from the notion that the benefits of receiving an education (return) are more to the individual than to the larger public and the returns increase with the level of educational attainment (Boarini & Strauss, 2010). This idea is supported by micro studies that measure individual private returns of education using the wage regression as in (Aromolaran, 2004; Asafu-Adjaye, 2013; Boarini & Strauss, 2010). However, these individual-level analyses could at most capture only the individual return to the education, leaving out the social returns of education to the society as a whole. Education delivers economic benefits to individuals. Thus, it should be expected to see the effects of education on groupings of individuals (nations).The benefit of schooling may not be limited to the school goer (individual) alone; it also extends to other members of the society in the form of externalities (social benefits). Supposedly, it is the social return to education at the macro level that should provide the relevant economic justification for public spending on education. To have a sound policy guide on government support for education, an investigation of the social returns becomes crucial. The empirical studies on social returns to schooling are limited and none on Nigeria. This study is meant to fill this vacuum.

The rest of this paper proceeds as follows. Section 2 summarizes previous studies on the impact of educational attainment. Section 3 describes the dataset and presents the econometric framework for analysis. The results are discussed in section 4. The conclusion is in section 5.

2. Literature Review

The existence of high rates of private returns to education gives an impetus to people to invest in human capital (i.e. Education). However, the benefit of education and training may not be limited to the individual who acquired it alone as it could extend to others too through 'Externalities'. Therefore the increased gains in the economy as a whole (the social return) may surpass the returns that go to an individual. This justifies public spending on education. The returns to education are not limited to the individual's earning of money. Education often affects the quality of life in ways rarely captured by monetary earnings that go to individuals. Unlike the private returns to education, the social returns are the benefits of education which accrue to the society at large. An increase in educational attainment provides both economic and non-economic public (social) returns which are crucial for collective progress.

In economic literature, improvement in education is identified with rising aggregate labour productivity, competitiveness and consequently real output growth and development (Romer, 1989). Fliesher, Li and Zhao (2010) find that education positively affects output and productivity growth in the Chinese economy. They also find that workers with a secondary education or higher education have a much higher marginal product than labour with less than a secondary education. Accordingly, low level of education has been identified with underdevelopment. Fasih (2008) has argued that countries with low levels of education run the risk of being

trapped in technological stagnation and lower productivity growth. Petrakis (2008) estimated the social return of different levels of education in Greece within the framework of cost-benefit analysis and found tertiary education commanding higher rates of return. Overall, the social rates of return are lower when compared to the estimations of the private returns reported in previous studies in the country. He attributed the findings to the state subsidization of higher education.

Another strand of economic growth literature suggested that the investment in human capital is essential for faster economic growth (Jajri, 2007). In this line, Annabi, Harvey and Lan (2011) used a computable overlapping-generations model to assess the dynamic effects of increasing government investment in education in Canada. Their Simulation results indicate that higher education incentives increase the rate of human capital accumulation and subsequently productivity growth. According to Psacharopoulos (2007) in OECD countries, each year of schooling is associated with a 0.3 higher rate of economic growth. Yao & Wei, (2007), have shown that the interaction of FDI with education in the newly industrialized economies is more consequential on growth than taking the role of FDI alone. This implies that education not only affects economic performance directly, but serves as a tunnel through which other factors channel their influence on income growth.

In addition to the direct effect of education on total productivity of a country's labour force, increase in human capital (education) has an indirect effect via fiscal returns, particularly through improvements in personal income tax. However, improvement in the education of the populace may also have redistribution effects. Harmon, Oosterbeek and Walker, (2000) argued that the proportion of private gross returns on education goes to the government through taxation and also through reduced welfare entitlements. This was corroborated by Psacharopoulos (2007) who indicated that public expenditure on education generates fiscal returns as part of this expenditure is later recouped by the state through higher taxation of the more educated individuals in the society.

Apart from the direct economic returns to education to societies, education also produces externalities that are essential to creating a conducive atmosphere for economic growth and development. These unintended consequences include the inculcation of behavioural and attitudinal changes, political awareness and participation, discipline and social cohesion that are all necessary for economic growth and development (Fasih, 2008). Another social externality of education is improving in health. Education influences the lifestyle and health-seeking behaviour of individuals. According to Riddell and Song (2011) education improves non-market outcomes such as individual civic participation, health-seeking behaviours and reduces criminal tendencies. These non-market outcomes are important for economic growth and development. Similarly, Harmon et al. (2000) asserted that increased education is positively and strongly correlated with improved health, family stability and environmental benefits.

Different levels of education may have varying social returns in an economy. This tendency was found in many previous rates of return studies (Sianesi & Reenen, 2003; Schultz, 2004). This paper is meant to test this tendency in the Nigerian context.

3. Methodology

The social rate of return to the different levels of education is estimated using the following specification (Equation 1). A similar approach has been used in the literature to evaluate the social returns to education (e.g. as in Heckman, Lochner and Todd, 2003; Berry & Glaeser, 2005; Combes, Duranton & Gobillon, 2008; López-Bazo & Motellón, 2012 among others). The main difference with the calculation of the private return is that the social return considers the effect of schooling on output (not wages) and ignores taxes and social benefits, as these are resource flows between the public and private sector.

$$lnY_i = X_i'\beta_1 + \beta_2\,(Dummy\ for\ edu) + £_i \qquad (1)$$

Here, the dependent variable lnY_i is the log of GDP per capita, X_i represents the set of control variables that can affect the GDP per capita such as levels of income inequality and population. β_1 is the vector of coefficients associated with the controlled variables. And β_2 is the coefficient associated with each educational level (i.e. Primary, Secondary and Tertiary levels), $£$ is the error term. This approach assesses the social returns associated with each level of education (i.e. Primary, Secondary/vocational and Tertiary) at the level of output per capita, in this case, measured by state level GDP per capita which is assumed to capture the society's net benefits of educating its citizens.

3.1 Data Sources

This study uses household data from the Living Standards Measurement Study (LSMS, 2013) of Nigeria available online, and also from 'http: //www.zawya.com/.' 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 study uses years of schooling because this indicator presumably is the best proxy for human capital at different levels of education.

The description of the variables and their sources are shown in Table 1.

Table 1
Description of Variables and Data Sources

Variable	Description	Sources
Edu	Educational attainment from 0-21 (illiterate=0,….Doctorate=21)	LSMS (2013)
GDPPC	States Gross Domestic product per capita	http://www.zawya.com/nigeria
Gini_Income	Measure of income inequality that takes a value between 0 &1 (0=perfect equality; 1=perfect inequality	LSMS (2013)
population	State Population as a Percentage of the national population	http://www.zawya.com/nigeria
Tertiary	Number of people with tertiary level qualification	LSMS (2013)
Secondary	Number of people with only secondary level qualification	LSMS (2013)
Primary	Number of people with only primary level qualification	LSMS (2013)

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

4. Results

This section provides estimates on the social return to the different levels of education in Nigeria. Social returns to education are the benefits of education which accrue to the society at large. Educational attainment is expected to generate both economic and non-economic social returns that are crucial for collective progress. In the economic literature, it is well documented that, improvement in education is identified by an increase in aggregate labour productivity and consequently real output growth (López-Bazo & Motellón, 2012; Combes, Duranton & Gobillon, 2008; Berry & Glaeser, 2005; Psacharopoulos & Patrinos, 2004). The major difference with the estimation of the private return to education when compared with the social rate of return is the coverage. The social return considers the impact of educating on the general economic condition of the society as measured by any economic indicator such as GDP per capita, not on individual as a person (salary or wages) and overlooks taxes and social transfers, as these are resource flow between the public (government) and private segments of the society. As effectively specified, the social rate of return estimations would represent the aggregate impact of the distinctive levels of education on GDP per capita.

In the specification (Equation 1), the GDP per capita of the 36 states in Nigeria are regressed on the three different levels of education. The regression results show that only secondary/vocational education is found to have a significant effect on the log of GDP per capita as pointed out by the high values of its corresponding t-statistic results and low p-values (p-value= 0.04). The variables of Primary and Tertiary education are not significant. This implies that the social premium of educational attainment is higher for secondary and vocational education than for tertiary and primary education in Nigeria. This finding complements the conclusion of Psacharopoulos & Patrinos, (2004) that investment in basic and intermediate human capital yields the highest social returns in lower and middle-income countries. Thus, suggesting that investing in this level of education (secondary/vocational) would offer the most appropriate support for boosting economic productivity across the states in the country at the current stage of development.

Table 2 OLS, using observations 1-37
Dependent variable: log of GDP Per capita (l_GDPC)

Variable	**Coefficient**
Constant	6.696*** (0.756)
l_gini-income	0.335 (0.448)
l_population	-1.272*** (0.376)
l_tertiary	0.171 (0.157)
l_secondary	0.569** (0.267)
l_primary	-0.116 (0.228)
F(5, 31)=4.400	P-value(F)=0.004
R-squared	0.360

Note: Heteroskedasticity-robust standard errors, variant HC1

Regarding the measures of fit, the Adjusted R-squared indicates that the regressors capture only a variance of 26% of the dependent variable. The F-test of the overall significance is also significant as shown by its corresponding p-values (F=4.400; P-value (F) =0.004). To further confirm the importance of the secondary education variable in the specification, a bootstrap estimate of the variable coefficient (point estimate 0.569) is

carried out. Based on 1000 replications, with simulated normal errors, the coefficient remains significant at 5% (p-value= 42 / 1000 = 0.042). However, bearing in mind the small sample size and the number of variables used to estimate the social return, some caution is called for in the interpretation of the results especially with the respect to variables of primary and tertiary education. Despite the constraints on the data and analysis in this section, the conclusions are at best consistent with the findings of the previous studies.

5. Conclusion

For the social rate of return to the different levels of education in Nigeria, this study finds an association between education and a measure of social benefit used in this study (GDP per capita) to be greater at lower levels of education than at higher levels. Only the secondary and vocational educations appear to be significantly associated with the GDP per capita. It is found that the social returns on investment in secondary education in Nigeria are higher than the returns on investment in higher education. The estimated social rates of return in this study highlight two significant policy implications: First, the utmost importance of investment in secondary and vocational education for economic development. Second, the fact that the secondary and vocational education yield higher social rate of return than tertiary education, Part of the cost of tertiary education should be shared with the beneficiaries. In other words, higher education gives more private returns than social returns, thus, suggesting that government spending on education should be biased towards basic and vocational education. Similar findings are well documented in the related literature (see for example Blundell, Dearden, Meghir, & Sianesi, 1999; Voon, 2001; Vedder, 2004; Oreopoulos & Salvanes, 2011; Dickson & Harmon, 2011; Oreopoulos & Petronijevic, 2013; Cygan-Rehm & Maeder, 2013).

References

Annabi, N., Harvey, S., & Lan, Y. (2011). Public expenditures on education, human capital and growth in Canada: An OLG model analysis. Journal of Policy Modeling, 33(6), 852-865.

Aromolaran, A. B. (2004). Wage returns to schooling in Nigeria. African Development review, 16(3), 433-455.

Asafu-Adjaye, P. (2013). Private returns on education in Ghana: Estimating the effects of education on employability in Ghana. *African Sociological Review, 16*(1), 121-139.

Berry, C. R., & Glaeser, E. L. (2005). The divergence of human capital levels across cities. *Papers in Regional Science*, *84*(3), 407-444.

Blundell, R., Dearden, L., Meghir, C., & Sianesi, B. (1999). Human capital investment: the returns from education and training to the individual, the firm and the economy. *Fiscal Studies, 20*(1), 1-23.

Boarini, R., & Strauss, H. (2010). What is the private return to tertiary education? New evidence from 21 OECD countries. *OECD Journal of Economic Studies, 2010*(1).

Combes, P. P., Mayer, T., & Thisse, J. F. (2008). *Economic geography: The integration of regions and nations*. Princeton University Press: Princeton.

Cygan-Rehm, K., & Maeder, M. (2013). The effect of education on fertility: Evidence from a compulsory schooling reform. *Labour Economics*, *25*, 35-48.

Dickson, M., & Harmon, C. (2011). Economic returns to education: What we know, what we don't know, and where we are going—some brief pointers. *Economics of education review*, *30*(6), 1118-1122.

Dickson, M., & Harmon, C. (2011). Economic returns to education: What we know, what we don't know, and where we are going—some brief pointers. *Economics of education review*, *30*(6), 1118-1122.

Fasih, T. (2008). *Linking education policy to labor market outcomes*. World Bank Publications.

Fleisher, B., Li, H., & Zhao, M. Q. (2010). Human capital, economic growth, and regional inequality in China. *Journal of Development Economics, 92*(2), 215-231.

Harmon, C., Oosterbeek, H., & Walker, I. (2003). The returns to education: Microeconomics. *Journal of economic surveys*, *17*(2), 115-156.

Heckman, J. J., Lochner, L. J., & Todd, P. E. (2003). *Fifty years of Mincer earnings regressions* (No. w9732). National Bureau of Economic Research.

Jajri, I. (2007). Determinants of total factor productivity growth in Malaysia. *Journal of economic Cooperation*, *28*(3), 41-58.

López-Bazo, E., & Motellón, E. (2012). Human capital and regional wage gaps. *Regional Studies*, *46*(10), 1347-1365.

Oreopoulos, P., & Petronijevic, U. (2013). Making college worth it: A review of the returns to higher education. *The Future of Children*, *23*(1), 41-65.

Oreopoulos, P., & Salvanes, K. G. (2011). Priceless: The nonpecuniary benefits of schooling. *The Journal of Economic Perspectives*, 159-184.

Petrakis, P and S. Kotsios, (2008), The Dynamic Evolution of Education Investment, Risk –Return Relationship and Education Structural System Change Evaluation, accepted in 2nd International Conference on Educational Economics

Psacharopoulos, G. (2009). Returns to investment in higher education. A European Survey. *A Contribution to the Higher Education Funding Reform CHEPS-led Consortium for the European Commission. Enschede: Center for Higher Education Policy Studies*.

Psacharopoulos, G., Patrinos, H.A., 2004. Returns to investment in education: A further update. Education Economics 12 (2), 111–134.

Riddell, W. C., & Song, X. (2011). The impact of education on unemployment incidence and re-employment success: Evidence from the US labour market. *Labour Economics*, *18*(4), 453-463.

Romer, P. M. (1989). *Human capital and growth: theory and evidence*: National Bureau of Economic Research.

Schultz, T. P. (2004). Evidence of returns to schooling in Africa from household surveys: Monitoring and restructuring the market for education. *Journal of African Economies*, *13*(suppl 2), ii95-ii148.

Sianesi, B., & Reenen, J. V. (2003). The returns to education: macroeconomics. *Journal of Economic Surveys, 17(2), 157-200.*

Vedder, R. (2004). Private vs. social returns to higher education: Some new cross-sectional evidence. *Journal of Labour Research*, *25*(4), 677-686.

Voon, J. P. (2001). Measuring social returns to higher education investments in Hong Kong: production function approach. *Economics of Education Review*, *20*(5), 503-510.

Yao, S., & Wei, K. (2007). Economic growth in the presence of FDI: the perspective of newly industrialising economies. *Journal of Comparative Economics*, *35*(1), 211-234.