Education and Economic Growth: The Causal Relationship in Sierra Leone

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EDUCATION AND ECONOMIC GROWTH: The Causal Relationship in Sierra Leone

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Abstract

The objective of the paper is to investigate the value-addition that expenditure on education has on economic growth in the Sierra Leone. The vector autoregression methodology is applied to annual data spanning 2000 – 2021, taking the time series properties of variables into consideration. A shock to government investment in education shows a positive response of growth but not immediately, which confirm that investment in education is conducive to long-term growth in Sierra Leone. Given government budget constraint, especially under a highly constrained tax revenue mobilization, efforts in building Public-Private-Partnership (PPP) as a way of facilitating sustainable long-term economic growth is imperative while increased donor support for Government investment in education is important for sustained inclusive growth in Sierra Leone.

1.　Introduction

Education is an essential asset for self-empowerment and most importantly, a form of consumer and capital goods on the basis that it offers utility to consumers. Also, building human resource capital through education is an essential factor in the production of goods and services. In this regard, investment in skills development is considered very critical in paving the way for a country's developmental progress.

Sierra Leone was once perceived as the Athens of West Africa, but it later witnessed a noticeable deterioration in the quality and quantity of human resource capacity needed to boost investment and sustain growth on a national scale (Jackson, 2016a). This was not unconnected to the decade old war, where capital destruction instead of building was the norm. Given the difficulty of the civil unrest the country experienced in the 1990s, there was enough reason for skilled and experienced labour to have sought-out opportunities further abroad (Jackson, 2016b; Zac-Williams, 2002). After the war, financing education was thought by many households as coming with large burden, especially for the poor. About a little above 15 years after the war, a new education regime for Government and Government-assisted schools was adopted in 2018- the Free Quality Education. As growth is a core macroeconomic objective of governments, the question therefore is "what is the effect of education on growth?" The objective of the policy brief is therefore to investigate the causal relationship between education and economic growth in Sierra Leone.

The rest of the policy brief is organized as follows. Section 2 is the Education Sector Dynamics in Sierra Leone; Section 3 provides a theoretical discussion of the education and growth relationship. Section 4 is analysis of empirical results and section 5 is the conclusion.

2.　The Education Sector Profile in Sierra Leone

Sierra Leone is well known for being one of the first countries in the West African sub-region to experience a westernized form of education, with the relics of Fourah Bay College (FBC) established as the first constituent college within the University of Sierra Leone (USL) framework (Byaruhanga, 2008). The USL was later mandated to accommodate specialized institutions like the then Njala University College (now transformed to a university, Njala University), Institute of Public Administration and Management (IPAM – formerly the Civil Service Training College)

and College of Medicine and Allied Health Sciences (COHMAS).

Given the need to expand higher education provision across the country, several institutions of higher education have been established - namely the then Milton Margai Teachers College (now Milton Margai Technical University – MMTU), Freetown Teachers College (now Freetown Polytechnic), Makeni and Portloko Teacher Training Colleges (now part of the Ernest Bai Koroma University of Science and Technology), Bumbuna Teachers College (now subsumed as part of the Eastern Technical University), University of Makeni and many more emerging as independently managed higher education institutions.

With the growing need to expand education provision across the country, there has increasing recognition by state actors to increase the existing educational provision to accommodate privately managed institutions across the education spectrum in Sierra Leone, cutting across kindergarten schools, primary schools, secondary schools, technical and vocational institutes and universities.

More recently, and particularly after the 2018 Presidential and Parliamentary elections, a commitment was made to increase spending on education as enshrined in the Sierra Leone People's Party manifesto (SLPP, 2018). Despite challenges faced on the part of the government to increase its revenue base to honour planned expenditures (e.g., an unproductive real sector and the emerging shock of COVID-19), the priority to continue with the free education project was still made a priority agenda (Ministry of Finance, Nov. 2019).

The higher education sector is now realizing gains from planned increases in government spending, with commitments to expand higher education provision, while at the same time upgrading some institutions to the standard of a university status (SLPP, 2018). In the effort to raise the standard of education across the country, great deal of energy is now diverted towards clamping down on examination malpractices across the education spectrum. This is considered very important in resurrecting the country's nomenclature profile as the "*Athens of West Africa*", which is expected to be achieved through high-quality graduate outputs in the country.

3. Education and Economic Growth Relationship: Theory

As emphasized by Zivengwa et al. (2013), education contributes to economic growth in two ways, which are: (i) it positively affects economic growth by making individual workers more productive and (ii) it indirectly affects economic growth through knowledge creation and

technological innovation using research and development. Thus, theoretically, there is a high degree of mutuality between human resource development and economic growth.

Figure 1 shows how human resource development and economic growth are related. It elucidates the importance of education in terms of its contribution to the economic growth of a nation. The illustration also indicates that an increase in the growth rate in an economy has the potential of improving the employment rate, which also implies that part of the reward from investment can be reinvested to develop future capacity for human up-skilling. The impact of this is likely to result in a reduction in poverty rate, with the potential of empowering human skills towards future investment opportunities.

Figure 1: Relationship between Growth, Employment and Human Capital
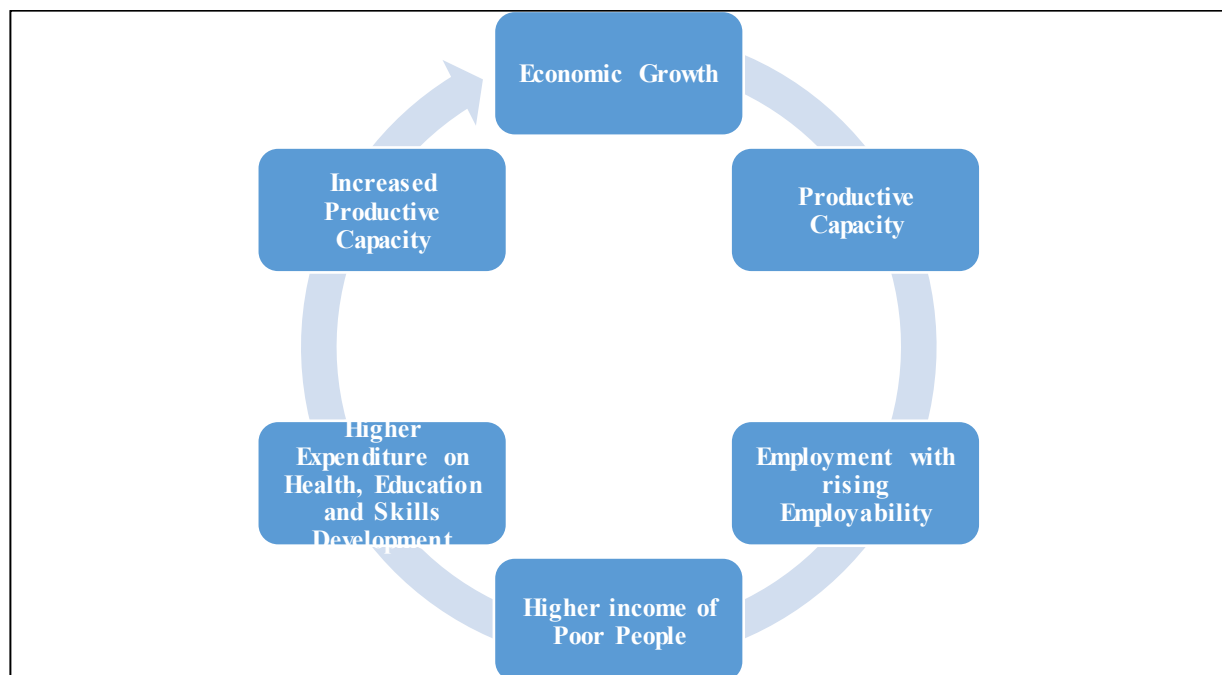
Source: Islam (2004) and Selim (2006)

4. Analysis of Empirical Results

The empirical results are given in the Impulse Response Functions shown in Figure 1 while Appendix 1 gives the associated unit root tests. In Box 1, the methodology is presented succinctly.

Box1: Methodology for the Empirical Analysis

The empirical approach is rooted in the theoretical foundation of the Cobb-Douglas production function, which emphasizes the relationship between production input and output factors. The variables used are Government Investment in Education (LGFCF_INVEST), Real Gross Domestic Product (LRGDP) and Expenditure on Tertiary Education (LTERTIARY_ED). The data is annual, spanning 2000-2021.

Unit root tests are carried out to ascertain the choice of econometric methodology for the empirical estimation. Pairwise Granger Causality Test, which revealed uni-directional relationship between the selected variables is also utilized to establish the direction of causality in the Granger sense-usefulness of past values of a variable in predicting another variable.

With reference to the unit root tests, the Augmented Dicky-Fuller (ADF) is used. The results are shown in Appendix 1. The Unit Root Test result shows that real GDP is stationary after first differencing, while both government investment in education and government expenditure eon tertiary education are both stationary after second differencing. This then asserts a justification for the use of the (unrestricted) VAR model where the last two variables are second differenced and the first variable is differenced.

As emphasised in various empirical undertakings (Jackson & Jabbie, 2020), there seems to be evidence of a weak theoretical base for using VAR methodology, but its relevance has been continually utilized to address a strong level of inter-dependence in the choices of variables, which is also linked with the Cobb-Douglas model as the theoretical foundation for this study. All variables in the VAR model are treated endogenously, with the added benefit of incorporating innovations through features like IRF analytics. More importantly, several post-estimation test outcomes were utilized and each of them passes the null hypothesis. The identified post-estimation tests were Serial Correlation, Heteroskedasticity and Normality.

The response of economic growth to government investment in education is found to be weak initially. However, in the third and fifth years, it is strong. The response of government investment in education to growth is weak throughout the shock period. This could be linked to the strong trade-off faced by governments, whereby much effort was placed on investing in resources to make strong progress on attracting foreign direct investments in the country by focusing more on physical investment, notably road construction, energy sector revamping. There is a strong response of tertiary education to economic growth, while on the other hand, response of tertiary education to investment is weak.

The IRF results imply that investment in education was low for a long time in the past. This overall situation has affected the scope for expanding tertiary education provision, which has also   impacted the quality of graduate output and ultimately led to slow growth experience in the past. This suggests that government needs to make tremendous investments in the education system such that it can ultimately impact directly on tertiary education, with its overall impact resulting in a higher level of growth prospects in Sierra Leone.

Figure 1: Impulse Response Functions
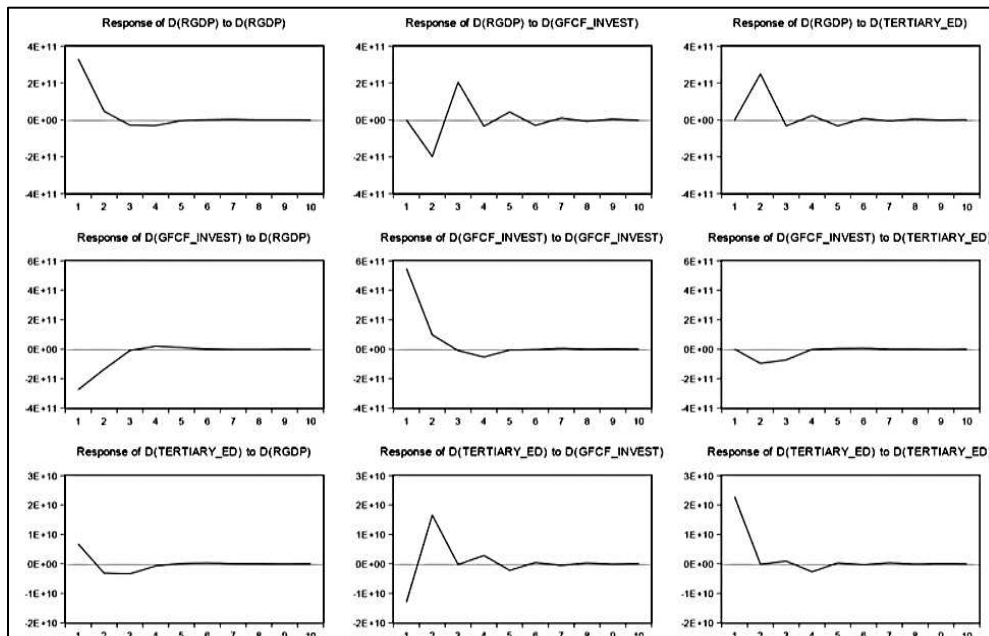
The IRF results also affirm that a high level of resource investment is required to facilitate much-needed growth. Such investments would be needed in areas connected with human resource capacity building to enable the country to compete internationally through a high-quality graduate completion rate. As this is receiving a welcoming boost by policymakers in the education sector, it is a situation that requires strengthening of effort.

While the effort is to ensure resources are poured across the spectrum of the education system, effort must be made to boost quality assurance in monitoring the quality of delivery and where possible, through competitive assessment of higher education institutions across the country, based on courses provided and ranking of institutions by performance. The competition among institutions can be a source for craving for value addition.

5. Conclusion

The empirical outcome from the Granger Causality test shows a unidirectional relationship between the investment and growth. The response of economic growth to government investment in education is found to be weak initially. However, in the third and fifth years, it is strong. The response of government investment in education to growth is weak throughout the shock period. There is a strong response of tertiary education to economic growth, while on the other hand response of tertiary education to investment is weak. The results of the IRF indicate that in Sierra Leone, government investment should be directed towards the tertiary education sector, given its importance for economic growth. This requires a high proportion of resources directed to establishing vocational training institutions across the country to support essential services that do not necessarily require graduate-level qualifications, with the hope of ensuring qualifications earned at every level are sufficient to warrant points for progression to a degree level. The outcome of such an effort towards widening participation in the education system will also serve as a way of reducing the poverty level and as well as a preferred option for embracing the United Nations Sustainable Development Goals (SDG) agenda earmarked for 2030.

The effort of the policymakers in the education sector to promote growth and development with the right level of investment in education is a laudable venture. In order to ensure sustainability and desired results it is useful to facilitate Public-Private-Partnership (PPP) collaboration with those in the private sector to facilitate a high standard of delivery and output for graduate completion rate, while at at the same time creating scope to support work-based learning across the country. In addition, resources utilised should regularly be monitored to ensure the system is efficiently managed.

The study is limited in its use of 21 years of data on account of problems inherent in collecting annual data on GDP and tertiary education. It is hoped that future studies on the issue will make use of longer data set.

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APPENDIX

Appendix 1: Unit Root Outcome

Variable	ADF Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value	Result
LGFCF_INVEST	-6.569930	-4.121990	-3.144920	-2.713751	Stationary (2) Prob: 0.0000
LRGDP	-5.288429	-4.057910	-3.119910	-2.701103	Stationary (1) Prob: 0.0013
LTERTIARY_ED	-7.717829	-4.121990	-3.144920	-2.713751	Stationary (2) Prob: 0.0001

Critical Value: * 1%, ** 5% and *** 10% respectively
Note: Trends and constant options have been used for first and second differencing.