

The Mediating Effect of Fiscal Space on the Relationship between Educational Expenditure and Economic Growth

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Abstract: - Existing literature is inconclusive about the relationship between educational spending and economic growth as it assumes, implicitly, that this relationship is direct. An alternative perspective, that has received less attention in the literature, is that this relationship can be mediated by mediating variables such as fiscal space. The study evaluated whether the fiscal space has a mediating effect on the relationship between economic growth and educational spending. The results have shown that educational spending affects the moderator variable significantly meaning educational expenditure has no direct effect on economic growth but through the moderating factor, fiscal space. This means that there is an indirect effect of educational expenditure on economic growth. In Zimbabwe, educational spending is the major expenditure by the government hence its financing depends on the government's ability to raise revenue to fund it. An increase in fiscal space has the effect of enhancing economic growth.

Key-Words: - Educational spending, Economic growth, fiscal space, mediating effect, government spending.

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1 Introduction

The discussion on the relationship between educational spending and economic growth has been at the center stage since time immemorial, [1], [2], [3]. It was identified that increasing education for labor contributed significantly to economic growth in developed and developing countries, [4]. It was also identified that educated in human resources increased the economic growth rate, [5]. The authors identified that the quality of education may increase over time, [1], [6]. The author concludes that with the contribution to internal growth models based on research and development analysis, he found that the

stable state growth rate is partly due to the level of human capital, [2].

The thrust of these studies centered on the role of educational financing as a springboard of economic growth. This argument has also been supported by scholars who are the proponents of the endogenous growth models, [7], [8]. These argue that limited funding to education is the main reason why growth rates are not at their social optimum. The main argument coming from the endogenous growth proponents is that countries endowed with huge human capital stock and spend more on education, research, and development have the potential to grow

faster. The authors also reflected on the role of education as the most important production factor in increasing human capital as a determinant of economic growth, [9]. Education assists people to gain knowledge which can be altered into higher wages and higher economic growth. Investment in educated and skilled workers brings out efficient use of labor and capital resources for greater productivity. The importance of education is well argued by [10] who argues that education is key for propelling the country's level and rate of economic growth. Education imparts quality and skills of human capital affecting economic processes and sustains the general wellbeing of individuals and the economy at large.

The transmission mechanism from education to economic growth has passed through effect via two main channels, [11]. In the first instance, human capital is increased through education. As human capital increases, the productivity of labor increases also which leads to a higher equilibrium output level. The other way is through increased innovative capacity of the economy and technological know-how which enhances the nation's growth potential. The ultimate effect of government educational expenditure on economic growth is dependent on a number of factors. It has been observed that huge increases in public sector spending may produce negative effects which may create a non-linear relationship between government educational expenditure and economic growth reversing the positive effect of government spending, [12],[13].

The debate on the effect of government educational expenditure on economic growth has been ongoing for a long time [14], [15], [16] and [17]. [14], evaluated the effect of public expenditure on economic growth in Nigeria for the period 1981-2017. The results revealed that recurrent expenditure significantly influenced economic growth. Expansion in government spending was found to granger cause real growth in the economy. [15], studied the connection between educational expenditure and economic growth in Nigeria. The study period spanned 1987-2016. The study established that the effect of educational expenditure on economic growth was dependent on the type of expenditure. Educational expenditure had a positive significant impact on economic growth in the long run. [18], evaluated the role of government expenditure on economic growth using time series data for the period 1980-2014. The study found that there is a

positive long-run relationship between government expenditure and economic growth. [19], evaluated the impact of public educational expenditure on economic growth in Vietnam from 2000 to 2015. The results revealed that public capital expenditure is positively related to GDP growth. [20], analyzed the relationship between higher education spending and economic growth in Kenya. The study revealed that there was cointegration among education expenditure, labor force participation, fixed capital formation, inflation, and economic growth.

[21], investigated the growth effect of public education spending on the level of educational quality. The study found that there was a threshold effect on the relationship between education expenditure and economic performance. The result meant that spending on education had a positive effect on growth. [22], examined the relationship between government expenditure and economic growth in Malaysia using time series data for the period 1970-2014.

While [23] studied the role of public education spending on educational outcomes and economic growth in Nigeria. The study established both the direct and indirect impact of educational spending on educational outcomes and economic growth. The results showed that aggregate education spending promotes economic growth without necessarily first improving education attainment. [24], evaluated the cointegration between public education expenditures and economic growth in a comparative study of developed and developing countries. The study established that the effect of public education spending on economic growth was greater in developing countries as compared to developed countries hence confirming the phenomena of catching up effect.

[25], investigated the causality between public expenditure on education and economic growth. Causal relations were found to run from economic growth to public expenditure on education in the long run. [26], employing the co-integration, error correction mechanism, and granger causality test, studied the impact of public educational expenditure on economic growth. The study established cointegration implying a long run relationship among the variables. The study further established that public capital spending and recurrent expenditure significantly determined economic growth. [16], employing the fully modified ordinary least squares studied the effect of educational expenditure on

economic growth among Asian countries. The study established a cointegration between educational expenditure and economic growth. Short-run causality was found to run from educational expenditure to economic growth using the panel vector error correction method. [27], evaluated the relationship between education and economic growth in Algeria for the period 1974 to 2012. The result established that government spending on education had a positive effect on economic growth. [28], evaluated the causal relationship between government expenditure in education and economic growth in Malaysia during the period 1970-2010. The study established that there was cointegration among economic growth, fixed capital formation, labor force participation, and government expenditure on education.

2 Study Hypothesis

Based on the inconclusiveness in the debate on the relationship between economic growth and educational expenditure, the current study adds another flair to the discourse by investigating the mediating effect of fiscal space on the relationship between educational expenditure and economic growth in Zimbabwe. The current debate assumes that there is a direct relationship running from educational spending to growth without taking cognizance that spending is dependent on the availability of fiscal space. Fiscal space is the availability of budgetary room that allows a government to provide resources for a desired purpose without any prejudice to the sustainability of a government's financial position. The fiscal space hence is a policy target with an impact on economic growth since the government can manipulate it to achieve certain macroeconomic objectives. [29], contend that studies on the effect of educational spending on economic growth show mixed and even non-existent results based on the fiscal policy used. This then reflects the importance of fiscal space which determines the fiscal policy to be adopted.

Specifically, the study investigates the mediating effect of fiscal space on the relationship between educational expenditure and economic growth. The contention is that the relationship between educational expenditure and economic growth is not direct but indirect through the availability of fiscal space. The test ground for the study is the Zimbabwean economy which has been characterized

by retarded economic growth while fiscal support to the social sectors has not been stable. This has been a result of political, economic, and exogenous shocks that have been affecting the country since its attainment of independence in 1980. The Zimbabwean government has been failing to meet the Dakar declaration framework for action since the fiscal space has been shrinking.

The study hypothesis is that: the relationship between educational spending and economic growth is mediated by fiscal space.

3 Methodology

To evaluate whether the fiscal space has a mediating effect on the relationship between economic growth and educational spending, the study adopts the methodology by [30]. The method is further refined in line with the suggestions by [31].

[31], proposed that to test for mediation between variables, a step procedure should be applied. These three steps are:

- i. Regress the mediator variable on the independent variable.
- ii. Regress the dependent variable on the independent variable.
- iii. Regress the dependent variable on both the independent variable and the mediator.

According to [31], the results should reflect the significance of the independent variable in the first two models while the last model is supposed to show the non-significance of the independent variable and the significance of the mediator variable.

[32], have shown that the significant relationship between the independent variable and dependent variable is not necessary and can be misleading. He attributed this to the fact that the total effect of the sum of direct and indirect effects, including the mediator, and that mediation must be only established by the existence of an indirect effect. [32], allude that the important thing is to evaluate the indirect effect.

$$FS_{t-1} = \beta_0 + \beta_1 ES_{t-2} + \beta_2 EC_{t-1} + \beta_4 TR_{t-1} + GF_{t-1} \quad (1)$$

$$GDP_t = \beta_0 + \beta_1 ES_{t-2} + \beta_2 FS_{t-1} + \beta_3 EC_t + \beta_4 TRA_t + GF_t \quad (2)$$

The variables above are defined as: growth in gross domestic product is used to proxy economic growth (GDP) and educational spending (ES) measures total educational expenditure as a percentage of GDP. The study integrates the following control variables: Gross fixed capital formation (GF), trade openness (TR), and economic crisis captured as (EC) which is a dummy account for economic crisis (1) and stability (0) prevailing in the country. The moderating effect of fiscal space is government fiscal space (FS) The Justification of the variables is given in Table 1 (Appendix).

The data utilized in this study was secondary data sourced from the Central Bank of Zimbabwe (RBZ) as well as the Zimbabwe Statistical Agency (Zimstats). The study covered the period 1980-2020. The choice of this period is based on the availability of data. The period under consideration is the period post the attainment of independence in Zimbabwe.

4 Results Presentation and Analysis

The descriptive statistics for the variables used to estimate the economic growth equation are presented in Table 2 (Appendix). The statistics show that there is little variation in all the variables. Educational expenditure has higher variability compared to the other variables. The fiscal space variable has the second highest variable among the variables.

The current study employed time series to ascertain the effect of educational expenditure on economic growth. To ensure that there is no security among the variables, a stationarity test was carried out employing the augmented dickey fuller test. The method was proposed by Dickey and Fuller (1981) and has gained dominance as a unit root test. The test is premised on a parametric approach and developed the Dickey-Fuller (DF) approach. The unit root test results are shown in Table 3 (Appendix).

The unit root test shows that the variables of interest are integrated into order one. The results mean that all the variables are stationary after first differencing. This then reduces the chances of attaining spurious results which arise if the variables are not integrated in the same order.

The results in Table 4 (Appendix) indicate that educational spending which is an independent variable affects the moderator variable significantly in the model. When economic growth and educational spending are included in model 2, the results show that educational spending has no direct

effect on economic growth, but fiscal space has a positive and significant effect on economic growth. The results imply that educational expenditure has no direct effect on economic growth but through the moderating factor, fiscal space. This means that there is an indirect effect of educational expenditure on economic growth. This supports other studies that found that educational expenditure influences growth [17], [14], and [15]. The creation of fiscal space gives the government the opportunity to increase its spending, [33]. In Zimbabwe where educational spending is one of the major expenditures by the government, it depends on the government's ability to raise revenue to fund it. A general reduction in government fiscal space has the effect of decreasing economic growth. Constrained fiscal space has a detrimental effect on growth and hence should be avoided. [34], also argues that fiscal policy has a positive effect on economic growth.

The results reveal that capital formation positively influences economic growth in line with other studies, [35], [36]. Increased stock accumulation increases growth. This calls for improvement in the operating environment to attract foreign and domestic investment.

Trade openness has a negative effect on economic growth. This means that as the country became more open to international trade, economic growth started to slow down. The result makes sense for a country such as Zimbabwe because of its lack of competitiveness. As the country is opened there is a great influx of goods from other countries at the expense of local production. Zimbabwe has been experiencing challenges with Balance of Payment problems because of imports which have been outstripping exports. The result means that the country should improve its competitiveness for it to improve its exports and limit imports. The result differs from [37]. He found that trade openness has positive effects on economic growth both in the short and long run.

Economic stability has a positive effect on economic growth or alternatively economic crisis reduces economic growth. In the period starting 2000 up to 2009 Zimbabwe experienced a significant economic decline (40 percent cumulatively) which was arrested in 2009 when growth rates averaged 10 percent the economy suffered a serious economic crisis which led to a cumulative economic decline of 40 percent. [38], support the argument that for a

country to attain sustained economic it needs stability both political and economic.

Table 5 (Appendix) shows results for testing for serial correlation and homoscedasticity. The results show that the model is free of serial correlation and is also homoscedastic. This implies that the results are free of serial correlation and heteroscedasticity.

5 Conclusion

The discussion on the relationship between educational spending and economic growth has been at the center stage since time immemorial. The thrust of these studies centered on the role of educational financing as a springboard for economic growth. The current study evaluated whether the fiscal space has a mediating effect on the relationship between economic growth and educational spending. The study has shown that educational spending affects the moderator variable significantly in the model. The results imply that educational expenditure has no direct effect on economic growth but through the moderating factor, fiscal space. This means that there is an indirect effect of educational expenditure on economic growth. In Zimbabwe where educational spending is one of the major expenditures by the government, it depends on the government's ability to raise revenue to fund it. A general reduction in government fiscal space has the effect of decreasing economic growth.

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- Leward Jeke and Abel Sanderson: study design, conceptualization, literature search and review, write-up of original draft, data processing and statistical analyses, and research fund acquisition.
- Julius Mukarati and Pierre Le Roux: study design approval, conceptualization, review and approval of literature search protocols, critical review and editing of the manuscript. All authors read and approved the final manuscript.

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Conflict of Interest

The authors declare that they have no competing interests.

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APPENDIX

Table 1. Justification of the variables`

Variable	Coefficient	Justification
Public Education Spending	ES	Financing the education sector enhances both individual manpower and the economy in aggregate. Those nations that possess huge stocks of human capital and spend more on education or research and development will enjoy a faster rate of economic growth. Despite the expected relationship, there might be an endogeneity problem caused by the simultaneous causal relationship between GDP and education spending (Phi 2017)
Economic Crisis	EC	Economic crisis slows down national economic activities, which in turn effectaffects public revenue. The impact on economic growth varies depending on the existing national economic structure, connections to the global economy, pre-crisis macroeconomic and fiscal conditions, and geographical and economic regions.
Trade Openness	TR	Trade openness is expected to enhance economic growth by providing access to goods and services, achieving efficiency in the allocation of resources, and improving total factor productivity through technology diffusion and knowledge dissemination (Barro & Sala-i-Martin, 1997)
Fiscal Space	FS	Fiscal space is the availability of budgetary room that allows a government to provide resources for a desired purpose without any prejudice to the sustainability of a government’s financial position The fiscal space has an impact on economic growth since the government can manipulate it to achieve certain economic objectives.
Gross Fixed Capital Formation	GF	Gross fixed capital formation (GFCF) refers to investment. This is the acquisition of produced assets including the production of such assets by producers for their own use, minus disposals. It is expected to have a positive relationship with economic growth.

Table 2. Descriptive Statistics

Variable	Mean	Minimum	Maximum	Standard Deviation
GF	2.9721	2.0612	3.3179	0.3627
EC	0.2500	0.0000	1.0000	0.4392
TR	0.6840	0.3592	1.2231	0.2103
ES	9.9189	1.2000	44.3300	8.3097
FS	6.3048	-24.5588	2.7999	5.6041

Source: Own Computation

Table 3. Unit Root Test

Variable	Trend and Intercept Level	Trend and Intercept First Difference	Level of Integration
GDP	-0.9727 (0.9351)	-5.3525 (0.0006)	I(1)
FS	-4.5837 (0.1043)	-10.8336 (0.0000)	I(1)
TR	-3.7444 (0.1323)	-6.0596 (0.0001)	I(1)
ES	-2.2489 (0.1605)	-6.3785 (0.0000)	I(1)
EC	-1.4516 (0.8169)	-5.6379 (0.0000)	I(1)
GF	-2.2169 (0.4660)	-6.5796 (0.0000)	I(1)

Table 4. Regression Results

	Model 1 Dependent variable: FS	Model 2 Dependent variable: GDP
Variable	Coefficient	Coefficient
ES	11.199**	0.020
FS	-	0.1113***
EC	-13.99**	-0.2401***
TR	-7.819	-0.1867*
GF	-3.150*	0.14542**
C	4.792**	2.9011***

Table 5. Diagnostic tests

Test	F-statistic	P-Value
Breusch Godfrey serial Correlation LM Test	0.3405	0.3316
Breusch Pagan- Godfrey Test for Homoscedascity	1.3272	0.4345