

PUBLIC SECTOR EDUCATIONAL EXPENDITURE AND ECONOMIC GROWTH NEXUS: AN AUTOREGRESSIVE DISTRIBUTED LAG APPROACH AND STRATEGIC IMPLICATION

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Abstract

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The government has a mandate to provide public goods to the general citizenry. Studies on the effect of government expenditure on economic growth has not yielded concrete results. This paper will try to unravel the role of public educational spending on economic growth in Zimbabwe over the period 1980 to 2018 utilising secondary data. The autoregressive distributed lag (ARDL) model was employed to ascertain the relationship as it has the advantage of handling studies which are short term in nature. Cointegration was established among the independent and dependent variables paving way for results analysis. The study's results indicate that economic growth is impacted in the long term by educational expenditure in a positive and significant way. Additional factors influencing long-term economic growth include fiscal space, educational expenditure, economic crises, and gross fixed capital formation. All variables, except for gross fixed capital formation, also affect economic growth in the short term. The study suggests that the government should enhance funding for education in accordance with the Dakar Framework for Action (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2020).

Keywords: Public Educational Expenditure, Economic Growth, ARDL, Zimbabwe

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1. INTRODUCTION

The discussion on the influence of education on economic growth discourse is not new in the literature. Some of the notable contributors to the issue include Lucas (1988), Romer (1990), and Barro (1991). These scholars noted that educational spending plays a positive role in enhancing economic growth. The argument has also been recently supported by other scholars (Ghose & Das, 2013; Romero-Ávila & Strauch, 2008). Supporters of the endogenous growth model are of the opinion that limited financial support for education is the causative factor for the retarded growth rate in less developed countries. The financing of the education sector improves enhances personnel capacity to work efficiently and which catalyses economic development. Nations possessing significant human capital and heightened investment in education or research and development are likely to achieve accelerated economic growth. Mankiw et al. (1992) researched on the role of education as the key component in enhancing labour productivity, which is a crucial determinant of economic growth. Education facilitates the acquisition of knowledge, which can subsequently lead to higher earnings and improved economic growth. Investment in skilled and qualified workers enhances the efficient utilisation of labour and capital resources, leading to increased productivity.

The World Bank (2013) noted that human labour has the greatest return on national income as compared to natural or physical capital. Public sector financing of education has been identified as vital in achieving knowledge acquisition and augmenting the innovative capabilities of communities and nations. The World Bank (2013) indicates that in contemporary technology-driven economies, workers' competitiveness relies on the efficacy of the educational system. Auty (2001) noted that human capital, encompassing skills and knowledge, constitutes less than two-thirds of income in developing countries. The quality of education systems is an important determinant of inclusive growth since education is a competitive factor (Tandi, 2013; Raheem et al., 2018). It has been observed that huge increases in public sector spending may produce harm the relationship between growth and educational spending rendering the relationship non-linear spoiling the role of government expenditure (Kosempel, 2004; Agénor, 2010).

The transmission mechanism linking education to economic growth occurs via two main channels (Hanushek & Woessmann 2008). First, education enhances labour. As human capital increases, labour productivity also rises, resulting in a higher equilibrium output level (Hanushek & Woessmann, 2008). Second, education contributes to the economy by enhancing innovative capacity and technological expertise, thereby increasing the nation's growth potential. Various factors affect relationship between of government educational expenditure and economic growth (Hanushek & Woessmann, 2008). The direction of causality between government size and economic growth has four possible outcomes (Nyasha & Odhiambo, 2019). All the potential outcomes are supported by empirical studies.

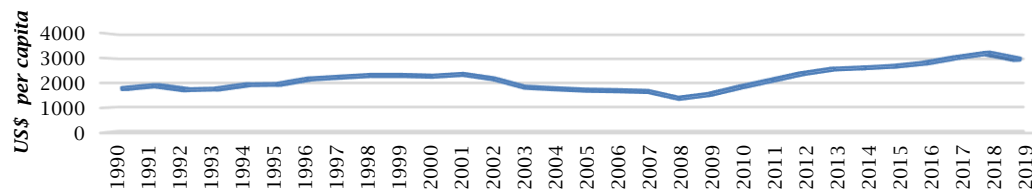
The different outcomes emanate from the location of study, techniques employed, proxies, data applied, and period study undertaken. Nyasha and Odhiambo (2019) established that the direction of causality between government size and economic growth is not clear. Based on the inconclusiveness in the debate, we endeavor to understand how public educational spending relate with economic growth in Zimbabwe. Specifically, the study examines how public educational expenditure impacts economic growth. The research additionally identifies additional factors influencing economic growth. The Zimbabwean economy has experienced sluggish growth, and fiscal support for social sectors has been inconsistent. This results from political, economic, and exogenous shocks affecting the country since its independence in 1980. The Zimbabwean government has not met the Dakar Framework for Action (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2020), which mandates that at least 20% of its budget be allocated to educational expenditure.

Given the importance of educational spending in different economies, this paper examines the effect of governmental expenditure on education using Zimbabwe as a case study for the period 1980–2018. The study uses the autoregressive distributed lag (ARDL) model given the short-term nature of the data sets.

The paper is organised as follows. Section 2 details the background of the study, highlighting the major developments in educational financing in Zimbabwe, as well as discusses literature review. This section is followed by the research methodology in Section 3. The results of the study are presented and discussed in Section 4. Conclusions and recommendations are proposed in the Section 5.

2. LITERATURE REVIEW

The growth trajectory in Zimbabwe has experienced ups and downs since 1980, when the country attained independence. In the first decade of independence, the economy registered modest growth, averaging around 4%. In the second decade of independence, the average growth declined to an average of 3%. The lowest negative growth rate after independence was recorded in 2008, during the peak of the economic crisis in Zimbabwe. The economy then registered an economic decline of 19.1%. Despite a general upward growth trend from 2009 to 2013, economic growth declined thereafter, indicating persistent structural distortions within the economy. The economic crisis intensified in 2020 because of government-imposed lockdown measures related to COVID-19, which hindered economic activities and impeded recovery efforts (Minister of Finance and Economic Development, 2019). Figure 1 shows the trends in the real gross domestic product (GDP) per capita from 1980. The importance of economic growth in the context of this study is that economic declines negatively impact fiscal policy since governments are forced to cut down on social services such as education and health. While a booming economy increases the potential to increase government spending.

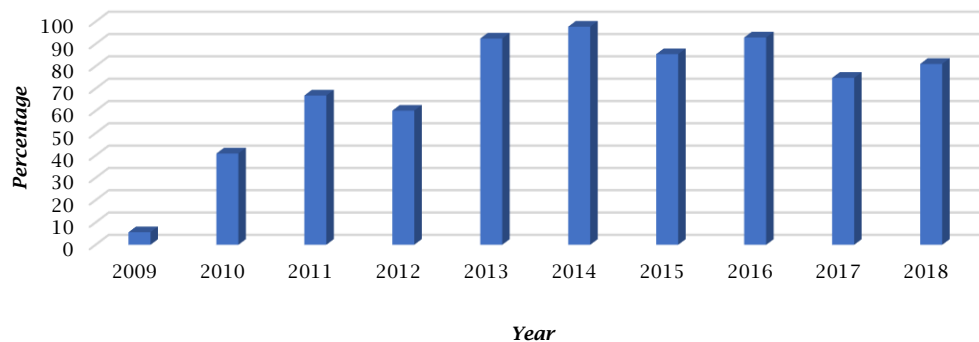
Figure 1. Gross domestic product per capita

Source: World Bank (n.d.).

The Zimbabwean government committed to the Dakar Framework for Action (UNESCO, 2020). This reaffirmed the vision articulated in the World Declaration on Education for All, Jomtien, Thailand (UNESCO, 1990), where there was consensus to adopt a comprehensive strategy aimed at meeting the basic learning needs of every child, youth, and adult within a generation and ensuring its sustainability thereafter. The Zimbabwean government was seriously committed to the financing of education, which led the country to be recognised as one of the countries with the highest literacy rates in the world. This was mostly a result of the government's vision, which saw it vigorously pursue an education-for-all policy after the attainment of independence. It was quite successful in expanding secondary and tertiary education and achieving universal primary education. The successful implementation of educational programs was attained at the backdrop of complementarities among government and

funding partners. With the implementation of the Structural Adjustment Program Project (World Bank, 1991), the government was forced to cut down on social spending and introduced user fees. User fees then led to the increase in dropouts among students.

In 2020 educational spending shrank significantly to US\$397 million compared to an average of US\$832 million over the period 2013–2016. The amount is smaller compared to the country's peers and comparators. The figure is lower than that envisaged Dakar Framework for Action (UNESCO, 2020) target. The 2020 education budget allocation was roughly US\$226 per student, which fell short of regional upper middle-income economies such as Namibia, Botswana and South Africa. The government expenditure per student indicates the adequacy of government spending on education (United Nations International Children's Emergency Fund [UNICEF], 2020).

Figure 2. Primary government expenditures as a proportion of original approved budget (%)

Source: World Bank (n.d.).

Another interesting aspect of the budget process in Zimbabwe is the difference between the budget allocation and the actual allocation. Figure 2 shows that the government has not been honoring its budget allocation since 2009, with disparities between the budget allocation and actual disbursement. This implies that some of the educational programmes that would have been planned are not undertaken as resources are not disbursed. The Auditor-General's report of 2019 (Office of the Auditor-General, 2021) lambasted the government for only having released 1% of the budget which was earmarked for health. The scenario applies to all ministries, including the educational sector. The education sector is affected by foreign currency shortages, rising prices of educational materials, severe power outages and intermittent fuel supply. Given the disparities in

resource disbursement and actual allocation, there is a need to understand if government financing of education has an effect on economic growth.

The discussion of the relationship between government educational expenditure and economic growth has persisted for an extended period (Onifade et al., 2020; Ayeni & Omobude, 2018; Mallick et al., 2016; Idrees & Siddiqi, 2013). Numerous studies have used varied methodologies and contexts. An additional noteworthy aspect is the employment of various control variables to mitigate issues related to omitted variable bias. The following sections discuss several studies and outline the methodologies employed.

The autoregressive distributed model has been utilised in various. Wang and Zhang (2024) examine the efficacy of educational investments in improving the growth narrative. The study indicates a strong

correlation between investment in secondary schools and notable economic benefits, analysing six criteria associated with government expenditure on education. Artige and Cavenaile (2023) studied the interaction among economic disparity, long-term growth, and investment in public education. The survey reveals that numerous states face a critical decision regarding the prioritisation of growth enhancement versus the reduction of inequality via investments in public education. States with higher public education spending, a larger share of teacher employment, improved relative compensation, and increased intergenerational mobility are more likely to participate in this trade-off. Coman et al. (2023) surveyed the relationship between growth and spending on education in Eastern European countries that transitioned from communism to EU membership. The period from 1990 to 2020 was analysed using the ARDL approach incorporating the structural break technique. The results indicated enduring interdependencies between GDP and educational investment, exhibiting either positive or negative short-term impacts. Ruzima and Veerachamy (2023) studied the influence of public investment in the health and education sectors on human growth in India. The study has shown that financing education and health has both the good and bad aspect on growth outcomes. The outcomes indicate that spending on health and education has minimal short-term impacts on human development in India, exhibiting both positive and negative effects, respectively. Sinha (2023) examined the role of human capital resources in facilitating output growth in India. The results established that improving educational financing leads to an improved growth perspective in India. The study indicates that for a government to enhance economic performance, it should prioritise public investment and expenditure on human capital development.

Onifade et al. (2020) assessed how public financing affects economic development in Nigeria from 1981 to 2017. Using Pesaran's ARDL method, the study established a long-term relationship between public spending indicators and economic growth. The results further showed that recurrent expenditure significantly influenced economic growth. Expansion in government spending was found to Granger-cause real growth in the economy. Ayeni and Omobude (2018) studied the connection between educational financing and economic growth in Nigeria. The study period spanned 1987–2016. The study adopted the ARDL model. The research demonstrated that the impact of educational expenditure on economic growth varies according to the specific type of expenditure involved. Educational expenditure significantly contributes to economic growth over the long term.

The Johansen co-integration method has also gained prominence in similar studies. Oladele et al. (2017) assessed used time series analysis using data spanning from 1980 to 2014. The cointegration technique coupled with vector error correction method was utilised for the study. The research showed that there was a positive relationship between government spending and economic growth. Dao and Nguyen (2020) evaluated the relationship investment in education and growth in Vietnam spanning 2000–2015. The study established that public spending on education enhances economic growth. Wambua and Mugendi

(2019) evaluated the same variable in Kenya. The analysis modelled higher expenditure with GDP, labour force participation, fixed capital formation, and inflation. The study found that economic growth, fixed capital formation, inflation, labour force participation, and education spending were all cointegrated. Expenditure on higher education and labour force participation rate positively shaped GDP in the long run, while fixed capital formation and inflation affected growth negatively.

The threshold model was employed by Trabelsi (2017) who established a threshold effect on the relationship on economic growth and spending on education. The result meant that spending on education had a positive effect on growth. The ordinary least squares (OLS) method was applied by Hasnul (2015) to examine the relationship between government expenditure and economic growth in Malaysia using time series data for the period 1970–2014. An OLS method was used to ascertain the role of educational financing on economic growth and established that spending harm growth. The study did not find any evidence that educational expenditure has an impact on economic growth. While Urhie (2014) studied the role of public education spending on educational outcomes and economic growth in Nigeria. The study used the two-stage least squares estimation method to investigate the relationship. The study established both direct and indirect impact of the relationship. It was found that aggregate education spending promotes economic growth. It was found that this does not improve educational attainment.

Idrees and Siddiqi (2013) evaluated the cointegration between public education expenditures and economic growth in a comparative study of developed and developing countries. The study applied the panel cointegration and the Pedroni's residual-based panel cointegration test to determine cointegration between the two variables. The study established that the effect of public education spending on economic growth was greater in developing countries as compared to developed countries. The result confirmed the phenomenon of the catching-up effect.

A number of authors have also been interested in evaluating the causal relationship between public educational spending and economic growth. Bhattacharyya (2019) investigated 28 states of India. The study established that there was cointegration among the variables. Unidirectional causality was found to run from economic growth in the long run. Using Nigerian data, Inimino et al. (2017), employing co-integration, the error correction mechanism and causal relationship test, studied the role of public educational spending on economic growth. The study established that there a long-term association among the variables. The study further established that the public capital spending and the recurrent expenditure significantly determined economic growth. The Granger causality test established that causality was unidirectional from government expenditure to economic growth.

Mallick et al. (2016) studied link between public spending and economic growth using the fully modified OLS in Asia for the period spanned 1973–2012. The results established that the variables were cointegrated, which means that there is a long run relationship between public spending and economic growth.

In the short term, educational spending leads

to an increase in economic growth. Mekdad et al. (2014) studied the same in Algeria between 1974 and 2012. Using OLS, Johansen co-integration test, and causality test found that educational expenditure enhances economic growth. Hussin et al. (2012) assessed causation in the expenditure-economic growth nexus in Malaysia spanning the time 1970–2010.

Cointegration was found to exist among economic growth, fixed capital formation, labour force participation and government expenditure on education. In the short run, economic growth was found to cause educational expenditure.

Based on the discussion above the study sets the following null and alternative hypothesis:

H_0 : Educational spending has no effect on economic growth.

H_1 : Educational spending has a positive effect on economic growth.

3. MATERIAL AND METHODS

Several methods have been used to assess the expenditure-growth nexus. These methods include OLS, cointegration test, and Granger

causality (Mekdad et al., 2014; Inimino et al., 2017), vector error correction model (Hussin et al., 2012), and two-stage least squares estimation (Urhie, 2014) among others.

The ARDL method advocated by Pesaran et al. (2001) is adopted for the study. The selection of the model is based on its suitability for small samples. The approach is contingent upon the variables being “I(0)” and “I(1)”, or a combination (Shrestha & Bhatta, 2018) and not greater. The ARDL method pertinent in small or finite samples, specifically 30 or more observations (Ghatak & Siddiki, 2001). The approach is applicable even when variables are not stationary at the same level, if they are not stationary at levels above one. The approach addresses the issues of serial correlation and endogeneity when modelled with suitable lags (Pesaran et al., 2001). The ARDL technique assist in assessing the long-run and short-run relations (Pesaran et al., 2001).

The model adopted is inspired by previous works: Hussin et al. (2012), and Ayeni and Omobude (2018). The general model adopted for the study is specified as below:

$$GDPG_t = f(FISCAL_t, EDUC_t, ECON_t, TRADE_t, GFCF_t) \quad (1)$$

Based on Eq. (1), the study specifies the model econometrically in Eq. (2):

$$GDPG_t = \beta_0 + \beta_1 FISCAL_t + \beta_2 EDUC_t + \beta_3 ECON_t + \beta_4 TRADE_t + GFCF_t \quad (2)$$

where, growth in national income is used to proxy economic growth ($GDPG$) and public educational expenditure ($EDUC$) measure total educational expenditure as a percentage of GDP. To avoid misspecification of the model other variables considered are gross fixed capital formation ($GFCF$), trade openness ($TRADE$), government fiscal space ($FISCAL$) and existence of economic crisis or stability

($ECON$) which is a dummy account for economic crisis (1) and stability (0) prevailing in the country. The justification of the variables is given in Table 1.

Since the study evaluates the effect of public educational expenditure on economic growth, the ARDL model capturing the short run and long run dynamics is specified in Eq. (3).

$$\begin{aligned} \Delta GDPG_t = & \beta_0 + \beta_1 GDPG_{t-1} + \beta_2 FISCAL_{t-1} + \beta_3 EDUC_{t-1} + \beta_4 TRADE_{t-1} + \beta_5 ECON_{t-1} + \beta_6 GFCF_{t-1} \\ & + \sum_{t=1}^p \theta_t \Delta GDPG_{t-1} + \sum_{t=1}^p \vartheta_t \Delta FISCAL_{t-1} + \sum_{t=1}^p \mu_t \Delta EDUC_{t-1} + \sum_{t=1}^p \varphi_t \Delta TRADE_{t-1} \\ & + \sum_{t=1}^p \omega_t \Delta ECON_{t-1} + \sum_{t=1}^p \epsilon_t \Delta GFCF_{t-1} \end{aligned} \quad (3)$$

The short run parameters of the model are θ , ϑ , μ , φ , ω , and ϵ , while the long run parameters are β_1 to β_6 . The hypotheses for testing cointegration are:

$$H_0: \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 \quad (4)$$

$$H_1: \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \quad (5)$$

The null hypothesis (H_0) implies there is cointegration while the alternative means there is no cointegration. The test is based on the F-statistic is done through the cointegration bounds test.

The cumulative sum (CUSUM) and CUSUM of squares (CUSUMSQ) test will be utilised to evaluate the stability of the model.

Table 1. Justification of the variables

Variable	Coefficient	Justification
Public education expenditure	<i>EDUC</i>	Public spending encompasses all expenditures spend in delivering or supporting education. Financing of the education sector enhances both individual manpower and the economy in aggregate. Nations that possess substantial stocks of human capital and invest more in education experience accelerated of economic growth (Phi, 2017).
Economic crisis	<i>ECON</i>	Economic crisis reduces rate of activity in an economy reducing fiscal collections. The structure of an economy determines the severity of the harm economic crisis can have on an economy.
Trade openness	<i>TRADE</i>	Trade openness refers to the degree an economy does commerce with the rest of the world. Trade openness has potential to spur growth as countries benefits from increased efficiency and enhanced productivity of resources (Barro & Sala-I-Martin, 1997).
Fiscal space	<i>FISCAL</i>	Fiscal space refers to a government's flexibility in making spending choices and, more broadly, encompasses the overall financial well-being of the government. The fiscal space is policy instrument that can be manipulate the government to achieve its objectives.
Gross fixed capital formation	<i>GFCF</i>	Fixed capital formation is the value of capital assets that are available for use in production at a given moment in time. An increase in the capital stock of a country increases the likelihood of the economy growing.

Note: The secondary data were utilised which were sourced from the Central Bank of Zimbabwe (RBZ) as well as the Zimbabwe Statistical Agency (Zimstats). The study covered the period 1980–2018. The period under consideration is the period post the attainment of independent in Zimbabwe.

4. RESULTS PRESENTATION AND ANALYSIS

The descriptive statistics are presented in Table 2. There is little variation among the variables as depicted by the standard deviation. Educational expenditure (*EDUC*) has higher variability compared to the other variables and is followed by fiscal space (*FISCAL*).

Table 2. Descriptive statistics

Variable	Mean	Minimum	Maximum	Std. dev.
<i>GFCF</i>	2.9721	2.0612	3.3179	0.3627
<i>ECON</i>	0.2500	0.0000	1.0000	0.4392
<i>TRADE</i>	0.6840	0.3592	1.2231	0.2103
<i>EDUC</i>	9.9189	1.2000	44.3300	8.3097
<i>FISCAL</i>	6.3048	-24.5588	2.7999	5.6041

Source: Authors' computation.

The current study employed time series analysis. To avoid spurious regression, stationarity tests were done using the augmented Dickey-Fuller test. The method has gained dominance testing stationarity. The test is premised on a parametric approach. The stationarity test results are presented in Table 3.

Table 3. Stationarity tests

Variable	Trend and intercept level	Trend and intercept – first difference	Level of integration
<i>GDP</i>	-0.9727 (0.9351)	-5.3525 (0.0006)	<i>I</i> (1)
<i>FISCAL</i>	-4.5837 (0.0043)	-10.8336 (0.0000)	<i>I</i> (0)
<i>TRADE</i>	-3.7444 (0.0323)	-6.0596 (0.0001)	<i>I</i> (0)
<i>EDUC</i>	-2.2489 (0.1605)	-6.3785 (0.0000)	<i>I</i> (1)
<i>ECON</i>	-1.4516 (0.8169)	-5.6379 (0.0000)	<i>I</i> (1)
<i>GFCF</i>	-2.2169 (0.4660)	-6.5796 (0.0000)	<i>I</i> (1)

Source: Authors' computation.

Results in Table 3 show that the variables are either *I*(0) or *I*(1). The variables that are *I*(0) are *FISCAL* and *TRADE*, while *GDP*, *EDUC*, *ECON*, and *GFCF* are *I*(1). This paves the way for the use of the ARDL method since all the variables fulfill the requirement of its use as discussed in Section 3.

After the evaluation of the suitability of the variables as candidates for the ARDL method, the succeeding stage is to ascertain the presence of cointegration among the variables. Pesaran et al.'s (2001) bound test for cointegration was used to detect cointegration, and Table 4 presents the results.

Table 4. Bounds tests

Test statistic	Value	Significance	LCB	UCB
F-statistic	8.6141	10%	2.08	3.00
K	5	5%	2.39	3.38
		1%	3.06	4.15

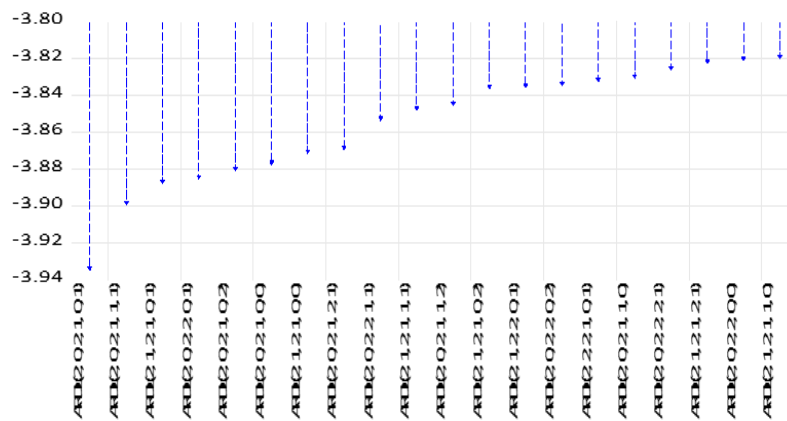
Note: Dependent variable: *GDP*. LCB is lower class boundary, UCB is upper class boundary.

Source: Authors' computation.

The bounds test result that there is cointegration given that the F-statistic is greater than the critical values at all levels. This establishes cointegration among the variables implying a long-run relationship among the variables.

The optimal lag length was assessed using the Akaike information criterion. The model selection was based on 2 lags given the shortness of the data series and the best model is the ARDL (2,0,2,1,0,1). This is shown in Figure 3.

The long-run and error correction results are shown in Table 5.

Figure 3. Model selection criteria: Akaike information criteria (top-20 models)

Source: Authors' computation.

Table 5. Regression results

Variable	Coefficient	p-value
Long-run regression		
GFCF	0.04542	0.046
ECON	-0.2101	0.0000
TRADE	-0.0867	0.0712
EDUC	0.0020	0.0747
FISCAL	0.0113	0.0001
C	2.9011	0.0000
Error correction model		
D(GDP (-1))	0.4571	0.0000
D(EDUC)	-0.0309	0.1977
D(ECON)	0.0931	0.0029
D(TRADE)	-0.3452	0.0000
D(FISCAL)	0.0053	0.0000
ECM (-1)	-0.6669	0.0000
R-squared = 0.8840		
Adjusted R-squared = 0.8633		
Durbin-Watson = 2.1032		

Source: Authors' computation.

Table 5 shows that spending on education positively influence economic growth. This means that as the government increases its expenditure on education, economic growth also increases. This result is important for a country such as Zimbabwe because economic growth can be stimulated by increased educational expenditure. The result confirms with other studies that have been done elsewhere which concluded that education is important for growth (Dao & Nguyen, 2020; Onifade et al., 2020; Ayeni & Omobude, 2018; Oladele et al., 2017; Inimino et al., 2017).

The study has shown that gross fixed capital formation influences economic growth positively. The results imply that in the long-term investments in a nation advance economic growth in the long run. As investment by both domestic and foreigners increase in the economy ultimately economic growth increases. The result implies that for the economy to enjoy higher growth rates, policies should be put in place that promote investment. Previous studies support the results (Ongo & Vukenkeng, 2014; Iftikhar, 2016).

Trade openness harms economic growth. This means that as the country becomes more open economic growth slows 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 on its exports and limit imports. The result differs from Keho (2017), who established that trade openness enhances economic growth.

Economic crisis (captured by dummy) is detrimental to economic growth. As the country suffers an economic crisis, this then slows down economic growth. The result tallies with developments that took place in the country. From 2000-2008, the economy suffered a serious economic crisis which led to a cumulative economic decline of 40%. Post the crisis the economy had a rebound and impressive growth averaging 10% was recorded between 2009 and 2013. The result implies that the country should have counter crisis mechanisms to avoid economic declines. The result has support in literature (Ksantini & Boujelbene, 2014; Kouki et al., 2018).

Fiscal space impacts positively growth, showing that as the government expands its expenditures, economic growth also increases. While a reduction in government fiscal space reduces economic growth. Constrained fiscal space has a detrimental effect on growth hence should be avoided.

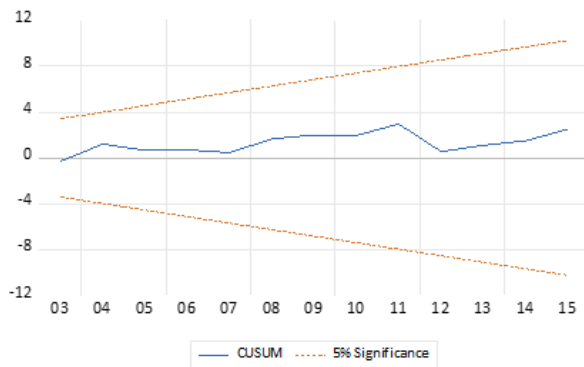
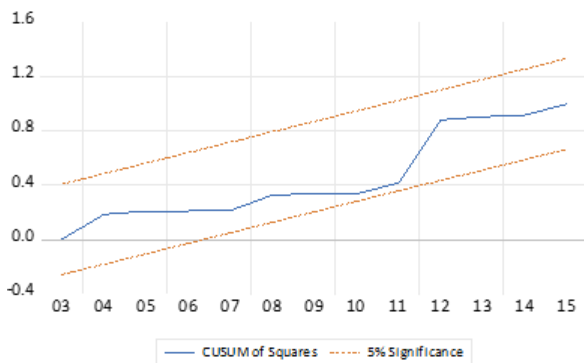
The significant coefficient of the error correction term (ECM-1) has negative sign. According to this coefficient, an output divergence from the long-term equilibrium level in one year is adjusted by 67% the next year. The study does establish that in the short-term educational expenditure does not affect economic growth since its coefficient is statistically insignificant. The short run results established that fiscal space, trade openness and fiscal trade are the determinants of economic growth.

Table 6. Diagnostic tests

Test	F-statistic	p-value
Breusch-Godfrey serial correlation lagrange multiplier (LM) test	0.2703	0.1244
Breusch-Pagan-Godfrey test for homoscedasticity	1.0861	0.4149

Source: Authors' computation.

Table 6 shows results for testing for serial correlation and homoscedasticity. The model is free of serial correlation and is also homoscedastic according to the results. This implies that the results can be interpreted without hesitation. CUSUM and CUSUMSQ are presented in Figure 4.

Figure 4a. Stability test: CUSUM**Figure 4b. Stability test: CUSUMSQ**

Source: Authors' computation.

The results show that the model is stable. This is evidenced by the plots of CUSUM and CUSUMSQ lying within the 5% significance level. This implies that the model is stable and efficient.

The study sought to investigate the connection between educational expenditure and economic growth using the ARDL method. The results revealed that educational expenditure and economic growth has a direct positive relationship. This result implies that states should fund education as a pro-growth strategy and has two important effects. It enhances economic growth and improves the human capacity of the country. The role of fiscal space and gross fixed capital formation was also established, implying that to improve the growth imperative of the country, governments should take a deliberate effort to increase the quantum of these variables. The study has also established that economic instability or crisis hurts economic growth; hence,

governments should strive for economic and political stability as a pro-growth strategy.

5. CONCLUSION

Evaluating the role of public educational expenditure in relation to economic growth in Zimbabwe was the objective of this study. Specifically, the research aimed to establish whether public educational expenditure significantly impacts economic growth, utilizing the ARDL methodology. The findings revealed long run relationship among the variables of economic growth, fiscal space, trade openness, educational expenditure, the economic situation, and gross fixed capital formation. Notably, the coefficient on the lagged error correction term was statistically significant and exhibited the appropriate sign, providing evidence of a stable long-run relationship among the variables. The results establish that educational expenditure enhances growth in the long run exclusively. Additionally, the determinants of economic growth in the long run include fiscal space, educational expenditure, the prevailing economic crisis, and gross fixed capital formation. All variables, apart from educational expenditure, also exert an influence on economic growth within the short term. The policy implications of this study suggest that the government should enhance its allocation to education in accordance with the Maputo Declaration (Southern Africa Development Community [SADC], 2022), as this is conducive to long-term economic growth. The stability test implies that the long-run and short-run estimates are stable and efficient hence giving credence to the result. The results of the study imply that governments should increase educational spending since it enhances economic growth in the country. The current study is important as it articulate factors that both harm and enhance economic growth and imperative for future development. The limitation of the study is that it concentrated on public educational spending. There is need to also include the private sector financing (though difficult to access) which is also significant. Combining the effects of public sector and private sector financing would give a holistic view of educational financing on economic growth.

In future, studies should concentrate on total social spending and how it is impacting different countries. This is quite important as the COVID-19 pandemic exposed the different countries weakness in social sectors of education, health and other supportive mechanisms.

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