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Budgetary Allocation and Access to Education in South Africa

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Abstract

Since the early 1990s, South Africa has undertaken significant reforms to transform its educational system through increased budgetary allocations to enhance access to quality education. While it is well established that adequate budgetary support can improve educational access, detailed empirical studies specifically examining the effect of these allocations on educational access in South Africa are limited. This study aims to analyse the impact of budgetary allocations on education access within the country, drawing on the Keynesian proposition that government spending is crucial for promoting economic prosperity and financing educational investments. Utilising the fully modified least squares (FMOLS) method, the study finds that budgetary allocations and domestic investment have a positive and substantial impact on increasing access to education in South Africa. Conversely, per capita income was found to have a significant inverse relationship with education access in the country. Based on these findings, it is recommended that the government continue prioritising educational access, given its direct impact on human development. Additionally, enforcing compulsory schooling laws is essential to address the issue of the rising number of out-of-school children. By doing so, every citizen will have the opportunity to contribute to the country's sustainable growth and development.

Keywords: *Budgetary Allocation; Access to Education; Fully Modified Ordinary Least Squares; South Africa*

Introduction

Education is a pivotal component in a nation's efforts to develop its human capital, innovate through research, and address the human resource demands of its economy. The 1998 UNESCO World Conference on Education in Paris highlighted the critical importance of access to education for sustainable domestic development.

In the global arena, numerous governments have prioritised the development of human resources through education, with South Africa being no exception (Tamang, 2011; Anyanwu & Erhijakpor, 2007). Post-apartheid South Africa has been committed to ensuring fundamental rights to education, promoting equity, redress, and improving the quality of education. Historically, educational institutions, especially public universities in South Africa, faced significant challenges such as inadequate infrastructure and a lack of educational resources due to

insufficient budgetary support (Mokgwathi et al., 2023; Agunyai & Ojakorotu, 2022; Amnesty International, 2020; Mouton et al., 2013).

However, in recent years, education has consistently received the largest allocation within the national budget. Funding for education has seen substantial increases, rising from R31,1 billion in 1995 to R59,6 billion in 2002. Between 2016 and 2017, the allocation soared to R197 billion, reflecting the government's reinforced commitment to enhancing educational access and quality (Department of Higher Education & Training, 2024; UNICEF, 2019; National Treasury, 2016; Statistics South Africa, 2015). This financial commitment indicates South Africa's dedication to nurturing its educational sector to foster national development and human capital growth.

Since 1994, South Africa has undertaken significant reforms in its educational system to increase access to education. This includes not only enhancing enrolment rates but also improving the quality of education provided (Chirambi & Ndofirepi, 2023; Mzangwa, 2019; Department of Education, 2001). The 1996 Constitution of South Africa mandated compulsory education for grades 1 through 9, or from ages 6 to 15. However, despite the establishment of numerous commissions and committees' post-apartheid aimed at reforming education, many recommended reforms have not been implemented. The lack of political will, coupled with student protests and financial constraints, has hindered these efforts (Sharma, 2016; Ojewumi & Oladimeji, 2016; Carsamer & Ekyem, 2015; Dastidar et al., 2015; Borkum, 2012; Moyi, 2012; Tamang, 2011; Anyanwu & Erhijakpor, 2007; Stasavage, 2005; Kaur & Misra, 2003).

Budgetary allocations for education have been a significant point of debate. The University Grant Commission of Bangladesh (UGC, 2006) observes that most public educational institutions in underdeveloped nations lack the resources required for high-quality instruction. Furthermore, Khatun (2003) observed that financial pressures have forced some schools to cut spending on essential items such as books, journals, laboratory equipment, research, and maintenance. Consequently, inadequate budgetary provisions have been identified as a primary barrier to accessing educational, teaching, learning, and research facilities in academic institutions across many countries (Mabula et al., 2023; Moyo & McKenna, 2021; Shange, 2018).

Budgetary allocation involves precise planning of income and expenditure, distributing financial resources across different economic sectors while considering their overall impact on national development (Felix, 2013). Globally, the education sector faces challenges of limited financial resources, making the design of school funding policies crucial in ensuring that budgetary allocations are effectively utilised (Carsamer & Ekyem, 2015; Borkum, 2012; Moyi, 2012). Equal access to education is vital for enabling equitable participation in society and realising individual potential, according to the Organisation for Economic Co-operation and Development (OECD, 2012).

Post-1994, South Africa's education policy was shaped by a commitment to the fundamental rights to education, equity, redress, and improving quality (Mzangwa, 2019). Before the COVID-19 pandemic, global education spending was increasing by 2.6 per cent annually between 2009 and 2019, particularly in low- and middle-income countries (Education Finance Watch, 2021, 2022; UNICEF, 2022). However, the pandemic significantly impacted public finances, complicating the continuation of these funding increases (UNICEF, 2022).

Research indicates that adequate budgetary allocation is crucial for improving access to education (Carsamer & Ekyem, 2015; Dastidar et al., 2015; Ojewumi & Oladimeji, 2016; Sharma, 2016). It is reported that an average of R4,930 is spent per learner in South Africa. However, this expenditure has not corresponded with expected educational outcomes (Van Der Berg & Hofmeyr, 2018), suggesting a mismatch between the resources allocated and the results achieved. Despite decades of educational reform, South Africa continues to struggle with providing consistent access to quality education(Dastidaret al., 2015; Sharma, 2016).

Resource disparities persist, with some rural schools equipped with advanced resources and teaching methods while others suffer from poor infrastructure and inadequate educational materials (Chiramba & Ndofirepi, 2023; Mokgwathi et al., 2023; Mouton et al., 2013). Common issues include the absence of teachers and outdated textbooks. Furthermore, the high costs and insufficient infrastructure severely limit internet use in classrooms across many of South Africa's provinces, despite increasing internet access in public schools (Mokgwathi et al., 2023; Mouton et al., 2013).

South Africa has, nevertheless, made significant strides towards ensuring the right to education, rapidly developing an effective, accessible, and high-quality educational system for children and

adolescents (Van Der Berg & Hofmeyr, 2018; UNICEF South Africa, 2017). This progress is evident in the substantial allocation of government expenditures to education. In 2021, approximately 19 per cent of government spending was dedicated to education, constituting 6 per cent of the nation's gross national income (WDI, 2023). This investment reflects the critical role that education plays in influencing the magnitude and pace of economic growth across all countries.

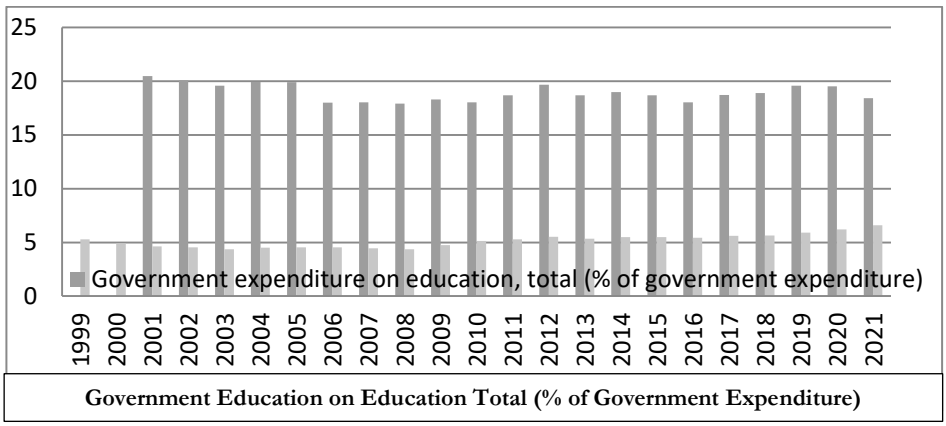


Figure 1: South Africa's Budgetary Allocations to Education

Educational access is a cornerstone of development efforts. South Africa, with its diverse population of approximately 60 million people, offers a range of cultural, linguistic, and religious backgrounds. The country's education system comprises around 30,000 schools, with 26,000 of these being public institutions accommodating 12.7 million students (World Bank, 2023; Department of Basic Education, 2015). Despite this extensive network, the quality of educational opportunities in South Africa often depends on the socioeconomic divide; a child's future too often hinges on the circumstances of their birth (Chiramba & Ndofirepi, 2023; Mouton et al., 2013). Persistent poverty and inequality deny many children the basic education they desperately need (Mabula et al., 2023; Moyo & McKenna, 2021; Shange, 2018). Education systems must therefore be designed not only for the present but also for preparing students for future roles that do not yet exist, ensuring they can adapt to and drive forward upcoming phases of development. This can only be achieved if educational policies align with a national strategic

vision that prioritises well-trained teachers, adequate funding, and a commitment to ongoing personal development within a fair market economy.

Despite numerous studies on South Africa's education sector (Moses, 2021; Mouton et al., 2013; Murambiwe & Hall, 2012; Spaul & Taylor, 2012; Motala & Dieltiens, 2010; Motala et al., 2007) and budget allocations (Sambo, 2022; UNICEF South Africa, 2022; Mestry, 2014), there remains a gap in research concerning the adequacy of these allocations, particularly in education, which is critical for nurturing human capital for the country's immediate and sustainable future. Therefore, this study aims to enhance understanding by examining the impact of budgetary allocations on access to education in South Africa.

The study is structured as follows: Section 2 presents the literature review, Section 3 describes the methodology, Section 4 discusses the results, and Section 5 concludes the study.

Literature Review

The development of human capital is a critical concern for governments worldwide, as it is a pivotal resource for alleviating poverty and driving development across various regions. Widely regarded as a key to economic progress, human capital represents the collective skills, knowledge, and abilities of a population. Formal education is traditionally seen as a pathway to enhance human capital by equipping people with skills that improve employability and job prospects. Educational attainment not only broadens access to jobs but also enhances social mobility and the quality of employment, offering better working conditions and higher wages (ILO, 2015).

Since the 1980s, with the advent of modern public management, budgetary allocation has gained prominence, particularly in emerging economies (Hood, 1995). In South Africa, post-apartheid educational policies made education compulsory for children from grades 1 to 9, or from ages 6 to 15, as mandated by the South African Constitution of 1996.

Research has extensively explored the nexus between government expenditure and public sector efficiency, probing whether increased spending translates into enhanced performance and how various other factors might influence public service outcomes. While financial

resources are undeniably important, they are not the sole contributors to public sector efficiency. Other critical elements include regulatory frameworks, market structure, organisation, and management, which also play significant roles in determining the effectiveness of public services (Boyne, 2003; Rainey & Steinbauer, 1999).

The question of whether the government should make active investments to raise educational attainment levels is crucial because education increases the chances of employment. The literature offers numerous justifications for government involvement in the delivery and financing of education. First, there has been sizable theoretical and empirical research on the role of human capital in understanding the disparity in growth rates across different nations worldwide. According to the literature, education is a key factor in explaining productivity inequalities (Mukherji, 2013). Both intrinsic and pragmatic values are thought to exist in education (Sen, 1999). Individuals who receive education as a private good directly benefit from it, and this has an impact on their potential future income. An educated workforce boosts the economy's overall productivity and human capital pool. If the amount of education is related to the income and wealth of the parents, there may be generational inequality (Banerjee & Newman, 1993). This trait also supports government involvement in the financing and delivery of education from an equity standpoint.

The literature on the impact of educational spending spans a broad spectrum, offering varied insights into its effects on educational and economic outcomes globally. Gupta et al. (1999), utilising ordinary least squares (OLS) and two-stage least squares (2SLS) on data from 50 developing and transitional countries, established a significant positive impact of educational spending on secondary school enrolment rates. Similarly, Fedderke et al. (2006) employed a vector error correction model (VECM) to analyse the period from 1976 to 2002, demonstrating that increased government expenditure fosters higher employment and economic growth in South Africa. Grimaccia and Lima (2013) analysed data from 27 European Union countries, finding that a decade of higher average educational spending correlates with increased employment rates.

Research by Urhie et al. (2014) shows that high-income nations, which invest more in education, correlate this higher governmental educational expenditure with increased national income. Pirim et al. (2014) investigated the long-term effects of United States educational spending on unemployment rates, revealing that public expenditure is an

effective tool for reducing unemployment, corroborated by panel data regression analysis across all 50 states over 25 years. Onuoha et al. (2019) identified a negative elasticity between the unemployment rate and government educational spending across 17 African countries from 2000 to 2017.

Notably, Anand and Ravallion (1993) discovered no substantial link between educational attainment and public investment in education. In contrast, Urhie (2015), utilising UNESCO data, found only a weak correlation between public educational spending and educational attainment across various income groups. Moreover, Sonje et al. (2018) pointed out the inefficiency of public spending per student in altering educational production measures like PISA (Programme for International Student Assessment) scores and the unemployment rate among university graduates.

Although extensive, existing research often overlooks how budgetary allocations impact educational access in South Africa. This study aims to bridge this gap by exploring the influence of budgetary allocations on educational access in South Africa, highlighting its significant implications for human capital development and broader socio-economic growth.

To date, empirical research in South Africa has spanned various aspects of public spending on education, ranging from its impact on outcomes to detailed analyses of expenditure trends. For example, Sharma (2016) delved into various dimensions of government education spending with a focus on expenditure patterns. Kaur and Misra (2003) explored state-level variations in spending and their correlation with educational attainment. The relationship between government expenditure on education and economic growth has also been the subject of studies by Tamang (2011) and Dastidar et al. (2015).

Anyanwu and Erhijakpor (2007) examined the relationship between government expenditure and enrolment rates at primary and secondary levels in SANE countries (South Africa, Algeria, Nigeria, and Egypt). They found a positive correlation between increased government spending and higher enrolment rates, noting that other factors such as national income, democracy, and foreign aid also play crucial roles in helping these countries achieve desired growth in school enrolments.

Stasavage (2005) investigated how governance systems affect public service delivery in Africa, finding that democratically elected governments tend to invest more in primary education than authoritarian

regimes, although spending on higher education appeared unaffected by the type of governance. Borkum (2012) assessed a fee elimination programme in South Africa, noting differing impacts in affluent and impoverished areas. His findings suggested that merely increasing funding might not lead to higher enrolment, particularly in contexts where financial access is not a limiting factor. This highlights the complexity of the effects of educational funding, underscoring the need for this study's focused analysis of the specific impacts of financial allocations on education access within the South African context.

Moyi (2012) utilised data from the 2006 Somali Multiple Indicator Cluster Survey (MICS) to examine educational enrolment and attendance patterns in Somalia and identify significant barriers to enhancing educational access. The study revealed considerable disparities in access to education across different demographics, notably those affected by gender, age, and residency, with nomads, girls, the impoverished, and residents of the Central-South region being the most disadvantaged.

Carsamer and Ekyem (2015) investigated the effects of government educational spending on primary and secondary school enrolments across 20 sub-Saharan African countries over 15 years. Their findings indicated that increased educational spending positively affects enrolment rates at both primary and secondary levels. Conversely, Ojewumi and Oladimeji (2016) analysed the impact of government expenditure on education in Nigeria that capital and recurrent spending had adverse effects on critical sector indicators, such as school enrolment.

The literature concerning budgetary allocation to education predominantly focuses on the relationship between public education spending and economic growth. Results from previous studies vary significantly depending on the countries selected, the periods considered, and the models used, leading to diverse conclusions. While most research underscores a positive correlation between financial investments in education and economic health, some studies present a contrary view, offering substantial statistical evidence that increased public education investment may hinder economic growth rates. This conflicting evidence highlights the complexity of the relationship between educational funding and broader economic outcomes, necessitating further investigation into the specific impacts and effectiveness of such investments.

Mallick et al. (2016) conducted a study across a panel of 14 Asian nations, investigating the relationship between educational expenditure

and economic growth. They discovered long-run equilibrium relationships between education spending and economic development across these countries, identifying a positive and statistically significant impact of education spending on economic growth. The study emphasises the robustness of the education sectors in these nations, highlighting their crucial role in facilitating economic development and suggesting strategic prioritisation to foster sustainable economic growth.

Ifa and Guetat (2018) explored the effects of public education spending on GDP per capita between 1980 and 2015 in Tunisia and Morocco, utilising the autoregressive distributed lag (ARDL) model to estimate the relationships. Their findings were mixed: while Morocco showed a positive short-term relationship between public education spending and GDP per capita, Tunisia exhibited a negative correlation, suggesting diverse impacts of education spending within similar regional contexts.

Ogundari and Awokuse (2018) utilised the system generalised method of moments (SGMM) in their dynamic model to analyse balanced panel data from 35 sub-Saharan African countries from the 1980s to 2008. They developed two human capital metrics, education and health, to assess their impacts on economic growth. Their results underscore the positive influence of health and education on economic growth, with health having a more pronounced effect. While the impact of government expenditure on education was positive, it was statistically insignificant, indicating that, while beneficial, education spending alone may not be a decisive factor in economic growth in these nations.

The relationship between education spending and economic growth has been explored across various global contexts, revealing positive and negative correlations. In the European Union, eight member states have demonstrated a positive correlation between education spending and economic growth, supporting the general trend that increased investment in education can spur economic development (Dudzeviit, Imelyt & Liuvaitien, 2017). Radi and Paleka (2020) focused on Croatia, finding one-way, short-run causal correlations between the country's GDP and higher education spending. This suggests that, in the short term, increases in spending on higher education can influence economic output.

In Nigeria, Iheanacho and Nwaogwugwu (2021) examined the impact of various forms of education spending on economic growth from 1985 to 2019. They found that both the ratio of total capital education

spending to total spending and recurrent education spending to total spending positively associate with economic growth. However, they noted that, in the long run, economic growth is primarily influenced by the ratio of recurrent educational expenses to overall expenses, highlighting the importance of sustained investment in education.

Kiran (2014) studied 11 Latin American countries between 1970 and 2009 and discovered a co-integrating relationship between educational spending and economic growth, even in structural breaks. This suggests a stable, long-term relationship between education investment and economic outcomes in these countries.

Conversely, Kouton (2018) investigated the impact of education spending on economic growth in Côte d'Ivoire from 1970 to 2015. The study revealed a long-term, significant negative impact of government spending on education on economic growth, indicating that increased education spending does not always correlate with economic improvement. In the short term, the impact of government education spending on economic growth was minimal, and the findings suggested a one-way causal relationship between education spending and economic growth.

These varied findings across different countries and periods demonstrate the complex dynamics between education spending and economic growth, emphasising the need for tailored, locally informed strategies when planning education budgets.

Research by Karaçor et al. (2017) on a panel of 19 OECD nations from 1998 to 2012 found no significant impact of education spending on GDP. Similarly, Coman, Lupu, & Nuta (2022) examined the effect of public education spending on economic growth in Central and Eastern Europe from 1990 to 2020. Using the ARDL model with structural breaks, they discovered long-term inter-conditioning relationships between education spending and GDP in some Eastern European countries, with short-term effects varying from positive to negative. However, in some cases, there was no consistent relationship between economic growth and education spending.

The role of budgetary allocation in government spending has been extensively analysed about sectors like economic growth (Fahimi et al., 2018), individual well-being (Currie, 2009), economic development (Suri et al., 2011), and poverty reduction (Okorie, 2016). Public spending on human capital development through education, particularly in developing countries, has garnered considerable attention from researchers and

development partners, though findings remain mixed. This discrepancy could stem from varying outcomes for government spending on education, differences in econometric techniques, or the choice of explanatory variables.

A significant gap in the literature exists despite numerous studies on the education sector in South Africa (Moses, 2021; Mouton et al., 2013; Murambiwe & Hall, 2012; Spaul & Taylor, 2012; Motala & Dieltiens, 2010; Motala et al., 2007) and on budgetary allocation (Sambo, 2022; UNICEF South Africa, 2022; Mestry, 2014). Studies directly examining the relationship between budgetary allocation and access to education are notably lacking. This study aims to fill this gap by investigating the impact of budgetary allocation on access to education in South Africa, thereby contributing new insights into the connections between financial policy and educational outcomes.

Methodology

In line with Keynesian economics, government expenditure is a crucial tool for policymakers aiming to foster economic prosperity (Dandan, 2011). This school of thought advocates that enhancing aggregate demand will consequently boost investment. In this context, education is viewed as a viable economic investment that not only enhances individuals' quality of life and health but also boosts productivity in both market and non-market activities. It improves individuals' access to paid employment and often facilitates broader social and political participation (Hill & King, 1991). The participation rate in education increases as individuals attain higher qualifications, leading to higher income (Onoja et al., 2020).

Furthermore, public expenditure on education is expected to increase concurrently with growth in the labour force, leading to greater budgetary allocations. This increase in government spending on education is paired with capital accumulation achieved through savings, borrowing, and technological advancements (Samuelson, 1954). Additionally, the traditional normative theory of public finance outlines three primary functions of fiscal policy: the allocation, distribution, and stabilisation of resources (Musgrave & Musgrave, 1984).

Data concerning budgetary allocation (proxied by government expenditure on education), access to education (proxied by school enrolment), GDP per capita, fiscal dependency ratio, fiscal concentration

ratio, domestic investment (proxied by gross fixed capital formation), and labour force participation rate covering the period from 1990 to 2022 were sourced from the World Development Indicator database. The foundational model for this study, following the methodologies of Anyanwu and Erhijakpor (2007) and Onoja et al. (2020), specifies the relationship between budgetary allocation and access to education in South Africa, as illustrated in Equation 1.

$$ACE = f(BAL, PCI, EMP, DOI, LFP) \ldots. (1)$$

The linear function of Equation 1 is given in Equation 2 as follows:

$$lnACE_t = \beta_0 + \beta_1 lnBAL_t + \beta_2 lnPCI_t + \beta_3 lnEMP_t + \beta_4 DOI_t + \beta_5 LFP_T + \mu_t, \quad (2)$$

where ACE represents access to education (primary and secondary school enrolment), BAL budgetary allocation (government expenditure on education); PCI represents GDP per capita income, EMP employment opportunity, DOI domestic investment (gross fixed capital formation), and LFP labour force is participation rate. Furthermore, $\beta_0$represents the intercept while $\beta_1 \ldots \beta_5$ represent the coefficients of the explanatory variables. The model a priori expectations are expressed as follows: $\beta_1 > 0, \beta_2 > 0, \beta_3 > 0, \beta_4 > 0$ and$\beta_5 > 0$. This implies that budgetary allocation, per capita income, employment opportunity, domestic investment, and labour force participation are expected to have a positive impact on access to education in South Africa.

Analysis and Interpretation of the Result

The preliminary test of the unit root was carried out on all the variables used in the study using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) techniques. The results are presented in Table 1,

Table 1 : Unit Root Test

Variables	Augmented Dickey-Fuller (ADF) Test			Phillip-Perron (PP) Test		
	Level	First Difference	Status	Level	First Difference	Status
ln(ACE)	-2,20	-4,75*	I(1)	-2,20	-4,72*	I(1)
ln(BAL)	-1,56	-4,60*	I(1)	-1,79	-4,57*	I(1)
ln(PCI)	-1,13	-3,91*	I(1)	-1,22	-3,66**	I(1)
ln(EMP)	0,11	-5,63*	I(1)	0,62	-5,64*	I(1)
ln(DOI)	-1,24	-3,69*	I(1)	-1,09	-3,69*	I(1)
ln(LFP)	-1,25	-6,49*	I(1)	-1,11	-6,52*	I(1)
Critical Value	Level	First Difference		Level	First Difference	
1%	-3,66	-3,67		-3,66	-3,67	
5%	-2,92	-2,96		-2,96	-2,96	
10%	-2,62	-2,62		-2,62	-2,62	

***Source*:** *Authors' Computation*

Note: * = 1%, ** = 5%, and *** = 10% significant level. For the ADF test, the automatic maximum lag length based on SIC is applied, while for the PP test, the automatic maximum lag length based on the Newey-West bandwidth is applied.

Table 1 indicates that all the variables utilised in this study become stationary after their first difference, confirming they are strictly *I(1)* series, which means they are integrated into order one.
Moreover, the long-term relationship among the variables was examined using the Johansen cointegration test. The null hypothesis, which posits no cointegration among the variables (*lnACE*, *lnBAL*, *lnPCI*, *lnEMP*, *lnDOI* and *lnLFP*), was rejected. Table 2 reveals the presence of at least two cointegrating equations among the variables. This finding establishes a long-run relationship among the variables used in the model.

Table 2: Johansen Cointegration Test

Series: ln(ACE) ln(BAL) ln(PCI) ln(EMP) ln(LFP)				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesised No. of CE(s)	Engen-Value	Trace Statistic	0,05 Critical Value	Probability
None*	0,89	140,09	95,75	0,00
At most 1*	0,62	75,18	69,81	0,00
At most 2*	0,81	80,26	47,82	0,01
At most 3	0,49	46,02	47,86	0,07
At most 4	0,43	25,56	29,80	0,14
At most 5	0,05	1,65	3,84	0,19
The trace test indicates at least three cointegrating equations at the 0.05 level				

Source: *Authors' Computation*

The maximum lag length for this study was determined using various selection criteria: the Akaike Information Criterion (AIC), SIC, and Hannan-Quinn Information Criterion (HQC). While both the AIC and HQC recommended a maximum lag length of three, the SIC suggested a shorter lag length of one. Consequently, the FMOLS analysis of the relationship between budgetary allocation and access to education in South Africa was conducted using a maximum lag of three to accommodate the more conservative estimate from the AIC and HQC.

Table 3: Lag Length Selection Criteria

Endogenous variables: ln(ACE) ln(BAL) ln(PCI) ln(EMP) ln(LFP)						
Sample: 1990 2021						
Lag	LogL	LR	FPE	AIC	SC	HQ
0	263,29	NA	7,93	-17,74	-17,46	-17,66
1	372,36	165,48	5,44	-22,78	-20,80*	-22,16
2	420,92	53,59*	3,26	-23,65	-19,97	-22,50
3	482,23	42,28	1,77*	-25,39*	-20,02	-23,71*
* Indicates lag the order selected by the criterion						
LR: sequential modified LR test statistic (each test at the 5per cent level) FPE: Final prediction error						
AIC: Akaike information criterion						
SC: Schwarz information criterion						
HQ: Hannan-Quinn information criterion						

***Source*:** *Authors' Computation*

The coefficient for budgetary allocation (*lnBAL*) in South Africa demonstrates a positive and statistically significant relationship with access to education, with a t-value of 5.34 and a p-value less than 0.05. This finding indicates that a unit increase in budgetary allocation results in approximately a 0.2 per cent improvement in access to education. This outcome supports prior research (Idrees et al., 2021; Onoja et al., 2020; Oseni et al., 2020; OECD, 2017; Senadza & Hodey, 2015) that asserts a strong positive effect of government spending on educational accessibility. Similar results have been noted in previous South African studies (Mestry, 2014; Matala et al., 2007).

Conversely, the GDP per capita shows a negative and significant effect on access to education, with a coefficient indicating that a0,2 per cent increase in per capita income leads to a 0,3 per cent decrease in educational access ($t = -5,64;\ p < 0,05$). This counterintuitive result, reflecting a potential indicator of class-induced inequality, aligns with findings from Ihugba et al. (2022) regarding Nigeria but contrasts with

studies by Gumus & Kayhan (2012) and Odhiambo (2020), who observed a positive relationship between per capita income and educational enrolment.

Furthermore, domestic investment positively influences access to education, with a t-value of 4.22 and a p-value less than 0.05. Each unit increase in domestic investment leads to about a 0.2 per cent increase in educational access, emphasising the critical role of infrastructure investment, such as new school construction and the maintenance of existing facilities, along with free schooling policies. This observation supports research by Duflo (2001), Handa (2002), Adetula et al. (2017), Barrett et al. (2019), and Majhi & Mallick (2019), highlighting the pivotal role of substantial investment in education infrastructure in promoting school enrolment and improving access to education in South Africa.

The coefficient of determination, or R-squared, for the long-run estimate is approximately 80 percent, suggesting that more than 80 per cent of the total variation in access to education in South Africa is explained by the variations in the explanatory variables used in the model, including budgetary allocation, per capita income, employment opportunities, domestic investment, and labour force participation. This high R-squared value indicates a good fit of the regression equation, implying that only about 20 per cent of the total variation in access to education is due to factors not included in the model. Additionally, the adjusted R-squared value, which accounts for the number of predictors in the model, stands at over 76 per cent, reinforcing that a significant proportion of the variation in access to education is accounted for by the variables considered. These robust results confirm that the regression model is well-fitted and reliable for assessing the effects of budgetary allocation on access to education in South Africa.

Table 4(a): Fully Modified Least Squares Estimates

Dependent Variable: ln(ACE)	Coefficients	Standard Error	t - Statistic	Probability
C	-0,78	1,03	-0,75	0,46
ln(BAL)	0,18	0,03	5,3	0,00
ln(PCI)	-0,33	0,06	-5,64	0,00
ln(EMP)	0,02	0,15	0,11	0,91
ln(DOI)	0,15	0,04	4,22	0,00
ln(LFP)	0,02	0,24	0,08	0,94
R-Squared	0,80			
Adjusted R^2	0,76			

Source**:** *Authors' Computation*

The canonical cointegrating regression (CCR) results, presented in Table 4(b), were estimated to act as a robustness check for the FMOLS estimates shown in Table 4(a). The CCR findings are consistent with those from the FMOLS analysis, further validating the conclusions of the study. This consistency across different estimation methods strengthens the reliability of the research findings.

Table 4(b): Canonical Cointegrating Regression (CCR) Estimates

Dependent Variable: ln(ACE)	Coefficients	Standard Error	t - Statistic	Probability
C	-1,18	1,31	-0,91	0,37
ln(BAL)	0,19	0,04	5,40	0,00
ln(PCI)	-0,35	0,08	-4,54	0,00
ln(EMP)	0,04	0,20	0,17	0,86
ln(DOI)	0,17	0,04	4,25	0,00
ln(LFP)	0,04	0,27	0,13	0,89
R-Squared	0,79			
Adjusted R^2	0,75			

Source: *Authors' Computation*

Conclusion

The study finds that budgetary allocation positively influences access to education in South Africa and confirms that domestic investment also emphasised the critical role of infrastructure investment, such as new school construction and the maintenance of existing facilities, along with free schooling policies, which further enhance access to education. Conversely, per capita income does not appear to support access to education within the country, which further validates the existence of class-induced inequality in South Africa. Consequently, the government is urged to continue prioritising education due to its substantial impact on human capital development. Additionally, enforcing compulsory education laws for children of school-going age is crucial to mitigate the increasing number of out-of-school children. Such measures ensure that every citizen has the opportunity to contribute to the nation's sustainable growth and development. Therefore, the study recommends the maintenance of sustainable budgetary allocation to the educational sector by the budgetary authority, putting in measures to ensure that the budgetary allocation is used to achieve its core objectives, and taking proactive measures to expand the dragnet to reduce the rising phenomenon of an increasing number of out-of-school children and

youths in the country to ameliorate their difficulty of having access to higher education, fewer job opportunities, and lower wages than their peers who finished their schooling.

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