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DOES COST OF LIVING AFFECT THE ENROLMENT OF PRIMARY SCHOOL PUPILS IN NIGERIA?

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Abstract

This study used the bounds testing (ARDL) technique to cointegration to explore the effect of cost of living on primary school enrolment in Nigeria from 1970 to 2019. The model was built to determine the link between these two variables while also taking into account the interactions with control variables such as total education expenditure, remittances, and investment. When primary school enrolment is the dependent variable, the bounds tests show that the variables of interest are bound together in the long run. Primary school enrollment is a basic survival need in Nigeria, hence some interesting observations were made. It was observed that an insignificant relationship exists between inflation which is a proxy for the cost of living on primary school enrolment. The speed of adjustment to equilibrium is 106% within a year when the variables wander away from their equilibrium values. The study recommends that government should increase their enlightenment programme on the benefit of education to reach those children who are least likely to receive an education as a result of lack of interest in schooling, negative attitude towards education by both parents and children.

JEL CODES: J32, A21, E31, C32

1.0 Introduction

Education attainment entails been enrolled in a school. Enrolment can be defined as the process of initiating attendance at a school and entails the total number of students properly registered and/or attending classes at a school (Dzombo, 2015). According to Article 28 of the UN Convention, governments have the responsibility of making primary education compulsory and available for free to all. Education is recognized as crucial not only to human development and to the eradication of poverty but also to enable all people to live in dignity (Wils, 2015). The Education for All (EFA) movement and the Millennium Development Goals (MDGs) have resulted in more attention being paid to issues of participation. Universal primary education is goal number two of both EFA (adopted in 1990 & reaffirmed in Dakar, 2000) and the millennium development goals (MDGs), and was adopted by the UN Member States in 2000 (UNESCO, 2015).

Nigeria government is aware that it cannot achieve the goal of educational development if pupils don't go to school that is why primary education is universal & free (public schools) and compulsory and provided by the government and private in the country. Primary education is considered to develop the individual's intellect, behaviors, attitudes and abilities. Such knowledge and skills, empower the individuals so that they become more productive in society. Nigeria runs a 6-3-3-4 system of education divided into primary, junior secondary, senior secondary and university excluding the pre-primary school years. Primary school years are split into what they call primary one through to primary six. At

the end of primary six, the students sit for the National Common Entrance Examination, the results of which are used to determine placement at secondary school.

Despite the indisputable role of education as a prerequisite for development, according to Nigeria education indicator (2016), the out of school children are within the ten million, Six Hundred and Forty-Eight Thousand, Five Hundred and Forty-six (10,648,546). According to UNICEF (2019), even though primary education is officially free and compulsory, about 10.5 million Nigeria children aged 5-14 years are not in school. Only 61 percent of 6-11 year-olds regularly attend primary school and only 35.6 percent of children aged 36-59 months receive early childhood education. In the north of the country, the picture is even bleaker, with a net attendance rate of 53 percent. Getting out-of-school children back into education poses a massive challenge. Gender, like geography and poverty, is an important factor in the pattern of educational marginalization. States in the northeast and north-west have female primary net attendance rates of 47.7 percent and 47.3 percent, respectively, meaning that more than half of the girls are not in school. The education deprivation in Nigeria is driven by various factors, including economic barriers and socio-cultural norms and practices that discourage attendance informal education, especially for girls.

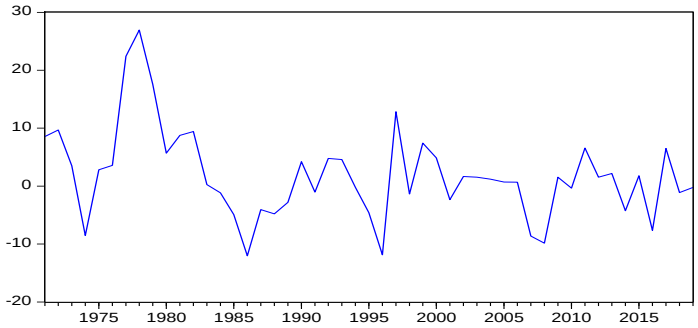
Available evidence has shown that primary school enrolment ratio growth rates are inconsistent. Specifically, the profile in Nigeria between 1971 and 2019 presents a gloomy picture as the percentage change in the growth of primary school enrolment ratio has followed an inconsistent and haphazard pattern see figure 1. The growth rate was 8.6% in 1971 when the enrolment ratio was 40.9 and the total figure 3,515,827 pupils. It reduced to 2.8% percent in 1974 even though the ratio increased to 47.4, the total figure was 4,266,032 pupils. When enrolment was 14,383,487 pupils in 1985, the ratio was 106.3 and later declined to 93.5 after the introduction of SAP in 1986. The ratio continued to slide until 1990 it increased to 4.2% from -2.8% the previous year. The highest growth rate was registered in 1978 with 27% followed by 1977 (22.4%) and 1979 (17.6%). The lowest growth was recorded in 1986, 12% followed by 11.9% in 1996. It is however disheartening to observe that between 1970 and 2019, the growth rates of primary school enrolment ratio is less than 2 percent (1.9%). It should be noted that despite various policy interventions initiated by the government over the years like National Policy on Education (1977), UBEC (1999), free-feeding programme etc. to stimulate schooling at all levels of education, enrolment rates of school-aged children remain abysmally poor.

Cost of living refers to the cost of maintaining a certain standard of living (level of wealth, comfort, material goods and necessities available for a geographical region, typically a country). This is one of the primary indicators of economic prosperity in a country and is subjected to change over time. Cost of living is measured by the Cost of living index or Purchasing power parity (Dili, 2017). The cost of living can be influenced by inflation. The relationship between the cost of living and inflation is how increases in the price of goods and commodities affect a previously established table of the cost of living in a particular area or country under consideration (WiseGeek, 2020).

The cost of feeding & sending four children to school in 1970 was not the same as feeding & sending four children to school in 1980, same as 1990, 2000, 2010, 2005, 2018 and 2019. These varieties in cost are influenced by inflation or Purchasing power parity. Hence, there is an urgent need to investigate if inflation militates against primary school enrolment in Nigeria considering the crucial role it plays in the educational development of a child. Apart from this, there is ample documentary

evidence on the impact of various factors like government expenditure (Ihugba, Ukwunna & Obiukwu, 2019; Anyanwu & Erhijakpor, 2007); economic growth, (Okuneye & Olukayode, 2014) and Factors, (Namukwaya & Kibirige, 2014) on primary school enrolment generally, on the cost of living impact of primary enrolment is still very nascent. Therefore, the main objective of this paper is to examine the impact of the cost of living on primary school enrolment in Nigeria between 1970 and 2019 using the inflation rate as a proxy for the cost of living. The rest of this paper is organized as follows: Section 2 presents the theoretical framework and review of related literature on primary school enrolment. Section 3 provides the methodology adopted for the study as well as the discussion of the empirical result while section 4 devoted to the conclusion and policy implications of the study.

Figure 1: Change in Primary School Enrolment Ratio (1971-2019)



Source: World Bank, 2020

2.0 Theoretical Framework

Maslow's (1943) theory of motivation asserts that humans are motivated by a hierarchy of needs: They act to fulfil basic survival needs before addressing more advanced needs or wants. This hierarchy is shaped like a pyramid, with the lower levels occupied by physical, physiological needs such as food, water and shelter. Self-actualization is at the peak of the pyramid of needs. The order of needs in Maslow's hierarchy, in order from most essential and basic to the most complex, are physiological needs, followed by security needs for safety, then social needs such as love and belonging. The hierarchy progresses on to needs related to esteem and recognition, and, finally, self-actualization. According to Maslow, each preceding need has to be met to reach self-actualization, which is a state in which a holistically healthy person can realize his or her full potential. Maslow first outlined his motivational theory in his 1943 paper, "A Theory of Human Motivation," and a subsequent book, "Motivation and Personality."

The theory of human motivation may be a plausible explanation for the enrolment as people have to make choices on whether to send their children to school or not; amidst other social pressing needs. The study was generally inclined towards an interpretive paradigm; which views people as having a human life, a social life, a human mind, human behaviour as well as a social world and not as mere sources of data (Namukwaya & Kibirige, 2014). Despite strategies and structures to improve access to education in Nigeria, the situation in the country has not reached the stage of education for all more especially, the Northern part of the country.

2.1 Literature Review

Several studies have found a positive correlation between family income and the enrolment of primary school pupils. Cameron and Heckman (2001), established a positive correlation between family

income and schooling attainment. Another possible explanation for a positive correlation between parental income and educational attainment stresses the long-term effects of family income. Carneiro and Heckman (2002) point out that the importance of family income and other family factors has been confirmed in many different environments including those with free tuition and no restrictions on entry. Orazen and King (2008), also emphasized household income determining enrolment.

However, there are controversies on the limitation of household income in estimation and such limitations include measurement errors associated with using current annual income. It has equally been noted in the literature that expenditure is more revealed than household income. To correct this error, certain studies have used household expenditure as a proxy for income (Tansel, 2002). Beyond this, the relationship between household income and schooling is usually argued to be positive (Glick and Sahn, 2000; Orazen and King 2008; Lincove 2009). This is because poor households may be unable to afford the direct and indirect costs of schooling and may equally be constrained in their ability to borrow to cover the costs. Generally, a household would not send its children to school if its cost of living is higher than its income. Indeed, the low level of incomes of parents has been argued as one of the main reasons why many children withdraw from schools and engage in child labour activities (Ray 2000). While some studies argued that child labour parents children from benefitting fully from school via increasing opportunity cost leading to a reduction in child schooling (Lincove 2009); Patrinos and Psacharopulos (1997) as reported by Okuneye & Olukayode (2014) find that in Peru working makes it possible for children to attend school, especially when parents do not have enough funds to keep their children in enrolment.

Several studies have investigated the effectiveness of public spending in education such as enrolment rates and other outcome indicators (Mingat and Tan, 1998; Gupta, Marijn & Erwin, 2002; Baldacci, Maria, & Luiz de Mello, 2004; Ihugba et.al., 2019, among others). The results of these cross-country regressions are mixed. Based on cross-sectional data for developing countries, Baldacci et al. (2004) and Gupta et al. (2002) find that social spending is an important determinant of education outcomes. These studies find that the effect of social spending on education outcomes is stronger in cross-sectional samples than when the time dimension is also added. They also find that education spending has a greater effect on social indicators than health outlays. Ihugba et.al, in their study, government education expenditure and primary school enrolment in Nigeria found an insignificant relationship existing between government education expenditure on primary school enrolment by applying the bounds testing (ARDL) approach to cointegration for the period from 1970 to 2017. McMahon (1999) as reported by Anyanwu & Erhijakpor, (2007) finds a negative and significant relationship between per-pupil expenditures and the primary gross enrolment rate, and a positive and significant impact of total education expenditure as a proportion of GNP. The results of the McMahon study suggest that increasing primary education expenditure while holding per-pupil expenditures constant, has a positive and significant impact on the primary gross enrolment rate. However, this study does not include income per capita as a separate explanatory variable, and it may be the case that these resource variables are proxying for income per capita.

3.0 Methodology and Analysis of Data

The method of study deals with the fundamental principles and techniques that guild the ensuing empirical analysis. We agree with the view of Udida, Udofia and Ozurumba (2008) that the importance

of methodology is underscored by the fact that it is a necessary condition or sine qua non for validating the results of studies such as the present one.

3.1 Scope of study

This study uses annual data for the period 1970-2019 collected from World Bank Databank. Primary school enrolment is the explained variable. Inflation, education expenditure remittances and gross domestic investment, are included in the model to present a robust interpretation and justification for the cost of living. These variables according to the literature have direct impacts on enrolment rates in primary education. The Data description, definition and sources are given

Table 1: Data to be used

Variables	Description	Expected sign	Sources
Primary school enrolment ratio (PSER)	The ratio of children of the official primary school age who are enrolled in primary school to the total population of the official primary school age.	-	https://data.worldbank.org
Gross domestic investment (GDI)	It refers to spending on land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; the construction of roads, railways, private residential dwellings, and commercial and industrial buildings. It is a proxy for investment.	Positive	https://data.worldbank.org
Inflation (INF)	Inflation, as mentioned, is the rate a price rises, and essentially how much the dollar is worth at a given moment with regards to purchasing. The idea behind inflation being a force for good in the economy is that a manageable enough rate can spur economic growth without devaluing the currency so much that it becomes nearly worthless.	Negative	https://data.worldbank.org
Total education expenditure (TEDEXP)	General government expenditure on education (current, capital, and transfers). It includes expenditure funded by transfers from international sources to government. General government usually refers to local, regional and central governments.	Positive	https://data.worldbank.org
Remittance (REMIT)	Transfers received from non-residents of a country	Positive	https://data.worldbank.org

3.2 Method of Data Analysis

Specifically, the autoregressive distributed lag (ARDL) estimation technique put forward in Pesaran and Shin (1999) and Pesaran, Shin, and Smith (1996, 2001) also known as the bounds testing cointegration technique is employed in this study to determine the long-run relationship between primary school enrolment, inflation, education expenditure, remittances and gross domestic investment. The choice of this technique became vital and most appropriate because it has three advantages in comparison with other previous and traditional cointegration methods. The first one is that the ARDL does not need that all the variables under study must be integrated of the same order and it can be applied when the underlying variables are integrated of order one, order zero or fractionally integrated. The second advantage is that the ARDL test is relatively more efficient in the case of small and finite sample data sizes. The last and third advantage is that by applying the ARDL technique we obtain unbiased estimates of the long-run model (Harris and Sollis, 2003). However, as noted by Quattara (2004) as reported by Ihugba et.al., (2019), the presence of 1(2) variables renders the computed F-statistics of the bounds test invalid since, they are based on the assumption that the variables are either I(0) or I(1) and in some cases, mutually cointegrated.

3.3 Model Specification

Following Ang and McKibbin (2007), the ARDL version of the vector error correction model (VECM) can be specified as:

$$\Delta LNPSER_t = \beta_0 + \beta_1 LNPSER_{1t-1} + \beta_2 INF_{2t-1} + \beta_3 LNGDI_{3t-1} + \beta_4 LNREMIT_{4t-1} + \beta_5 LNTEDEXP_{5t-1} + \sum_{j=0}^{p} \delta_j \Delta LNPSER_{1t-j} + \sum_{1=0}^{q} \varphi_1 \Delta INF_{2t-1} + \sum_{m=0}^{q} \delta_m \Delta LNGDI_{3t-m} + \sum_{n=0}^{q} \eta_n \Delta LNREMIT_{4t-n} + \sum_{a=0}^{q} \mu_a \Delta LNREDEXP_{5t-a} + \varepsilon_t \quad (1)$$

Where:

LNPSER= Primary school enrolment ratio,

INF=Inflation rate,

LNGDI=Gross domestic investment,

LNREMIT=Remittance,

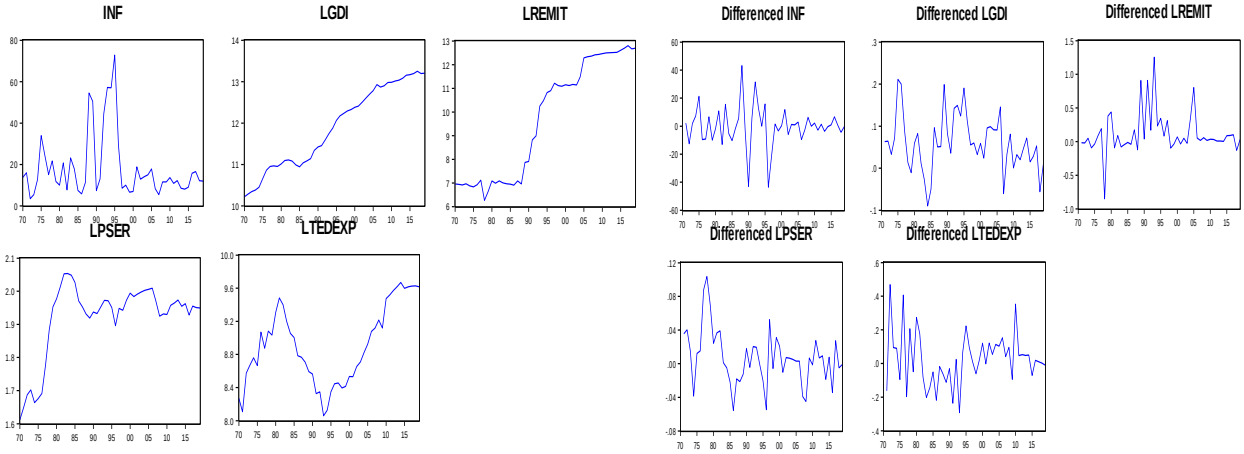
TEDEXP=Total education expenditure, and ε is the error term. Using the ARDL approach we regress the dependent variable being primary school enrolment on the dependent variables.

3.4 Empirical Result and Analysis

3.4.1 Series Trend Analysis

Times series data often exhibit increasing or decreasing trends, with fluctuations. As such, trend analysis is necessary before unit root testing, to establish whether the series has a unit root or not. The results of the graphical display in Figure 2A indicate that the series exhibit a random walk with drift and trend except for inflation rate. Figure 2B show that the series reflects a trend with a pattern of large fluctuations, meaning that the series are non-stationary.

Figure 2: Trend Analysis



A: The Series In Their Raw (Undifferentiated) Form
Source: Researcher's Computation Using Eviews 9

B: Results Of The Series Trend Test After First Difference
Source: Researcher's Computation Using Eviews 9

3.4.2 Unit Root Tests

In order to validate the choice of technique for this study, it became imperative to test for the order of cointegration to ensure that there is no $I(2)$ cointegrating equation in the series. Thus a unit root test would provide important information to justify the choice of the ARDL estimation technique for this study.

Following the Dickey & Fuller (1979) method, the series are estimated. The results of the ADF tests at level, constant & trend, none and first difference are summarized in table 2 below.

As indicated by the asterisk, the inflation variable (INF) is stationary when tested at level with a constant and constant and trend. We therefore conclude that series for INF is stationary at level, because data is stationary when the ADF test statistics are less than the test critical values at 5% ($ADF\ test\ statistics < test\ critical\ value\ at\ 5\%$). The corresponding probability value for stationary data is less than $0.05 (P - value < 0.05)$. The corresponding probability value for stationary data is less than $0.05 (P - value < 0.05)$. Following the ADF test, all series except INF are non-stationary at level but stationary at first difference. However, ADF tests are often affected by the choice of the lag length (p) and lose power while estimating a large sample. As such, the ADF tests results are validated by the Phillips–Perron (PP) test.

Table 2: Unit Root Tests Result

Variables	ADF Test Statistic				PP Test Statistic			
	Constant	Constant & Trend	None	First Difference	Constant	Constant & Trend	None	First Difference
LPERR	-2.67	-2.48	1.32	-4.28*	-2.88	-2.24	0.90	-4.21*

INF	-3.43*	-4.02*	-2.11	-7.17*	-3.27*	-3.26	-1.96*	-14.59*
LTEDEXP	-1.10	-1.26	1.17	-7.54*	-1.19	-1.40	1.13	-7.53*
LGDI	-1.22	-1.74	2.63	-4.22*	1.22	-1.35	4.37	-4.17*
LRMIT	-0.75	-2.01	1.29	-3.30*	-0.40	-1.86	2.03	-5.94*

Source: Researcher's calculations from Eviews 9, 2020.

Notes (ADF): Test critical values at 5% (At level: constant = -2.92, Constant and trend = -3.50, none = -1.95 while at First difference = -2.92); P-value= Probability value, * signifies stationarity.

Notes (PP): Test critical values at 5% (At level: constant = -2.92, Constant and trend = -3.50, none = -1.94 while at First difference = -2.92); P-value= Probability value, * signifies stationarity.

The advantage of the PP test over the ADF test is that the test corrects any heteroscedasticity and serial correlation in the errors terms (u_t). Also, PP tests do not require lag selection and are based on a serially correlated regression error term. Similar to the ADF test, the null for PP is also based on the null that the series are non-stationery. The results of the PP test are indicated in Table 2 above. The results indicate that the series are non-stationary at level but stationary at first difference except inflation. Figure 2B show the variables in their differenced form. This result justifies the use of ARDL model for estimation.

3.4.3 Optimal Lag order Check

The issue of finding the appropriate lag length for each of the underlying variables in the ARDL model is very important because we want to have Gaussian error terms (i.e. standard normal error terms that do not suffer from non-normality and non-stability). According to Bahmani-Oskooee and Brooks (2003), selecting the appropriate model of the long run underlying equation, it is necessary to determine the optimum lag length (k) by using proper model order selection criteria such as; the Akaike Information Criterion(AIC), Schwarz Information Criterion (SIC) or Hannan-Quinn Criterion(HQC). The appropriate lag length to be used for each variable is presented in table 3 below:

Table 3: VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	59.97379	NA	0.005930	-2.290574	-2.095658	-2.216915
1	104.8931	78.60885	0.000952	-4.120547	-3.886647	-4.032156
2	110.3973	9.402881*	0.000790*	-4.308219*	-4.035335*	-4.205096*

* indicates lag order selected by the criterion

Source: Researcher's calculations from Eviews 9, 2020.

From the table above, lag 2 has the lowest AIC value which is also smaller than the SIC value at lag 2, hence model (Lag 2) is selected to estimate Equation (1). Cointegration result is presented below.

3.4.4 Cointegration test

To check if the variables are cointegrated in the long run, the applicable hypothesis is that the null hypothesis of no long-run relationship, such as:

H_0: $\lambda_1 = \lambda_2 = \lambda_3 = \lambda_4 = 0$ (no long-run relationship)

H_1: $\lambda_1 \neq \lambda_2 \neq \lambda_3 \neq \lambda_4 \neq 0$ (there exist long-run relationship)

Table 4: The Estimation Results of the Cointegration (Long Run) Equation (Ordinary Least Squares Technique)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.249606	0.167301	-1.491957	0.1442
LPSER(-1)	1.118932	0.148708	7.524329	0.0000
LPSER(-2)	-0.344191	0.127373	-2.702219	0.0103
LREMIT(-1)	-0.019936	0.015877	-1.255635	0.2171
LREMIT(-2)	-0.015779	0.016230	-0.972180	0.3373
LTEDEXP(-1)	0.004767	0.028287	0.168524	0.8671
LTEDEXP(-2)	-0.021897	0.029923	-0.731773	0.4689
INF(-1)	-0.000170	0.000347	-0.490250	0.6269
INF(-2)	0.000235	0.000324	0.723886	0.4737
LGDI(-1)	0.095652	0.084135	1.136888	0.2629
LGDI(-2)	0.003777	0.092875	0.040667	0.9678

R-squared=0.94; Adjusted R-squared=0.92; Prob. (F-statistic) =0.000; DW=2.27

Source: Researcher's calculations from Eviews 9, 2020.

3.4.5 Model Checking

To ensure that there is no serial correlation in the long-run model, the null hypothesis that there is no serial correlation is tested, with a guideline to accept the null hypothesis (H_0) if the probability is greater than five percent. The result reported in table 5 reveals that there is no serial correlation. In the same vein, the normality test is also tested, according to our results, skewness is 0.04 while the kurtosis indicates 2.54. The JB is indicated by 0.44, with a corresponding probability value (0.80) not significant at a 5% critical value. Based on this test, our model is normally distributed. The stability test result as reported in figure 4 & 5 also reveals that the Cusum of squares plots and the recursive coefficients did not cross the 5 percent critical lines, indicating that the model is stable. The diagnostic tests conducted suggests that our model is valid because all probability values for the tests are greater than 5%, meaning that our primary school enrolment long-run equation is valid for economic analysis.

Table 5: Serial Correlation Test

F-statistic	1.872330	Prob. F(2,35)	0.1688
Obs*R-squared	4.639186	Prob. Chi-Square(2)	0.0983

Source: Researcher's calculations from Eviews 9, 2020.

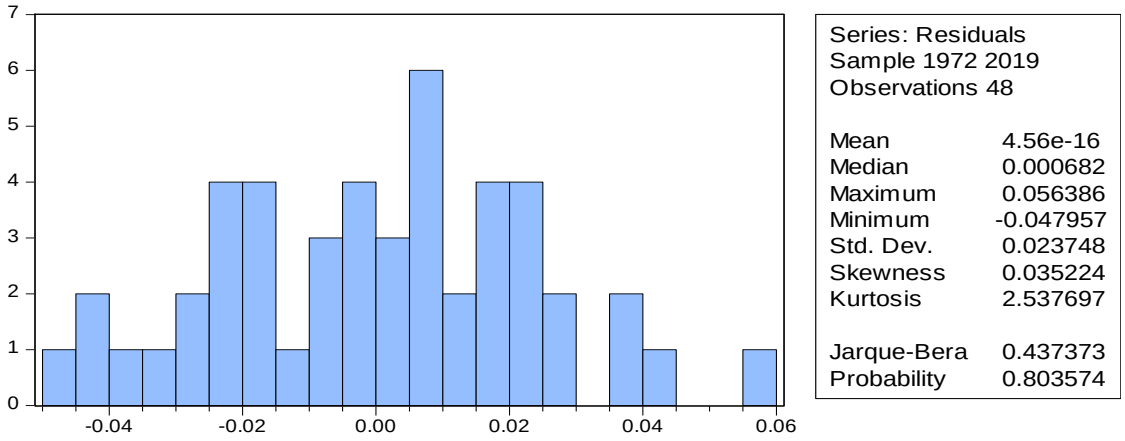


Figure 3: Normality Test

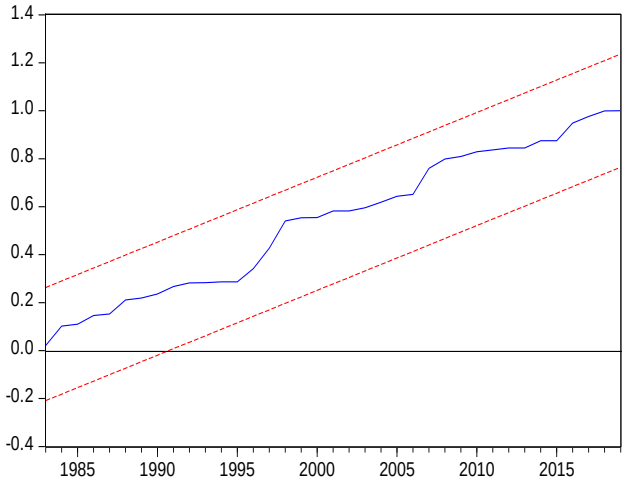


Figure 4: CUSUM of Squares @ 5% Significance

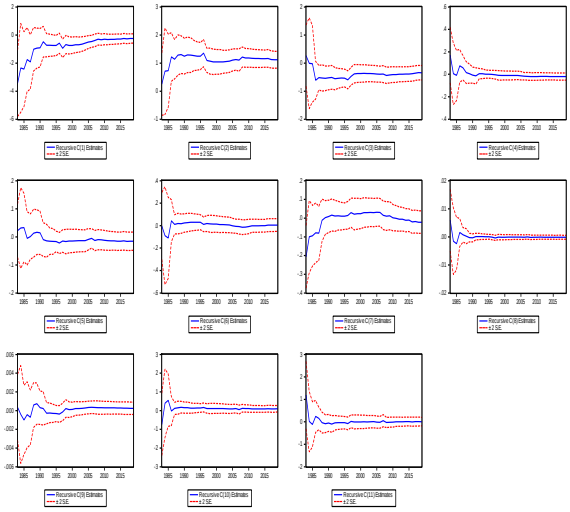


Figure 5: Recursive coefficients @ 5% Significance

Proceeding with the ARDL technique to cointegration analysis as advanced by Pesaran, Shin & Smith (2001), the null hypothesis of the non-existence of a long-run relationship among all stationary series included in Equation (1) is to be tested. The main interest here is to find where the Wald test computed F-statistic of the long-run model using the OLS estimation technique falls. The calculated F-statistics for the "bounds" tests are presented in Table 6, which also include the critical values for the upper and lower bounds provided by Pesaran & Pesaran (2001). The calculated F-statistic is 4.121735 which is greater than both the upper and lower bound critical values at 5% and 10% levels of significance using no intercept and no trend. This implies that the null hypothesis of no co-integration can be rejected and that there is a long-run relationship between the cost of living and primary school enrolment.

Table 6: Bounds Test for Co-integration Analysis

Test Statistic	Value	k
F-statistic	4.121735	5
Critical Value Bounds		
Significance	I0 Bound	I1 Bound

10%	2.26	3.35
5%	2.62	3.79
2.5%	2.96	4.18
1%	3.41	4.68

Source: Researcher's calculations from Eviews 9, 2020.

3.4.6 The error correction model

The model is specified as follows:

$$\sum_{j=0}^{p}\delta_j \Delta LNPSER_{1t-j} + \sum_{1=0}^{q}\varphi_1 \Delta INF_{2t-1} + \sum_{m=0}^{q}\delta_m \Delta LNGDI_{3t-m} + \sum_{n=0}^{q}\eta_n \Delta LNREMIT_{4t-n} + \sum_{a=0}^{q}\mu_a \Delta LNREDEXP_{5t-a} + \varepsilon_t \quad (2)$$

Table 6: Error Correction Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.003825	0.006470	-0.591205	0.5582
D(LPSER(-1))	1.040690	0.283645	3.668984	0.0008
D(LPSER(-2))	-0.111469	0.181846	-0.612984	0.5438
D(LREMIT(-1))	-0.021812	0.014004	-1.557538	0.1283
D(LREMIT(-2))	-0.010126	0.014766	-0.685767	0.4974
D(LTEDEXP(-1))	-0.005053	0.028331	-0.178354	0.8595
D(LTEDEXP(-2))	-0.016988	0.026800	-0.633863	0.5303
D(INF(-1))	-0.000209	0.000296	-0.705594	0.4851
D(INF(-2))	0.000234	0.000308	0.758506	0.4532
D(LGDI(-1))	0.119356	0.083317	1.432548	0.1609
D(LGDI(-2))	0.011742	0.082201	0.142845	0.8872
ECT(-1)	-1.064628	0.329153	-3.234448	0.0027

Source: Researcher's calculations from Eviews 9, 2020.

3.4.7 Model Checking

The result reported in table 6 reveals that there is no serial correlation. In the same vein, the normality test is also tested, according to our results, skewness is -0.21 while the kurtosis indicates 2.89. The JB is indicated by 0.38, with a corresponding probability value (0.83) not significant at a 5% critical value. Based on this test, our model is normally distributed. The stability test result as reported in figure 7 & 8 also reveals that the cusum of squares plots and the recursive coefficients did not cross the 5 percent critical lines, indicating that the model is stable. The diagnostic tests conducted suggests that our model is valid because all probability values for the tests are greater than 5%, meaning that our primary school enrolment short-run equation is valid for economic analysis.

Table 6: Serial Correlation Test of the Dynamic Model

F-statistic	0.112377	Prob. F(2,33)	0.8940
Obs*R-squared	0.317940	Prob. Chi-Square(2)	0.8530

Source: Researcher's calculations from Eviews 9, 2020.

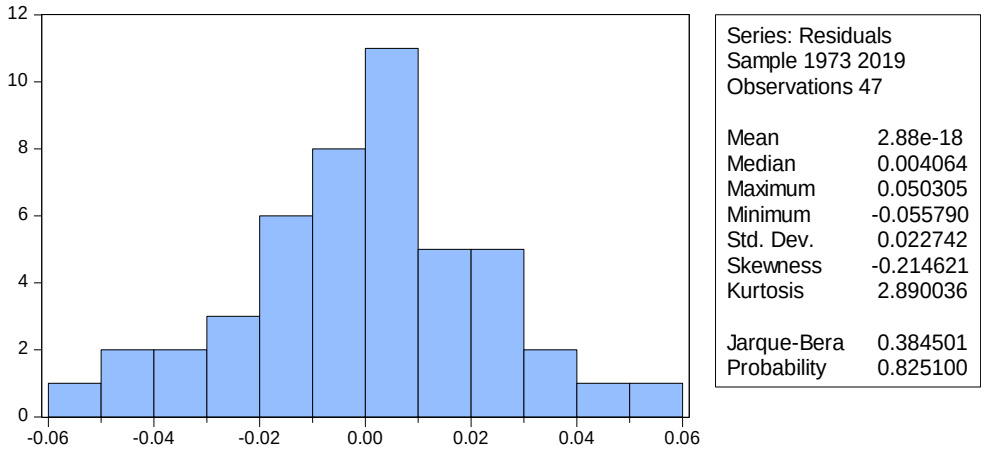


Figure 6: Normality Test

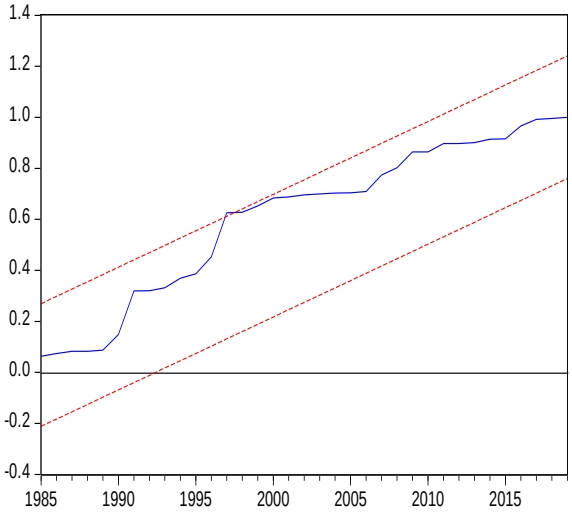


Figure 7: CUSUM of Squares @ 5% Significance

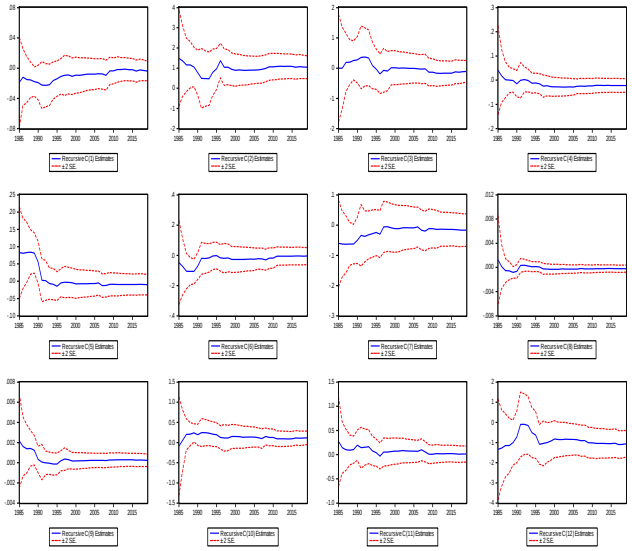


Figure 8: Recursive coefficients @ 5% Significance

4.0 Discussion of Findings

The results of the long-run Equation is presented in table 4. The empirical results indicate that the coefficients of the explanatory variables are not all correctly signed thereby not conforming to the 'Apriori expectations. Besides, the value of the coefficient of determination (R^2) of 0.940120 shows that about 94 percent of the variation in the dependent variable (LPSER) is explained by changes in independent variables between the years 1970 to 2019. This implies that the primary school enrolment ratio is positively related to its first lag and also, statistically significant. The target variable (inflation which is a proxy for the cost of living) is well signed but not significant. A 1 percent increase in inflation rate decreases primary school enrolment in Nigeria by 0.00017%. The findings show that primary school enrolment is a basic survival need in Nigeria, that is, cost of living does not determine

enrolment. In line with Maslow's (1943) theory of motivation, the cost of living (inflation) does not motivate primary school enrolment because primary education is free in Nigeria. The obstacle to participating in primary education might be propelled by of lack of interest in schooling, negative attitude towards education by both parents and children, which is common in the northern part of the country where they practice pastoral culture. There, children get involved in cattle raids, grazing animals and early child marriages.

Other results are equally interesting. For example, total education expenditure (LTEDEXP) is insignificant and negatively related to primary school enrolment in Nigeria, which is not in line with the findings of Baldacci, et.al. (2004) and Ihugba et.al. (2019). However, gross domestic investment is positively related to primary school enrolment although, not significant. Remittance from abroad is negatively related to primary school enrolment which is also, not in line with the findings of Ihugba et.al. (2019).

The result of the estimates of the error correction model presented in Equation 2 is reported in table 6. The estimated error correction model provides information on the short-run relationship among LPSER and INF, LEDEXP, LGDI and LREMT. These variables are reported in their (lagged) difference. The one-lagged error-correction term ECT_{t-1}, which measures the disequilibrium between the actual and equilibrium LPSER, is statistically significant at one per cent level of significance and has the correct sign. According to the estimated coefficient for ECT_{t-1}, ΔLPSER takes about 1.06 yearly (i.e. one divided by the estimated coefficient of ECT_{t-1}) to converge to a long-run steady state. Moreover, the estimated results suggest that the model has a reasonable good fit with robust diagnostic tests for error processes such as the absence of serial correlation, stability and normality.

The result presented in Table 6 also shows that the coefficient of the first lag of inflation (a proxy for the cost of living) is negatively related to primary school enrolment and statistically insignificant at all levels. This implies that holding other variables constant, a percentage change in the lag of inflation in the first year will result in a -0.0002% percentage change in primary school enrolment. This is consistent with our a priori expectation that decreased inflation will lead to increase enrolment of primary school pupils.

4.1 Conclusions and Policy Implications

Though the cost of living is believed to influence parent's decision to send their children to school, more especially, primary school, this study finds it wrong in Nigeria. The findings of the study portray that the free education up to junior secondary school class three has helped in the number of pupils that enrol into a primary school in the country. The school feeding program has also helped. A survey by the News Agency of Nigeria, NAN (2018) concluded that the school feeding program has improved primary school enrolment across the country. They also reported that enrolment of pupils in Oyo state Nigeria increased from 378, 000 in 2014 to 463,863 in 2017.

This study recommends that government should explore other factors that affect enrolment of primary school pupils in Nigeria like lack of interest in schooling, negative attitude towards education by both parents & children and also, increase their enlightenment programme on the benefit of education to reach those children who are least likely to receive an education as a result of like lack of interest in schooling, negative attitude towards education by parents.

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Appendix 1

Year	Remittances (billions)	TEDEXP (billions)	Inflation	GDI (billions)	% Change In PSER	PSER	Total Enrolment
1970	9012502	185714200	13.76	16521226665.00	-	40.9	3515827
1971	8657202	127752200	16	19108482256.00	8.6	44.4	3894539
1972	8279004	376130000	3.46	22153240418.00	9.7	48.7	4391197
1973	9263203	468001300	5.4	23901755384.00	3.5	50.4	4662400
1974	7451719	575574100	12.67	28183928056.00	-8.5	46.1	4115991
1975	6858750	461360600	33.96	45837546167.00	2.8	47.4	4266032
1976	8347500	1178125000	24.3	72663324707.00	3.6	49.1	4889857
1977	13000000	748970000	15.09	89170422763.00	22.4	60.1	6165547
1978	1830000	1208267000	21.71	92047188091.00	27.0	76.3	8100324
1979	4400000	1080053000	11.71	89828567135.00	17.6	89.7	9867961
1980	12100000	2028570000	9.97	102972849780.00	5.7	94.8	10798550
1981	9760000	3038154000	20.81	124517194158.00	8.8	103.1	12117483
1982	12060000	2516300000	7.7	128085520237.00	9.4	112.8	13760030
1983	10080000	1578398000	23.21	120258238741.00	0.3	113.1	14311608
1984	9120000	1130221000	17.82	97766702945.00	-1.1	111.8	14654798
1985	8900000	1007268000	7.44	87136262666.00	-4.9	106.3	14383487
1986	8080000	608941200	5.72	108869836916.00	-12.0	93.5	13025287
1987	12060000	584650600	11.29	122310033318.00	-4.1	89.7	12914870
1988	9080000	508345700	54.51	137747844795.00	-4.8	85.4	12690798
1989	73900000	392461200	50.47	217755033125.00	-2.8	83.0	12721087
1990	80400000	365400600	7.36	263084572174.00	4.2	86.5	13607249
1991	654060000	211962000	13.01	285622645858.00	-1.0	85.6	13776854
1992	968800000	223987300	44.59	396654087317.00	4.8	89.7	14805937
1993	17485650000	114262700	57.17	559302758371.00	4.6	93.8	15870280
1994	29810000000	133731900	57.03	744371503369.00	-0.2	93.6	16190947
1995	65890690000	223774100	72.84	1154517224465.00	-4.6	89.3	15741078
1996	79511779200	278435400	29.27	1496544169808.00	-11.9	78.7	14078473
1997	163222525000	285482600	8.53	1700206826321.00	12.8	88.8	15470195
1998	130656193000	248014300	10	1951611913892.00	-1.4	87.6	15370173
1999	120594880640	258926600	6.62	2102033952117.00	7.4	94.1	17907009
2000	142119352860	342022300	6.93	2409072000428.00	4.9	98.7	19151442
2001	130590883100	340363800	18.87	2546590443712.00	-2.3	96.4	19041223
2002	146247770230	450664900	12.88	3172388639669.00	1.7	98.0	19806082
2003	137486524560	509967100	14.03	3983960516117.00	1.5	99.5	20600796
2004	303409989000	662893800	15	4914876329456.00	1.2	100.7	21395510
2005	1934686572000	840489700	17.86	6055525234019.00	0.7	101.4	22115432
2006	2178319811000	1196690000	8.24	8464221407651.00	0.7	102.1	22861884
2007	2266755726900	1314125000	5.38	7366768619212.00	-8.6	93.3	21513996
2008	2592448200000	1639735000	11.58	7949687979189.00	-9.9	84.1	20008142
2009	2705071559700	1316803000	11.54	9583049887821.00	1.5	85.4	20957642
2010	2932283911900	2970410000	13.72	9591062086578.00	-0.4	85.1	21558461
2011	3145931245100	3305684000	10.84	10329197507471.00	6.6	90.7	23668903
2012	3209426640800	3728857000	12.22	10822927782984.00	1.5	92.1	24822374
2013	3271596520300	4158514000	8.48	12073648918592.00	2.2	94.1	26167545
2014	3302464903500	4669330000	8.06	14244079774117.00	-4.3	90.1	25801197
2015	4052728668000	3956580000	9.01	14743130327392.00	1.8	91.7	25115005
2016	4977420639300	4128320250	15.68	15735104737141.00	-7.6	84.7	25591181
2017	6293484026500	4228186063	16.52	17779886398544.00	6.5	90.2	25668732
2018	4656524559325	4245604078	12.09	15625550309299.00	-1.1	89.2	25544029
2019	4995039473281	4139672598	11.9	15970917943094.00	-0.2	89.0	25479737

Source: As defined in Table 1

Note: PSER can exceed 100% due to the inclusion of over-aged and under-aged students because of early or late school entrance and grade repetition.