Macro-Economic Disequilibrium and Educational Development in Nigeria between 1980-2017

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Abstract:

This study empirically investigates the effects of macroeconomic disequilibrium on educational development in Nigeria. The study employed time series data between 1980 and 2017. Autoregressive Distributed Lag method of estimation was employed. The result revealed that the variables stationarity test were mixed between the first difference I(I) and level I(0). The cointegration result shows that there exist long run relationship between the variables. The result revealed that Balance of payment, Poverty, Debt rate inflation and unemployment exhibited negative relationship with educational development. The estimation result showed that all explanatory variables account for 88% variation of educational development in Nigeria. It is therefore recommended that government should fast track policies that can stabilize inflation and exchange rate in the country. Also, Policies must be formulated to reduce poverty and unemployment.

Introduction:

Developing countries have always been characterized with economic volatility and an uncertain macroeconomic environment. While developed countries have enjoyed stability since the 1980s, macroeconomic instability has been a serious concern in the developing world. From the Latin American debt crisis of 1982, to the Asian financial crisis of 1997, and to the world food price crisis in 2007, developing countries have suffered from serious volatilities in output growth, inflation, exchange rate, interest rates, and other variables of concern.

The magnitude, depth and persistence of macroeconomic volatility are more pronounced in poor and least-developed countries (LDCs) than in developed ones. Macroeconomic instability has thus developed into its own field of research over the last decade, thanks to the recognition that “non-linearities magnify the negative effects of volatility on long-run growth and inequality, especially in poor countries” (Aizenman and Pinto, 2005). For low-income countries, macroeconomic instability is of a major concern because it seriously affects the poor and has negative impact on their long-term growth. These macro-economic disequilibrium has negative effect on all sectors including education sector.

Educational sector is believed to be sensitive to macroeconomic problems resulting from negative internal and external shocks that a country has to face. These shocks include terms of trade shocks, political instability, war, policy uncertainty and other disturbances among others. Uncertainty and instability are generally believed to be serious obstacles to public social spending in developing/transition economies. Abrupt economic downturns, resulting from factors such as fiscal weakness, weak financial systems, falling external competitiveness, a decrease in export volumes, and natural disasters are a reality in many African countries, including Nigeria.
Macro-economic disequilibrium affects educational sectors in many ways. Apart from policy formulation, it affects the major stakeholders in education. Educational institutions were starved of funds, no major repairs in the secondary and elementary schools; and this is mainly as a result of inadequate funding of the educational sector.

Achievement of quality and accessible education in Nigeria is a strong perquisite to nation building and human capital development.

The empirical evidence on the interaction between educational development and macroeconomic shocks is inconclusive. Generally, it is difficult to draw policy conclusions from cross-country data; much however, depends on the country’s specific situation. This is the motivation for this paper. Thus, the main purpose of this research work is to examine the impact of macroeconomic disequilibrium on educational development in Nigeria. To achieve this objective, the paper is divided into five sections: section one discusses introduction, section two is on the review of relevant literatures, section three address model specification while section four presents results and discussion and conclusion and recommendation are made in section five.

**Review of Literature:**

**Empirical Review of Literature:**

There is no substantial literature exploring the relationship between macroeconomic disequilibrium and educational development. However, the few studies available produce conflicting results.

Schady (2002) analyzed the impact of macroeconomic crisis on education in Peru between 1988 and 1992. The author reported that crisis has no effect on attendance rates but noticed a significant decline in the fraction of children who are both employed and attend school. Using cross-country regressions, Flug, Spilimbergo and Wachtenstein (1998) report that macroeconomic shocks have negative effects on enrollment. Behrman, Duryea, and Szekely (2000) suggest that the poor macroeconomic prospects of the 1980’s in Latin America set back the rate of growth of schooling attainment in the region. In Indonesia, Thomas et al. (2004) observed that the country’s deep financial crisis of 1998 seemed to have had little effect on schooling outcomes. This is consistent with the works of Cameron (2000) and Pradhan and Sparrow (2000) which report some impact of the crisis on enrollment, although the effects tend to be small.

Oladoyin, (2011) examines the effect of government educational spending and macroeconomic uncertainty on schooling outcomes in Nigeria using the econometric methods of cointegration and error correction mechanism together with the vector auto regression methodology. The results indicate that schooling outcome cointegrated with all the identified explanatory variables.

The study found that public educational spending impacts positively on schooling outcome while macroeconomic instability impacts negatively. The variance decomposition analysis shows that "own shocks" constitute the predominant source of variation in schooling outcome. The impulse response analysis shows that any unanticipated increase in the macroeconomic uncertainty rate will have a contractionary impact on literacy rate. The policy implication of this study is that government should pay attention to policies that enhance educational attainment through adequate public social investment under stable macroeconomic environment.

Adowaa, (2014) assessed the significance of public expenditure management on primary education outcomes in public schools in two South African provinces (Gauteng and North West). Using cross-sectional data from 175 primary schools and 13 local education offices, the linear OLS regression analysis finds that while misappropriation of education funds (leakages) is not strongly associated with poor education outcomes, delays on the part of the government in disbursing funds to schools are correlated with Grade 5 dropout rates. The study finds no evidence that public expenditure and total resource wealth (including public and private contributions) are significantly associated with education outcomes.

Obi and Obi, (2014) focused on the impact of education expenditure on economic growth as a means of achieving the desired socio-economic change needed in Nigeria. They employed time series data from 1981 to 2012. The Johansen’s co-integration analysis and ordinary least square (OLS) econometric techniques were used to analyze the relationship between gross domestic product (GDP) and recurrent education expenditure and their findings indicate that though a positive relationship subsists between education expenditure and...
economic growth, but a long run relationship does not exist over the period under study.

Anochie and Ude, (2015) examined the effect of government educational spending and macroeconomic framework on schooling outcomes in Nigeria using the econometric methods of co-integration and error correction mechanism together with the vector autoregression methodology. The results indicates that schooling outcomes co-integrated with all the identified explanatory variables. The study found that public education spending impacts positively on schooling outcome while macroeconomic instability impacts negatively. The variance decomposition analysis shows that “own shocks” constitute the predominant source of variation in schooling outcome. The impulse response analysis shows that any unanticipated increase in the macroeconomic uncertainty rate will have a contractionary impact on literacy rate.

Methodology:
Model Specification

The basic specification is stated as follows:

Educational development = f(Inflation rate, Unemployment rate, Balance of payment, poverty rate, Exchange rate, Debt rate and the stochastic variables)

\[
GR_t = \beta_0 + \beta_1 BOP_t + \beta_2 POVR_t + \beta_3 EXCHR_t + \beta_4 DEBTR_t + \beta_5 INFR_t + \beta_6 UMPR_t + \mu_t
\]  

(1)

\[
GR_t = \beta_0 + \beta_1 BOP_t + \beta_2 POVR_t + \beta_3 EXCHR_t + \beta_4 DEBTR_t + \beta_5 INFR_t + \beta_6 UMPR_t + \beta_7 GR_{t-1} + \mu_t
\]  

(2)

Where \(GR_t\) is the Contribution of education to GDP per capita from 1980 to 2017, \(BOP_t\) is the Balance of Payment, \(POVR_t\) is a representative Poverty rate, \(EXCHR_t\) is the Exchange rate, \(DEBTR_t\) is Debt rate, \(INFR_t\) is the inflation rate, \(UMPR_t\) is the unemployment rate and \(\mu_t\) is stochastic or random or error term to accommodate the influence of other determinants of Education development that are not included in the model.

On the a priori, we expect: \(\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7\) to be less than zero

Techniques of Estimation:

This study adopts Autoregressive Distributed Lag (ARDL) regression method to analyze the impact of macroeconomics disequilibrium on educational development in Nigeria. In the process of analyzing the data to test the research hypothesis and draw valid conclusion, the model regresses the dependent variable (Contribution of Education to Economic Growth (Educational Development) on the independent variables (Balance of Payment, Poverty rate, Exchange rate, Debt rate, inflation rate and unemployment rate).

Results and Discussion:
Unit Root Test:

Most time series variables are non-stationary and using non-stationary variables in the model might lead to spurious regressions. This therefore necessitate the stationarity test applying the Augmented Dickey-Fuller (ADF) and Phillip Perron methods which is presented in table 4.1 below

<table>
<thead>
<tr>
<th>Variables</th>
<th>Augmented Dickey-Fuller (ADF) Test</th>
<th>Phillip Perron (PP) Test</th>
<th>Conclusion on the Order of Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Levels</td>
<td>1st Diff.</td>
<td>Levels</td>
</tr>
<tr>
<td>GR</td>
<td>-5.888510 (0.0000)</td>
<td>-8.957490 (0.0000)</td>
<td>-5.897988 (0.0000)</td>
</tr>
<tr>
<td>BOP</td>
<td>-4.17781 (0.0020)</td>
<td>-6.14301 (0.0000)</td>
<td>-4.07733 (0.0026)</td>
</tr>
<tr>
<td>POVR</td>
<td>-3.0001 (0.0422)</td>
<td>-8.5526 (0.0000)</td>
<td>-2.91772 (0.0510)</td>
</tr>
<tr>
<td>EXCHR</td>
<td>-3.3718 (0.0172)</td>
<td>-7.73101 (0.0000)</td>
<td>-3.4012 (0.0161)</td>
</tr>
<tr>
<td>DBTR</td>
<td>-3.0999 (0.0337)</td>
<td>-6.3174 (0.0000)</td>
<td>-2.5961 (0.0107)</td>
</tr>
<tr>
<td>INFR</td>
<td>-3.376864 (0.0185)</td>
<td>-6.05915 (0.0000)</td>
<td>-2.81700 (0.0656)</td>
</tr>
<tr>
<td>UMPR</td>
<td>-2.36201 (0.1591)</td>
<td>-5.94465 (0.0000)</td>
<td>-2.36201 (0.1591)</td>
</tr>
</tbody>
</table>

Source: Author’s Computation, 2018.
The unit root test is carried out with constant and trend specifications for the respective series. The lag-selection was based on the default selection of the Akaike-Information Criterion (AIC). The table contains the ADF and the PP test statistic at levels and first difference of the panel series. The numbers in the brackets represent the probability values of the estimate test statistic of the ADF and PP test.

The unit root test result from the ADF and PP methods shows that the order of integrations of the variables are stationary at levels and first difference at the same time. In particular, the stationarity of the general unit root process for the set of time series data for the variables shows that they are all significant at least at 5 percent level for the first difference of all the variables and thus the null hypothesis of unit root in the data cannot be upheld.

### Long Run Relationship between the Variables:

#### Table 4.2 Johansen Co-integration Test

<table>
<thead>
<tr>
<th>Date: 10/19/18</th>
<th>Time: 15:55</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample (adjusted): 1982 2017</td>
<td></td>
</tr>
<tr>
<td>Included observations: 36 after adjustments</td>
<td></td>
</tr>
<tr>
<td>Trend assumption: Linear deterministic trend</td>
<td></td>
</tr>
<tr>
<td>Series: GR BOP POVR EXCHR DBTR INFR UMPR</td>
<td></td>
</tr>
<tr>
<td>Lags interval (in first differences): 1 to 1</td>
<td></td>
</tr>
<tr>
<td>Unrestricted Cointegration Rank Test (Trace)</td>
<td></td>
</tr>
<tr>
<td>Hypothesized</td>
<td>Trace</td>
</tr>
<tr>
<td>No. of CE(s)</td>
<td>Eigenvalue</td>
</tr>
<tr>
<td>None *</td>
<td>0.805487</td>
</tr>
<tr>
<td>At most 1 *</td>
<td>0.648755</td>
</tr>
<tr>
<td>At most 2*</td>
<td>0.468381</td>
</tr>
<tr>
<td>At most 3*</td>
<td>0.438990</td>
</tr>
<tr>
<td>At most 4*</td>
<td>0.305747</td>
</tr>
<tr>
<td>At most 5</td>
<td>0.100351</td>
</tr>
<tr>
<td>At most 6</td>
<td>0.041983</td>
</tr>
</tbody>
</table>

Trace test indicates 5 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level


As evident in table 4.2, the co-integration tests include the Educational Development (GR), Balance of Payment (BOP), Poverty Rate (POVR), Exchange Rate (EXCHR), Debt Rate (DBTR), Inflation Rate (INFR) and Unemployment Rate (UNPR). The test statistics strongly reject the null hypothesis of co-integration in favour of five co-integration relationships.
Regression Result:

Table 4.3 Regression Output

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.*</th>
</tr>
</thead>
<tbody>
<tr>
<td>GR(-1)</td>
<td>0.670754</td>
<td>0.098353</td>
<td>6.819860</td>
<td>0.0000</td>
</tr>
<tr>
<td>BOP</td>
<td>-0.015255</td>
<td>0.044436</td>
<td>-0.343294</td>
<td>0.7339</td>
</tr>
<tr>
<td>POVR</td>
<td>-0.081732</td>
<td>0.031245</td>
<td>-2.615843</td>
<td>0.0140</td>
</tr>
<tr>
<td>EXCHR</td>
<td>0.018777</td>
<td>0.007938</td>
<td>2.365615</td>
<td>0.0249</td>
</tr>
<tr>
<td>DBTR</td>
<td>-4.90E-10</td>
<td>2.33E-10</td>
<td>-2.101091</td>
<td>0.0444</td>
</tr>
<tr>
<td>INFR</td>
<td>-0.048955</td>
<td>0.019437</td>
<td>-2.518663</td>
<td>0.0176</td>
</tr>
<tr>
<td>UMPR</td>
<td>-0.258964</td>
<td>0.119267</td>
<td>-2.171297</td>
<td>0.0382</td>
</tr>
<tr>
<td>C</td>
<td>11.27071</td>
<td>3.209571</td>
<td>3.511596</td>
<td>0.0015</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.878938</td>
<td></td>
<td></td>
<td>12.75477</td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.849717</td>
<td>S.D. dependent var</td>
<td>5.992036</td>
<td></td>
</tr>
<tr>
<td>S.E. of regression</td>
<td>2.322897</td>
<td>Akaike info criterion</td>
<td>4.712318</td>
<td></td>
</tr>
<tr>
<td>Sum squared resid</td>
<td>156.4797</td>
<td>Schwarz criterion</td>
<td>5.060625</td>
<td></td>
</tr>
<tr>
<td>Log likelihood</td>
<td>-79.17788</td>
<td>Hannan-Quinn criter.</td>
<td>4.835112</td>
<td></td>
</tr>
<tr>
<td>F-statistic</td>
<td>30.07818</td>
<td>Durbin-Watson stat</td>
<td>1.506959</td>
<td></td>
</tr>
<tr>
<td>Prob(F-statistic)</td>
<td>0.000000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: p-values and any subsequent tests do not account for model selection.

From the above result, the constant was directly related to educational development and it was significant but the result does not make any economic meaning.

Past trend of educational growth (GR<sub>c,1</sub>) is an important determinant of current educational development. It shows that 1% increase in the past educational growth will lead to about 67% increase in the current educational development (GR<sub>c</sub>). The result is also significant at 5% level of significance since its probability value is less than 5%.

Balance of Payment disequilibrium (BOP) has an inverse relationship with educational development (GR). The result conforms to a priori expectation. From the result, 1% increase in BOP will lead to 15% decrease in educational development. However, the result is not significant at 5% level of significance. Though BOP disequilibrium has negative impact on educational growth, the result shows that BOP is not an important variable affecting educational development in Nigeria.

Poverty rate which is another macroeconomic variable depicts an indirect relationship with educational development. The result conforms to a priori expectation. It shows that 1% increase in poverty level in the country, will lead to 8.2% decrease in educational development. The result is also significant at 5% level. Hence, it becomes clear that Poverty rate is an important determinant of educational development in Nigeria.

Exchange Rate Disequilibrium shows a positive relationship with Educational development. The result does not conform to a priori expectation. From the result, 1% increase in exchange rate will lead to about 1.8% increase in educational development. The probability value of 0.0249 shows that the result is significant at 5% level. The result is not surprising because any increase in exchange rate will raise the cost of schooling abroad hence, facilitate the educational development of the local nation.

The result from the Debt Rate shows that debt is anti-development to educational sector. An inverse relationship was found between Debt volatility and educational development. From the result, 1% increase in debt rate will lead to about 49% decrease in educational development. The result is significant at 5% level of significance. It is quite cleared that debt rate is an important prediction of educational development in Nigeria.

Price instability is an important determinant of educational development in Nigeria as evident from the result. From the result, 1% increase in Inflation will lead to about 4.8% decrease in educational development. The result also conforms to a priori expectation; hence, price volatility reduced educational development in Nigeria.

Unemployment depicts a negative relationship with educational development and the result is significant at 5% level. From the result, 1% increase in unemployment rate will lead to about 25% fall in educational development in Nigeria. The result also conforms to a priori expectation. It becomes cleared that the higher the number of unemployed youth in Nigeria, the lower the educational development. However, the result is not surprising because the more the people who are academically sound and can’t find jobs, the lesser the interest of people towards education.

The R-square from the result shows that Educational development is explained by about 88% of the explanatory variables and the result is confirmed by the higher adjusted R-square value of about 85%. The F statistics value of 30.07818 and its probability value of 0.0000 shows that overall model is significant at 5% level of significance. The Akaike information criterion and Schwarz criterion values of 4.712318 and 5.060625 respectively depict that model selection is good. The Durbin Watson value of 1.51 shows that there is absence of serial correlation in the model.

**Conclusion:**

This study empirically investigates the effects of macroeconomic disequilibrium on educational development in Nigeria. The study employed time series data between 1980 and 2017 and Autoregressive Distributed Lag (ARDL) method of estimation. The result revealed that the variables stationarity test were mixed between the first difference I(1) and level I(0). The co-integration result shows that there exist long run relationships between educational growth, price volatility, exchange rate fluctuation, poverty rate, balance of payment and debt rate. Also, the result revealed that except exchange rate, all other variables (Balance of payment, poverty, debt rate, inflation and unemployment) have negative effects on educational development and the estimation result showed that all explanatory variables account for 88% variation of educational development in Nigeria. The challenges of youth unemployment, general price level fluctuation, exchange rate
volatility, balance of payment instability and poverty are evident in Nigeria. This problem has far reaching economic and social implications. It not hampers economic growth and development but threatens the stability of the nation in the long run. Although other factors contribute to this problem, it is obvious that the educational system is a major tool that can be used to provide lasting solutions. There is a widening gap between the present educational apparatus and demands of the labour market. It is undoubtedly clear that if graduates were to have all the required skills that will place them at a better position in the labour market, most of the unemployed graduates would have been gainfully self-employed. The abysmal fund unavailability has also hampered the full trainability of Nigerian undergraduates.

Recommendations:
This issues of unemployment, poverty, exchange rate volatility, general price fluctuation, public debts and underfunding have critical effects on educational development. Unemployment and underfunding of educational sector must be tackled if a nation is to grow.

Appropriate mechanism should be put in place to facilitate the attainment of the objectives of some of poverty alleviating programmes in the country. Appropriate fiscal and monetary policies should put in place so as to check the general price level, exchange rate and interest rate volatility in the country. Effective monetary and fiscal policies should be put in place to bring the nation back to its original equilibrium condition. The quality and relevance of educational programmes should be improved. The relevance of course content should be stepped up to encourage entrepreneurship and wealth creation. This will enhance employability not only within but outside the shores of this nation as the world has become a global village following the advancement in ICT. Professional and vocational education should be encouraged and supported as these can generate employment. This is a good platform through which unemployment graduates can get themselves employed. Policies that will encourage foreign direct investment and industrialization should be formulated. Also, conducive environment should be created and infrastructural facilities should be provided by the Government. These would foster industrialization hereby reducing unemployment and encourage balance of payment. Adequate funding of education and research should also be a topmost priority to the government.

References:
Mbipom at the University of Calabar on 31st October.