ASSESSING THE DETERMINANTS OF ECONOMIC GROWTH IN HEAVILY INDEBTED POOR COUNTRIES

Charles Temitope AWOSUSI, PhD

Catherine Kemi OWADOLA, B.Sc.

Department of Banking and Finance, Faculty of Administration and Management Sciences, Adekunle Ajasin University, Akungba Akoko, Nigeria. E-mail: charlesawosusi@gmail.com

ABSTRACT

The research analyzed the factors that influence economic growth in 39 countries that are heavily indebted and poor, commonly referred to as HIPCs. The study utilized eight sets of data pertaining to economic indicators, education, and population from the years 1980 to 2021. The study employed the auto-regressive distributed lag (ARDL) technique to analyze the impact of various factors, including export volume, inflation, foreign aid, foreign direct investment, agricultural output, population growth, industrial sector output, foreign direct investment, and secondary school enrolment, on the economic growth of a group of 39 countries in both the short and long terms. Among the eight eco-social variables analyzed, only export volume and inflation demonstrate a significant impact on the economic growth of the nations. From the analysis, both in the short and long periods, export volume has a favorable impact on economic development (short run: coefficient = 0.601183, p = 0.0212; long run: coefficient = 0.488446, p = 0.0205). Both in the short and long periods, inflation has a detrimental impact on economic growth (short run: coefficient = -0.184358, p = 0.0385; long run: coefficient = -0.149787, p = 0.0542).. Further, it was found that exports granger caused GDP growth, while the latter itself granger caused inflation and secondary school enrolment. It was recommended that governments of HIPCs put in place more export boosting strategies, significantly reduce inflation and control population growth. Governments in the affected countries need to focus on the growing of the real sector of the economy through effective utilization of domestic savings and foreign financial aid to develop the sector.

Keywords: Highly indebted poor countries, economic growth

1.0 INTRODUCTION

The resource gap in most developing and poor countries push them to borrowing. The investment – savings gap in the domestic economies need huge capital to fill (Yogo, 2017). The neo-classical growth model posits that individual countries should attain steady capital for meaningful economic growth to take place. This, however, has been a tall dream for most less developing countries (LDCs) over the years (Beyene & Kotosz, 2020), The LDCs resort to borrowing, the effect of which may be destabilizing on the domestic economy, especially when such borrowings are not efficiently utilized to aid economic growth.

De-Rugy and Salmon (2020) stated that the global financial crisis during the last decade, especially between 2007 and 2008 as well as the sovereign debt crisis in Europe in 2009 spurred renewed interest in the debt – real economic growth relationship. Reference in this regard can be made to the work of Reinhart and Rogoff (2010) in their discuss on how countries can grow in the times of debt.

Theoretically as noted by De-Rugy and Salmon (2020), rising public debt can have a devastating effect on the accumulation of capital stock and economic growth as it can elicit prolonged rise in interest rate, distorting tax policy, rising inflation and constraints on countercyclical fiscal policies. Against the Ricardian growth (equivalence) theory which posits that household savings increase as government borrowing increases, high debt level can cause dissaving in the private sector. Saungweme et al., (2019) believed that high debt can create uncertainty leading to low economic growth for poor countries as investors may avoid investing in the stock market or other productive investment opportunities. The author asserted that high debt-to-GDP ratio can take its toll on government expenditure (especially in terms of debt servicing) and foreign exchange. this is apart from the re-direction that debt gives the government from productive investments to the pursuit of debt reduction. (Johnny & Johnnywalker, 2018).

As far back as 1998, the IMF and World Bank have recognized the difficulty in addressing the debt burdens of extremely poor countries. Such countries are characterized by low per capita income, inadequate human capital, low literacy level, low life expectancy, civil and political unrest and high dependence on foreign assistance (NSAID, 2015).

In their research, Yusuf and Mohd (2021) found that governments borrow money whenever tax collections fall short of spending. When it's tough to increase taxes and cut expenditures, public debt becomes a crucial instrument for governments to support public spending. As a result of this method, most countries now have enormous debts. This rising debt profile may be reasonable if efficiently utilized to fund infrastructure development needed for local production but will become unreasonable if it turns out to create distorting and depleting effects on the economy (Joy & Panda, 2020).

The classical economists, as stated by Domar (1944) posited that financing government expenditures with debt does not totally remove the negative effect of crowding out problem in of private investment. Debt, therefore, can elicit interest rate spikes, liquidity problem and economic downturn. On the contrary, the ―crowding-in effect‖ was proposed by the Keynesian economists to argue that financing government expenditure with debt brings about a direct positive multiplying effect the economy. The ―law of increasing state activity‖ theory, postulated by the Keynesian economists, states that when government finances its activities through debt, the private investment sector receives a crowding-in effect, a kind of performance boost (Ncanywa & Masoga, 2018). The crowding-in effect manifests such that although public debt reduces fund availability to the private sector, the same fund is somehow re-injected into the economy by increasing aggregate demand through salaries, wages and capital expenditures.

According to Salmon (2021), the levels of indebtedness, in the belief of the Keynesians, does not pose much concern since debt interest rates have been lower than the rate of economic growth in many

countries. Boskin (2020) has, however, observed that in recent years, increasing debt-to-GDP ratio may lead to increased tax rate, falling incomes and ―intergenerational inequity‖.

The question of what factors influence economic growth in heavily indebted countries, Anyanwu (2014) stated that, there are several economic, political, social, legal and technological factors that can significantly influence economic growth in HIPCs. For example, Hilton (2021) opined that running a surplus government budget might be difficult hence a country may have to borrow to finance its economy. Nevertheless, unsustainable debt profile can stifle domestic economic growth. Therefore, this study was carried out to assessing the determinants of economic growth in heavily indebted poor countries between 1980 and 2021. The research also examined the existence and direction of causation between economic growth and the chosen macroeconomic factors.

1.0 Literature Review

Conceptual Review

Highly Indebted Poor Countries (HIPC)

The concept of ―heavily indebted poor countries‖ (HIPC) was developed by the International Monetary Fund (IMF) and the World Bank in 1996 as an initiative to address the development finance gap in developing countries. The countries classified as HIPC by the IMF are 39 with 37 fully qualified and two in the process of being qualified (IMF, 2022). These countries are in the highly poor group (Table 2.1) with high debt burden. These countries need much of external intervention to be able to develop their domestic economy. The HIPCs have the privilege of debt reliefs such as rescheduling or outright cancellation occasioned by their unsustainable debt overhang which they cannot effectively manage.

Table 2.1 contains the list of countries in the HIPCs.

Table 2.1: Countries Qualified as HIPCs as at Feb. 2020

Post-Completion-Point Countries (37)		
Togo	Uganda	Comoros
Benin	Zambia	Côte d‘Ivoire
Bolivia	Burkina Faso	Rwanda
Mali	Central African Republic	Tanzania
Burundi	Guyana	Ethiopia
Niger	Haiti	Democratic Republic of Congo
Somalia	Chad	Sierra Leone
Mauritania	Liberia	Afghanistan
Nicaragua	Republic of Congo	Ghana
Malawi	Cameroon	Guinea-Bissau
The Gambia	Honduras	Guinea
Madagascar	São Tomé & Príncipe	

Mozambique	Senegal	
Pre-Decision-Point Countries (2)		
Sudan	Eritrea	

Source: IMF (2022).

The IMF specified some conditions precedent before a country can be classified as a HIPC. These conditions include eligibility to borrow from the World Bank IDA (International Development Agency) and the Poverty Reduction and Growth Trust of the IMF with zero interest rate and subsidized rates respectively. Such countries must also be faced with unsustainable debt overhang which the traditional debt relief processes cannot address. The majority of HIPCs are located on the African continent (IMF, 2022) and are required to have in place a track record of solid monetary and fiscal policies as defined by the IMF as well as a well-developed Poverty Reduction Strategy Paper (PRSP) via a broad-based participatory process in the nation.

1.1 Empirical Review

Owing to the much interest generated by the challenges faced by highly indebted and poor countries, there have been several studies aimed at researching into what factors contributed to their high indebtedness, poverty level and economic underdevelopment. Th study of De-Rugy and Salmon (2020) aimed to review a wide range of previous research on the topic of the connection between high levels of debt and the economic development of HIPCs.

Anyanwu (2014) listed such factors as domestic investment, exports, imports, technology, reforms, official development assistance (ODA), inflation, private sector credits (PSC), oil prices (for HIPCs), foreign direct investments, urban population, government expenditures, government efficiency and secondary school enrolment as determinants of economic growth in HIPCs. Out of these factors, however, the author found that domestic investment, ODA, inflation and population have significant effect on economic growth of the HIPCs.

Henri (2019) examined the effects of the IMF‘s HIPC debt relief on African countries economic growth

necessary conditions for better economic performance.

De-Rugy and Salmon (2019) had reported that studies in America, a less indebted country, a threshold of between 75% and 100% of the gross domestic product was found in the debt – growth linkage. It was also stated by the authors that most of the studies found a negative relationship between high indebtedness and economic growth (in the present and the future). The authors predicted that as America continues to go on her existing fiscal route, massive economic losses to about $5 trillion in GDP and $13,000 in per capita in 2049.

Karadam (2018) has a research that investigated the effect of various forms of debt on the economic development of 134 nations between the years 1970 and 2012. The findings point to a link that is not linear between debt and economic expansion. According to the results of the research, there is a link between debt and economic growth that experiences a transition from positive to negative as a certain threshold, which is generally referred to as the GDP-Debt ratio, is gradually reached. The shift from positive to negative occurs when a particular threshold is progressively crossed.

Caner et al (2019) conducted a study on the impact of public and private debts on the economic growth of 29 countries that are members of the Organization of Economic and Cooperative Development (OECD). The study utilized a "endogenous panel threshold model" to analyze a dataset spanning the years 1995-2014. The findings of the analysis indicate that a noteworthy negative impact of the interplay between public and private debt is observed when the debt level reaches approximately 137% of the Gross Domestic Product (GDP). As the magnitude of the debt increased, so did its adverse impact. Chudik and colleagues (2017) have previously established that a universally accepted threshold for the correlation between public debt and economic growth has not been identified. The authors' study entailed an analysis of data from 40 countries, revealing a significant negative effect of public debt on economic growth.

Lim's (2019) research investigated the influence of debt accumulation on economic growth across a sample of 41 nations. The researcher employed a "panel vector autoregression" (PVAR) approach to examine data that covers the period from 1952 to 2016. The research conducted by the authors indicates that the amassing of debt had an adverse impact on the progression of the economy. The findings suggest that a rise of one standard deviation in debt was associated with a reduction of roughly 0.2% in economic growth. Jacobs et al (2020) conducted a study with the objective of exploring the plausible causal correlation between the ratio of debt-to-GDP and the growth of economy in 31 countries belonging to the European and OECD regions. The study's results indicate that there is no statistically significant causal relationship between public debt and economic growth. Nonetheless, the research has established a causal correlation that originates from the expansion of the economy towards the accumulation of public debt.

A study was conducted by Swamy (2019) on 152 countries, utilizing a dataset that encompassed the years 1960 to 2009. The purpose of the study was to assess the causal connection between debt and economic growth. The findings of the study indicate that the accumulation of government debt has a detrimental effect on the economic growth of nations. Based on empirical data, it can be inferred that a rise of 10% in the ratio of debt-to-GDP is linked to a reduction of roughly 0.23% in the mean rate of growth of GDP. Hilton's (2021) research sought to investigate the correlation between public debt and economic growth. The present study employed a dynamic autoregressive distributed lag (ARDL) causality model to examine the data obtained from the Ghanaian economy over a period of 40 years, from 1978 to 2018. The author's study has determined that there is no causal connection between the expansion of Gross Domestic Product (GDP) and public debt in the immediate period. There exists a unidirectional relationship of long-term nature from public debt towards GDP. A reciprocal causal association can be observed between investment and GDP, whereby a negative causal effect is evident in the short-term, while a positive causal effect is evident in the long-term. Currently, there exists no discernible causal linkage between government expenditure and consumption in the short run. In the long run, a unidirectional causal association exists between government expenditure and consumption. Yusuf and Mohd (2021) have conducted research which indicates that debt can have both beneficial and detrimental effects on economic growth in the long and short run, respectively.

How public debts affect economic growth has a been a concern for researchers, policy makers and practitioners. If developed and emerging countries are taking drastic steps to significantly reduce their debt burdens in recent years (De-Rugy & Salmon, 2020), researching into factors that determine economic growth in HIPCs should be a continuous exercise. HIPCs countries also need to expand and update their knowledge of likely negative effects of high indebtedness on economic growth and development. Empirical studies have recorded varied outcomes (Hilton, 2021). However, studies that specifically capture the determinants of economic growth in heavily indebted and poor countries are rare, to the best the researcher's knowledge. Apart from examining the effect of eight important economic and educational indicators on economic growth of the HIPCs, the study further examined whether there exists causal relationship between the dependent and each of the explanatory variables.

2.0 Research Methodology

We used secondary data extracted from the World Bank Database on heavily indebted and poor countries (HIPC). A dataset for GDP growth rate, agriculture production, exports volume, foreign aid, foreign direct investment, industrial output, inflation, population growth and school enrolment were extracted for the period 1980 to 2021. The study model expresses the linear relationship between economic growth and some selected macroeconomic variables in a functional form:

GDPG = f(AGRI, EXPO, FAID, FDIV, INDU, INFL, POPU, SCHE) …… 3.1

Expressing the adapted equation (3.1) in longitude and econometric form, it becomes:

$$lnGDPG = \mho + \Theta_1 lnAGRI + \Theta_2 lnEXPO + \Theta_3 lnFAID + \Theta_4 lnFDIV + \Theta_5 lnINDU + + \Theta_6 lnINFL + \Theta_7 lnPOPU + \Theta_8 lnSCHE + \varepsilon \quad \ldots\ldots 3.2$$

where

GDPG = Gross domestic product growth
AGRI = Agriculture output
EXPO = Exports volume
FAID = Foreign aid to HIPCs
FDIV = Foreign direct investment
INDU = Industrial sector output
INFL = Inflation rate
POPU = Population growth rate
SCHE = Secondary school enrolment
ln = Natural logarithm
$\mho$ = Regression intercept
Θ_1 …… Θ_8 …….. Regression coefficients
ε = Stochastic error term

The data collected was subjected our dataset to four preliminary tests so as to ascertain the statistical properties of the variables and the most appropriate techniques used for inference purposes. We check descriptive statistics, correlations, stationarity (ADF-Fisher unit root test), and co-integration (Bound test). Based on early experiments, we employed the auto-regressive distributed lag (ARDL) long run and error correction model to determine how chosen explanatory factors affected HIPC economic

development. The Granger causality test was performed to determine causation between economic growth and each explanatory variable in the nations. We thereafter, for robustness check, subjected the results to some residual tests, namely, Jarque-Bera normality, serial correlation, heteroscedasticity and recursive tests.

4.0 Data Analysis and Discussion

4.1 Preliminary Tests

(a) Descriptive Statistics

Table 4.2 contains the statistical properties of all the variables used in the study. Emphasis is placed on the mean of the variables, coefficients of skewness, kurtosis and the Jarque-Bera (JB) statistics and probabilities for all the variables. other parameters are self-explicit.

Table 4.2: Descriptive Statistics

	GDPG	AGRI	EXPO	FAID	FDIV	INDU	INFL	POPU	SCHE
Mean	3.396796	28.10031	21.60876	2.36E+10	1.08E+10	21.86907	8.175962	2.829172	0.818547
Median	3.860811	25.92196	21.78179	1.72E+10	4.65E+09	21.45158	7.693302	2.822880	0.801160
Maximum	6.079075	36.52114	28.13689	4.42E+10	3.52E+10	26.1039	25.06204	3.097734	0.917360
Minimum	-0.750245	21.78627	15.45549	6.57E+09	-15811822	17.57609	2.049498	2.587509	0.737900
Std. Dev.	2.028603	4.758008	3.444043	1.32E+10	1.20E+10	2.148738	4.290609	0.117123	0.060251
Skewness	-0.541477	0.396956	0.009253	0.344202	0.785263	0.157494	1.534874	0.278435	0.436471
Kurtosis	2.041391	1.752600	2.112017	1.513956	1.983335	2.089635	7.422861	3.464989	1.703843
Jarque-Bera	3.311891	3.461647	1.249022	4.246860	5.541915	1.469304	45.89299	0.833337	3.866578
Probability	0.190912	0.177138	0.535523	0.119621	0.062602	0.479672	0.000000	0.659239	0.144672
Sum	129.0783	1067.812	821.1329	8.98E+11	4.09E+11	831.0248	310.6866	107.5085	31.10480
Sum Sq. Dev.	152.2635	837.6297	438.8731	6.40E+21	5.29E+21	170.8318	681.1450	0.507562	0.134315
Observations	38	38	38	38	38	38	38	38	38

Source: Author's (2022)

As revealed in Table 4.2, the mean of GDPG, AGRI, EXPO, FAID, FDIV, INDU, INFL, POPU and SCHE is 3.396796, 28.10051, 21.60876, 2,360,000,000, 10,800,000,000, 21.86907, 8.175962, 2.829172 and 0.818547 respectively. These means represent the central tendencies of the variables. Only the dependent variable (GDPG) is asymmetrically skewed to the left of the mean (-0.54147) while the explanatory variables, AGRI, EXPO, FAID, FDIV, INDU, INFL, POPU and SCHE are all asymmetrically skewed to the right with coefficients 0.396956, 0.009253, 0.344202, 0.785262, 0.157494, 1.534874, 0.27435 and 0.436471 respectively. EXPO in particular lies around its mean value. The kurtoses for GDPG, AGRI, EXPO, FAID, FDIV, INDU and SCHE are all platykurtic as they are less than the 3-point benchmark (2.041391, 1.752600. 2.112017, 1.5133956, 2.089635 and 1.70384 respectively). INFL and POPU are leptokurtic as they are above the 3 benchmark (7.422861 and 3.464989 respectively).

Given the JB statistics and their probabilities, only INFL is not normally distributed with probability of 0.00000. GDPG, AGRI, EXPO, FAID, FDIV, INDU, POPU and SCHE are all normally distributed (with probabilities 0.19091, 0.177158, 0.535523, 0.119621, 0.062602, 0.479672, 0.659239 and 0.144672 respectively). There are 38 observations in all.

(b) Pearson's Correlations Coefficients

Table 4.3 contains the rate and direction of co-movement between GDPG and the explanatory variables. Table 4.3: Correlations of GDPG with Explanatory Variables

	GDPG	AGRI	EXPO	FAID	FDIV	INDU	INFL	POPU	SCHE
GDPG	1								
AGRI	-0.762932	1							
EXPO	0.777335	-0.827034	1						
FAID	0.654403	-0.773890	0.785976	1					
FDIV	0.627094	-0.806902	0.731125	0.928821	1				
INDU	0.687061	-0.843202	0.780625	0.919808	0.893880	1			
INFL	-0.589103	0.632387	-0.364569	-0.518056	-0.606160	-0.570023	1		
POPU	-0.148139	0.175253	-0.048430	0.116072	-0.053634	0.127724	0.296312	1	
SCHE	0.658121	-0.848764	0.722204	0.956981	0.959969	0.942830	-0.622932	0.058817	1

Source: Author's (2022)

Three of the variables, AGRI, INFL and POPU have negative correlation with GDPG given their coefficients -0.762932, -0.589103 and -0.148139 respectively. This implies that the variables move in opposite direction to the movement of GDPG. While AGRI and INFL have relatively high correlation coefficients, POPU has a low negative correlation. EXPO, FAID, FDIV, INDU and SCHE have positive and direct high correlation with GDPG with 0.777335, 0.654405, 0.627094, 0.687061 and 0.658121 respectively.

(c) Test of Variable Stationarity

All the variables are tested for their order of stationarity using ADF-Fisher unit root test. Tables 4.4 contains the results of ADF-Fisher unit root test.

Table 4.4: ADF-Fisher Stationarity Test

Null Hypothesis: Unit Root Exists					
Variable	At Level		At first Difference		Decision
	ADF- Fisher Statistics	Probability	ADF- Fisher Statistics	Probability	
GDPG	-2.697949	0.0832	-8.227650	0.0000	1(1)
AGRI	-0.575960	0.8645	-5.500513	0.0000	1(1)
EXPO	-1.406389	0.5696	-4.938607	0.0002	1(1)
FAID	-0.550243	0.8698	-3.080438	0.0366	1(1)
FDIV	-0.511507	0.8783	-5.952703	0.0000	1(1)
INDU	-1.484378	0.5306	-6.430101	0.0000	1(1)
INFL	-3.263941	0.0235	-	-	1(0)
POPU	-0.753609	0.8185	-3.542448	0.0129	1(1)
SCHE	-0.520740	0.8762	-5.840516	0.0000	1(1)

Source: Author's (2022)

A variable is stationary (without unit root) in the order at which the probability of its ADF statistic is less than the selected level of significance (0.05). Apart from INFL which has a probability less than 0.05 at level, all the other variables have their probabilities less than 0.05 in the first difference. Hence, while INFL is stationary at level 1(0), GDPG, AGRI, EXPO, FAID, FDIV, INDU, POPU and SCHE are stationary at first difference 1(1). These conditions, coupled with the results of Bound co-integration test, provide the basis for using the ARDL for estimation and inference.

(d) ARDL Bound Co-integration Test (F- Statistic and t-Statistic)

The study tested whether long-run relationship between GDPG and other variables using the ARDL Bound co-integration test. Table 4.5 shows the results of this test

Table 4.5: Test of Co-integration

Null Hypothesis: No co-integration				
Test Statistic	Value	Significant	Lower Bound 1(0)	Upper Bound 1(1)
F-Statistic	3.115945	10%	1.92	3.06
K	8	5%	2.22*	3.69
		2.5%	2.48	3.7
		1%	2.79	4.1
t-Statistic	-4.660914	10%	-2.57	-4.4
		5%	-2.86	-4.72*
		2.5%	-3.13	-5.02
		1%	-3.43	-5.37

*co-integration exists. Source: Author‘s (2022)

While the F-Statistic at k = 8 degree of freedom is 3.115945 (greater than the critical value of F at 5% significance level at the lower bound – 2.22), the t-Statistic is -4.660914 (greater than the critical value of t which is -4.72 at the upper bound). These imply that there is long-run relationship (co-integration) between the dependent and independent variables.

4.2 Short and Logn-run Effects and Causality Test Results

The ARDL technique was utilized to determine the short- and long-term relationships between all explanatory variables and GDPG. To determine whether the variables have a causal relationship with the dependent variable, the Granger causality test was administered.

(a) Determinants of Economic Growth in HIPCs

The results for the ARDL short and long-run effect of selected variables on economic growth in the HIPCs are tabulated in Table 4.6.

Table 4.6: ARDL Short and Long-run Results

Dependent Variable = GDPG Period: 1981-2021, Null Hypotheses: No Significant Effect						
Variable	Short-run Effect			Long-run Effect		Decision
	Coefficient	Probability	Decision	Coefficient	Probability	

AGRI	0.122651	0.5655	Insignificant	0.099651	0.5630	Insignificant
EXPO	0.601183	0.0212*	Significant	0.488446	0.0205*	Significant
FAID	-7.62E-11	0.4937	Insignificant	-6.19E-11	0.4849	Insignificant
FDIV	-1.05E-10	0.2551	Insignificant	-8.52E-11	0.2724	Insignificant
INDU	-0.012514	0.9750	Insignificant	-0.010167	0.9750	Insignificant
INFL	-0.184358	0.0385*	Significant	-0.149787	0.0542*	Significant
POPU	-0.618405	0.8404	Insignificant	-0.502438	0.8423	Insignificant
SCHE	33.67865	0.3851	Insignificant	27.36306	0.3867	Insignificant
Conit.Eq	-0.812475	0.0000	-	-	-	-
R-squared	0.500388		R-squared	0.747142		
F-Stat	36.05594		F-Stat	9.192668		
Prob (F-Stat)	0.000001		Prob (F-Stat)	0.000003		
DW Stat	2.021289		DW Stat	2.021289		

*Significant.

Source: Author's Computation (2022)

From Table 4.6 in the short-run, AGRI and SCHE have positive but insignificant effect on GDPG coefficient 0.122651 (prob. 0.5655) and 33.67865 (prob. 0.3851) respectively. EXPO has a significant positive effect on GPDG with coefficient 0.601183 (prob. 0.0212). furthermore, FAID, FDIV, INDU and POPU have negative but insignificant effect on GDPG with coefficients -7.62E-11, -1.05E-10, -0.1024358, and -0.618405 and probabilities 0.4937, 0.2551, 0.9750 and 0.8404 respectively. INFL has a significant negative effect on GDPG with coefficient -0.184358 and probability 0.0385. About 81% (-0.81247) of previous year's deviations is corrected back to equilibrium in the present year. The coefficient of determination (R^2) of 0.500388 implies that about 50% of the variations in GDPG is explained by the selected dependent variables while another 50% is explained by other variables outside the short-run research model. The F-Statistic calculated (36.05594) and its probability (0.000001) connote that the short-run research model is significant and reliable. The Durbin-Watson (DW) statistic also reveal that the research variables do not have autocorrelation problem as it is 2 (acceptable benchmark).

The same results trend in the short-run also occur in the long-run with AGRI and SCHE having insignificant positive effect on GDPG, EXPO having a positive significant effect, FAID, FDIV, INDU and POPU having negative but insignificant effect and INFL having a significant effect on GDPG. In the long-run, the R^2 of 0.747142 shows that about 75% of the behaviour of GDPG is explained by the independent variables. The F-Statistic calculated (9.192668) and its probability (0.000003) connote that the long-run research model is significant and reliable. The Durbin-Watson (DW) statistic also reveals that the research variables do not have autocorrelation problem as it is 2 (acceptable benchmark).

(b) Causality between Economic Growth and Selected Variables in HIPCs

The research also looked at whether economic growth and certain growth indicators in the HIPCs are significantly correlated. Table 4.7 contains the Granger causality test findings.

Table 4.7: Causality Test Results

Pairwise Granger Causality Tests
Date: 11/25/22 Time: 18:24
Sample: 1980 2021
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
AGRI does not Granger Cause GDPG	38	1.35265	0.2725
GDPG does not Granger Cause AGRI		0.63845	0.5345
EXPO does not Granger Cause GDPG	39	4.35396	0.0207
GDPG does not Granger Cause EXPO		0.00476	0.9953
FAID does not Granger Cause GDPG	38	2.13405	0.1344
GDPG does not Granger Cause FAID		0.96188	0.3926
FDIV does not Granger Cause GDPG	39	0.02463	0.9757
GDPG does not Granger Cause FDIV		2.00824	0.1498
INDU does not Granger Cause GDPG	37	0.18540	0.8317
GDPG does not Granger Cause INDU		0.31916	0.7290
INFL does not Granger Cause GDPG	39	1.80439	0.1800
GDPG does not Granger Cause INFL		6.03661	0.0057
POPU does not Granger Cause GDPG	39	1.83626	0.1749
GDPG does not Granger Cause POPU		2.52242	0.0952
SCHE does not Granger Cause GDPG	38	2.80418	0.0750
GDPG does not Granger Cause SCHE		3.37216	0.0465

Source: Author's (2022).

The decision rule on whether two variables granger cause each other is hinged on whether the calculated value of F-Statistic is greater than its critical value or whether its probability (*p* value) is less than the selected level of significance. Using the latter rule, AGRI and GDPG do not have significant causal relationship given their *p* values being greater than the 0.05 significance level. EXPO significantly granger causes GDPG ($p = 0.0207$) while FAID and GDPG and FDIV and GDPG have no significant causal relationship. On its part, GDPG significantly granger causes inflation ($p = 0.0057$) but POPU and GDPG do not have significant causal relationship between them. Finally, GDPG also granger causes SCHE (*p* 0.0465). Among the selected determining variables, the null hypothesis of no significant causality cannot be accepted for EXPO, INFL and SCHE.

Table 4.8 gives a summary of serial correlation and heteroscedasticity tests. The tests follow a standard F-distribution criterion (statistics and probability).

Table 4.8: Serial Correlation and Heteroscedasticity Tests

Test	F-Statistics	Probability	Decision
Breusch-Godfrey Serial Correlation LM Test	0.207488	0.8140	No serial correlation
Breusch-Pagan-Godfrey Test of Heteroscedasticity	1.277789	0.3035	Heteroscedastic

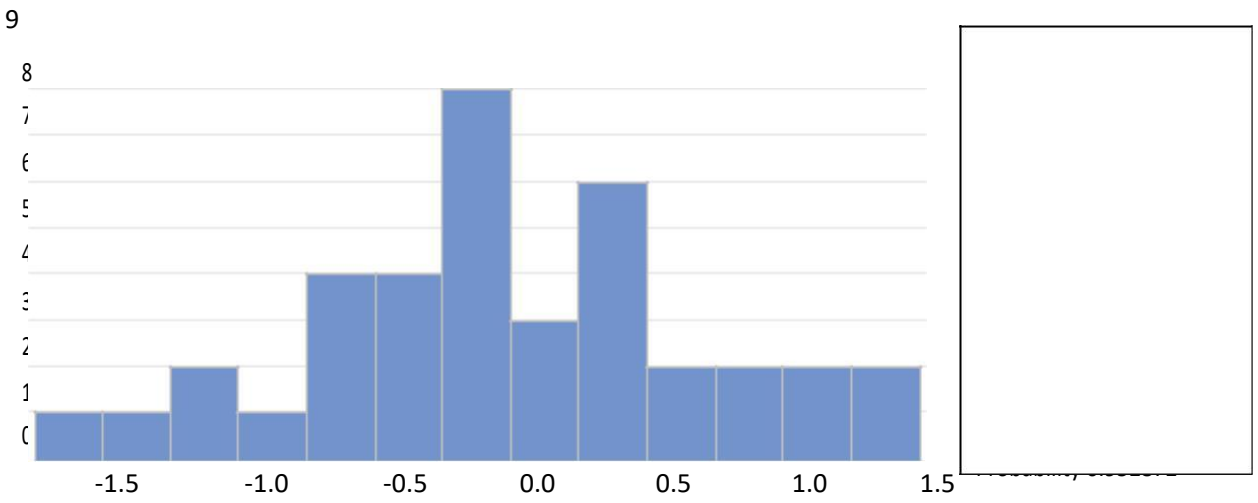
Source: Author's (2022)

In the context of serial correlation testing, the null hypothesis posits that the variables under study do not exhibit any issues with serial correlation. Based on the outcome of the Breusch-Godfrey serial correlation test, the F-Statistic and its corresponding probability (F-Stat = 0.207488; p = 0.8140), it can be concluded that the null hypothesis, which states that the variables do not exhibit any serial correlation issue, is accepted. Furthermore, it is important to note that the null hypothesis for a heteroscedasticity test posits that the variables under consideration exhibit homoscedasticity. Hence, the Breusch-Pagan-Godfrey test of heteroscedasticity result shows that the variables are homoscedastic ((F-Stat = 1.277789; p = 0.3035).

4.3 Post Estimation Tests

For robustness' sake, we subjected our results to selected post-estimation tests including, the test of residual normality, serial correlation, heteroscedasticity and the CUSUM test which shows the extent to which our research model drifts away from the mean, that is the degree of stability of regression coefficients.

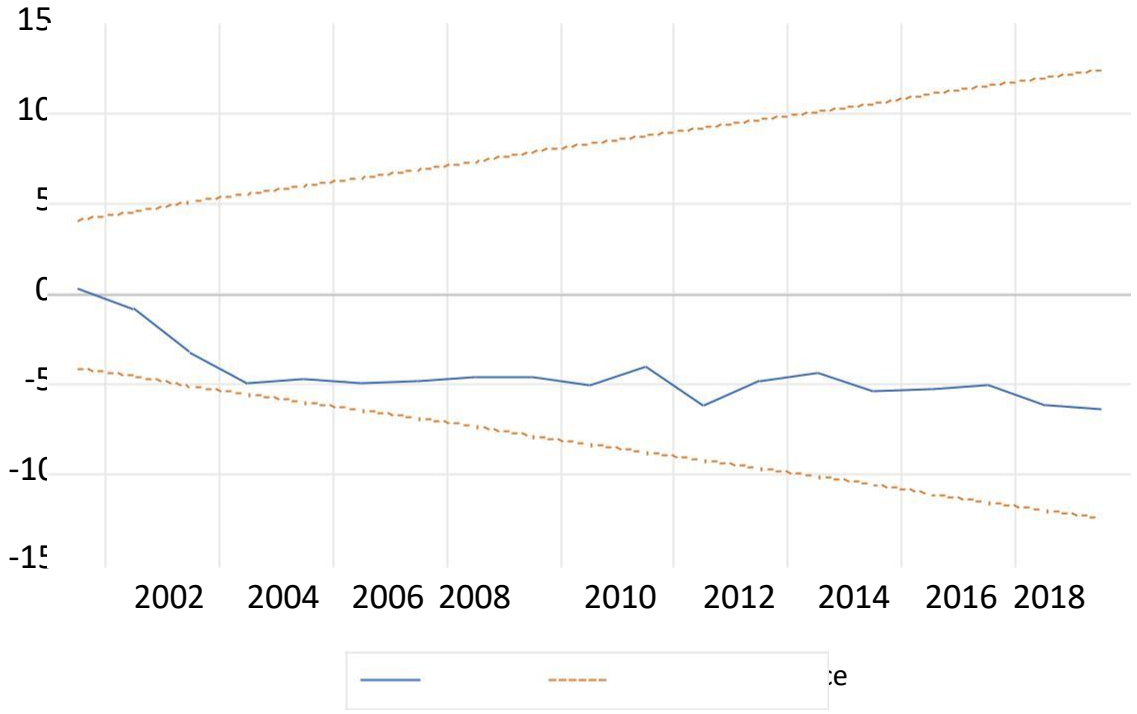
Figure 4.1 depicts the result of the Jarque-Bera (J-B) of residual normality. Generally, the residual is normally distributed if the probability of J-B statistics (Prob. J-B Stat.) is greater than the selected level of significance (that is p > Prob. J-B statistics). In this case, the p value of J-B statistic is 0.952872 which is far higher than the 0.05 level of significance, signifying that the residuals are normally distributed. This position is further buttressed by the coefficient of skewness (-0.001271, hovering around the mean) and kurtosis of 2.753105 (approximately 3 – the benchmark for normal distribution).



Source: Author's (2022)

Figure 4.1: Test of Residual Normality

Figure 4.2 is the result of the CUSUM (recursive) test. It shows that the research model does not drift away from the mean and that regression coefficients are stable over time.



Source: Author's (2022)

Figure 4.2: Result of CUSUM Test

4.3 Discussion and Implication of Findings

This study set out to achieve two major objectives. First, it assessed the effect of selected macroeconomic and social indicators on the growth of the economies of the 39-member group of heavily indebted and poor countries in the world. Secondly, the study also examines whether past changes in these variables significantly caused present changes in the GDPG more than the past changes in GDPG caused in itself.

First, agricultural production has a favorable impact on economic development in the short- and long-term, although the influence was negligible throughout the research period, according to the findings of the ARDL used to evaluate the impact of the variables chosen on economic growth in HIPCs. This contradicts the expectation of the effect of the agricultural sector on the economic growth of the HIPCs as a portion of the debts ought to be channeled to revamping the sector. This result suggests that the HIPCs need to strategically deploy available financial resources to develop the agricultural sector since it is one sector that ought to spur growth in the economy.

Secondly, the volume of exports has a significant positive effect on economic growth in the shirt- and long-run. This is expected as more exports attract more foreign exchange earnings which are used to

finance domestic economic growth in terms of purchasing of raw materials, importation of machines and expertise and productivity operations in general. Without doubt, exports promote economic growth, especially in poor countries but lack of it means that there will be no foreign exchange resources to finance importation of raw materials, machines and expertise from abroad.

Surprisingly and against the fundamental theoretical expectations, foreign aid, foreign direct investment and industrial sector output have negative effect on economic growth of the HIPCs in both short and long-runs. Although the effect is insignificant, the fact that it is negative calls for concern. For countries that are poor and heavily indebted, it is expected that these three economic indicators will exert significant positive effect on economic growth. For foreign aid to affect economic growth negative could mean that development assistance and grants given to the HIPCs are not channeled to productive uses that could grow their economies. These findings agree with those of Chudik et al (2019) and Hilton (2021).

Expectedly, inflation has a significant negative effect on the economic growth of the HIPCs. Inflation worsens the precarious economic position of heavily indebted and poor countries essentially because it leads to increased cost pf production, reduction in the value of domestic currency and general price rise. It them means that inflation control should be a major concern for economic managers and policy makers in the HIPCs.

The effect of population growth, though insignificant, is negative in both short and long runs. Usually, it is characteristic of many poor countries to have growing population, a chunk of which does not contribute positively to the overall economy. Malthus population theory posits that a geometrically growing population can result into more poverty for already poor countries because of its crowding-out effect on available resources. Population growth not directly channeled towards productive engagement becomes a burden for HIPCs.

Finally, the number of secondary school enrolment has positive effect on economic growth in both short and long runs, however, the relationship between them is insignificant. This also contradicts the theoretical expectation of the relationship between education as a social indicator and economic development. This insignificant positive effect also calls for attention as it portrays that HIPCs, despite the borrowing opportunities and acquisitions available to them, were yet to translate education to economic growth significantly. Nonetheless, the positive effect implies that the possibility of significant desirable effect on economic growth is very high.

Next, the presence and direction of causality between economic growth and the selected economic and educational indicators in the HIPCs was tested. The results of Granger causality reveal that agricultural output, foreign aid, foreign direct investment, industrial sector output and population growth do not have significant causality with economic growth. This position also agrees with the short- and long-run effects of these variables on economic growth and studies conducted by Henri (2019), Swamy (2019) and Anyanwu (2014). However, the absence of causality portends grave consequences for the economies of the HIPCs. Adjustments and development in these variables ought to cause positive changes in the GDP growth if the economies are to witness any meaningful growth. The reverse is the case in the HIPCs as revealed by this study.

Expectedly, the exports volume has significant causal effect on GDP growth. It Granger caused GDP growth during the study period ($p = 0.0207$). This result also tallies with the short- and long-run effects

of the former on the latter. The importance of exports and foreign exchange earnings in promoting domestic economic growth cannot be overemphasized as we had earlier pointed out and that it Granger causes GDP growth in the HIPCs further brings to the fore the need for these countries to constantly take steps to improve on their exports so as to earn more foreign exchange for domestic economic growth.
GDP growth significantly Granger caused inflation ($p = 0.0057$). It means that previous changes in GDP growth caused rise in present inflation. It also reflects that part of the increases in GDP growth would probably have been due to general price level increase or the presence of large liquidity volume in the economy which fuels inflation.

Finally, GDP growth significantly Granger caused number of secondary school enrolment in the HIPCs ($p = 0.0465$). The causal effect is most likely hinged on the fact that GDP growth should affect the education sector positively thereby leading to greater enrolment in schools. Given these results, we conclude that there exists significant causal relationship between GDP growth and its determinants in the HIPCs. The null hypothesis that there is no causal relationship between these variables cannot be accepted.

5. Conclusion and Recommendations

This study assessed the determinants of economic growth in 39 heavily indebted and poor countries as a group between 1980 and 2021. The study estimated the impact of eight economic, social, and demographic variables on the economic growth of a group of 39 countries. The variables included export volume, inflation, foreign aid, foreign direct investment, agricultural output, population growth, industrial sector output, foreign direct investment, and secondary school enrollment. The estimation was necessary due to the unavailability of certain data. The study employed the Autoregressive Distributed Lag (ARDL) methodology to assess the short-term and long-term effects of the mentioned factors on the Gross Domestic Product (GDP) growth. Furthermore, the study utilized the Granger causality test to establish the causal connection between the selected variables and economic growth. According to the study, there is no statistically significant impact on economic growth from certain factors, including agricultural output, foreign aid, foreign direct investment, industrial sector output, population growth, and secondary school enrolment. According to the analysis, there is a notable positive correlation between the volume of exports and the economic growth of Highly Indebted Poor Countries (HIPCs). Conversely, the inflation rate has a significant negative impact on the economic growth of these countries. The researchers also find that whereas exports granger caused GDP growth, the GDP growth itself granger caused inflation and secondary school enrolment during the study period.

We conclude that in terms of effect, export volume and inflation have been the significant determinants of economic growth in the HIPCs group. In terms of causality, however, export volume, inflation and secondary school enrolment have had significant causal relationship with GDP growth. This study observes that against expectations, agriculture, foreign aid, foreign direct investment, industrial sector output, population growth and secondary school enrolment have not significantly impacted the economies of the HIPCs over time. To worsen the situation, inflation has continued to significantly impair the economies. Only exports volume has aided the HIPCs‘ economies. We strongly recommend, in the light of these findings, that more export boosting strategies should be put in place by the government of the affected countries. They should formulate policies that will significantly reduce inflation and control population growth through education and advocacy. Governments in the affected countries need to focus on the growing of the real sector of the economy (agriculture and industry) by effectively utilizing domestic savings and foreign financial aid to finance the sector.

REFERENCES

Ahlborn, M. & Schweickert, R. (2016). Public debt and economic growth – Economic systems matter, Center for European, Governance and Economic Development Research Discussion Papers 281), University of Goettingen, Göttingen.

Anyanwu, J. C. (2014). Factors affecting economic growth in Africa: Are there any lessons from China? *African Development Review, 26*(3) 468–493

Beyene, S. D., & Kotosz, B. (2020). Determinants of external indebtedness in heavily indebted poor countries: Empirical evidence using panel - corrected standard error regression. *Journal of Applied Economic Sciences, 1*(67): 229-242. DOI: https://doi.org/10.14505/jaes.v15.1(67).21.

Blanchard, O. (2019). Public debt and low interest rates. *American Economic Review 109* (4): 1197–229.

Boskin, M. (2020). Are large deficits and debt dangerous? National Bureau of Economic Research Working Paper No. 26727.

Caner, M. Fan, Q. & Grennes, T. (2019). Partners in debt: An endogenous nonlinear analysis of interaction of public and private debt on growth (working paper, 2019).

Carmen, R. M., & Rogoff, K. S. (2009). Growth in a time of debt (online), *American Economic Review Papers and Proceedings.* Available from http://www.aeaweb.org/aea/conference/program/ retrieve .php?pdfid=460.

Chudik, A. et al., (2017). Is there a debt-threshold effect on output growth?, *Review of Economics and Statistics* 99(1): 135–150.

De-Rugy, V. & Salmon, J. (2020). Debt and growth: A decade of studies, *Mercatus Policy Brief,* Mercatus Center or George Mason University Policy Brief, Available from: https://www.mercatus.org/publicat ions /government-spending/debt-and-growth-decade-studies.

De-Rugy, V. & Salmon, J. (2019). Are fiscal rules an effective restraint on government debt? *Mercatus Policy Brief,* Mercatus Center at George Mason University, Arlington, VA, July 2019).

Domar, E. D. (1944), The burden of the debt and the national income, *American Economic Review,* 34, 798-827.

Elmendorf, D.W. & Mankiw, N. G.. (1999). Government debt, in Taylor, J. B. and Woodford, M. (Eds), Handbook of Macroeconomics, Harvard University.

Henri, A. O. (2019). Heavily indebted poor countries initiative (HIPC), debt relief, economic stability and economic growth in Africa, *Economic Change and Restructuring,* 52(2), 89-121, DOI: 10.1007/s10644-017-9218-1.

Hilton, S. K. (2021). Public debt and economic growth: Contemporary evidence from a developing economy, *Asian Journal of Economics and Banking, 5(2): 173-193,* DOI: doi.org/10.1108/AJEB-11-2020-0096.

IMF (2022). Factsheet: Debt relief under the heavily indebted poor countries (HIPC) Initiative, (online) Accessed October 29, 2022, www.imf.org.

Jacobs, J. et al. (2020). Public debt, economic growth and the real interest rate: A panel VAR approach to EU and OECD countries, *Applied Economics,* 52(12): 1377–1394.

Johnny, N., & Johnnywalker, W. (2018). The relationship between external reserves and economic growth in Nigeria (1980-2016). *International Journal of Economics, Commerce and Management, 6*(50), 213–241.

Joy, J., & Panda, P. K. (2020). Pattern of public debt and debt overhang among BRICS nations: An empirical analysis, *Journal of Financial Economic Policy*, *12*(3), 345–363. DOI: //doi.org/10.1108/JFEP-01-2019-0021.

Karadam, D. Y. (2018). An investigation of nonlinear effects of debt on growth, *Journal of Economic Asymmetries* 18(C): 1–13.

Lim, J. J. (2019). Growth in the shadow of debt, *Journal of Banking & Finance,* 103(C): 98–112.

Mankiw, N. G. (2000). The savers-spenders theory of fiscal policy, *American Economic Review Papers* 90(2): 120-125.

Ncanywa, T. & Masoga, M. M. (2018). Can public debt stimulate public investment and economic growth in South Africa? *Cogent Economics & Finance, 6*, 1-13.

Reinhart, C. M. & Rogoff, K. S. (2010). Growth in a time of debt, *American Economic Review* 100(2): 573–78.

Salmon, J. (2021). The impact of public debt on economic growth, *Cato Journal, 41*(3): 487-509, DOI:10.36009/CJ.41.3.2.

Saungweme, T., Odhiambo, N. M., & Camarero, M. (2019). Government debt, government debt service and economic growth nexus in Zambia: A multivariate analysis. *Cogent Economics & Finance, 7*(1), 1622998. DOI://doi.org/10.1080/23322039.2019.1622998

Swamy, V. (2019). Debt and growth: Decomposing the cause and effect relationship, *International Journal of Finance & Economics*, published ahead of print, May 9, 2019.

The NSIAD (1998). Developing countries: Status of the heavily indebted poor countries, Debt Relief Initiative NSIAD-98-229." *GAO Reports* (1998): 1. *MasterFILE Premier*. Web. 10 Sept. 2015.

The World Bank (2018). Heavily indebted poor countries (online),. Accessed: December 4, 2022: Available from www.wb.org

Yogo, T.U. (2017). Assessing the Effectiveness of Foreign Aid in the Education Sector in Africa: The Case of Primary Education. African Development Review, 29(3), 389-402. https://doi.org/10.1111/1467-8268.12276

Yusuf, A. & Mohd, S. (2021). The impact of government debt on economic growth in Nigeria, Cogent *Economics & Finance*, 9: 1-19, DOI: https://doi.org/10.1080/23322039.2021.1946249.

This pages has been intentional left blank