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PROCEEDINGS OF THE FACULTY OF ECONOMICS IN EAST SARAJEVO

ЗБОРНИК РАДОВА ЕКОНОМСКОГ ФАКУЛТЕТА У ИСТОЧНОМ САРАЈЕВУ

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Editor's note

Dear scientists, readers and colleagues,,

I am delighted to introduce scientific journal „Proceedings of the Faculty of Economics in East Sarajevo” (Zbornik radova Ekonomskog fakulteta u Istočnom Sarajevu) one of the best journals in Republic of Srpska and Bosnia and Herzegovina in the area of economics and business. The journal was, according to the Ministry of Scientific and Technological Development, Higher Education and Information Society Republic of Srpska, won 34 out of a possible 40 points, and thus classified in the first category of scientific journals. The Journal is indexed in ERIH Plus, Bergen, Norway; Sherpa Romeo – JISC, United Kingdom; DOAJ - Directory of Open Access Journals, Hovedstaden, Denmark; ProQuest, Ann Arbor, Michigan, U.S.; Google Scholar; EBSCO Publishing, Ipswich; INDEX COPERNICUS International, Warsaw, Poland; CABELL'S Directories (Cabell's Directories of Publishing Opportunities), Texas, USA; C.E.E.O.L (Central and Eastern European Online Library), Frankfurt am Main, Germany; BASE (BASE – Bielefeld Academic Search Engine), Bielefeld University Library, Germany; JEL (Journal of Economic Literature) / EconLite, (American Economic Association's Electronic Database), Pittsburg, USA; DOI Srpska, Banja Luka; CrossRef, Oxford, United Kingdom.

The journal publishes the papers of the scholars from the Faculty of Economics in East Sarajevo and outside the Faculty as well. This issue features five original research articles addressing key topics in economic development across diverse regions. The first paper examines the adverse effects of rising public debt on GDP growth in transitional post-socialist economies. Another study analyzes the impact of trade liberalization on poverty reduction in West Africa, emphasizing the role of institutions and macroeconomic stability. Regional economic integration is further explored through a comparative analysis of trade blocs in Africa, highlighting divergent outcomes of intra- and extra-regional trade. The issue also includes a contribution on peer-to-peer (P2P) lending as a digital-era alternative to traditional financing, and an empirical study of public expenditure and human capital development in Nigeria. Together, these articles provide valuable insights into fiscal dynamics, trade policies, and innovative financial solutions shaping contemporary economic systems. The papers refer to the broad area of economic science, and their main prerequisites are scientific contributions to economic theory and practice. The papers can be of theoretical and methodological-analytical nature, and may include areas ranging from national economic policies to business policy. Manuscripts are written in English language.

Needless to say, any papers that you wish to submit, either individually or collaboratively, are much appreciated and will make a substantial contribution to the early development and success of the journal. Best wishes and thank you in advance for your contribution to the scientific journal „Proceedings of the Faculty of Economics in East Sarajevo”.

Editor-in-Chief

Nemanja Šarenac, PhD Assoc. Prof.

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ORIGINAL SCIENTIFIC PAPER

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PUBLIC DEBT AND ECONOMIC GROWTH IN TRANSITIONAL ECONOMIES: INSIGHTS FROM A 50-COUNTRY PANEL STUDY

ЈАВНИ ДУГ И ЕКОНОМСКИ РАСТ У ТРАНЗИЦИОНИМ ЕКОНОМИЈАМА: УВИДИ ИЗ ПАНЕЛ-СТУДИЈЕ 50 ЗЕМАЉА

Summary: The increase in public debt is a controversial issue in both developed and developing nations, but it is particularly prevalent in post-socialist economies. The challenge of rising public debt extends beyond economic concerns, encompassing political and social dimensions as well. Many former socialist countries have experienced a significant rise in public debt since their transition. This study explores the relationship between public debt growth and GDP, focusing on 50 post-socialist countries across Europe, Asia, and Africa from 2000 to 2019. Utilizing a panel model, the research incorporates macroeconomic factors such as gross investment, trade openness, human capital, and unemployment indices as control variables. The findings indicate a strong negative correlation between increasing public debt and GDP growth. The results suggest that, in post-socialist economies where there is no proper control over the use of credit funds, rising public debt hampers economic development.

Keywords: public debt, GDP, economic growth, fiscal policy, post-socialist economies

JEL classification: E60, H60, C33, O50

Резиме: Раст јавног дуга представља контроверзно питање у развијеним и земљама у развоју, али је посебно изражен у постсоцијалистичким економијама. Изазови који произилазе из повећања јавног дуга не односе се само на економске аспекте, већ укључују и политичке и социјалне димензије. Многе бивше социјалистичке земље су након транзиције доживјеле значајан пораст јавног дуга. Ова студија истражује везу између раста јавног дуга и БДП-а, са нагласком на 50 постсоцијалистичких земаља Европе, Азије и Африке у периоду од 2000. до 2019. године. Кориштењем панел-модела у истраживању су као контролне варијабле укључени и макроекономски фактори, као што су бруто инвестиције, отвореност трговине, људски капитал и стопа незапослености. Добијени резултати указују на снажну негативну корелацију између повећања јавног дуга и раста БДП-а. Наглази сугеришу да у постсоцијалистичким економијама, где је нема адекватне контроле над кориштењем кредитних средстава, раст јавног дуга успорава економски развој.

Кључне речи: јавни дуг, БДП, економски раст, фискална политика, постсоцијалистичке економије

ЈЕЛ класификација: E60, H60, C33, O50

1. INTRODUCTION

Contemporary theory and practice recognize public debt as a useful and significant instrument of economic development. This is especially pronounced in developing and underdeveloped countries, where access to funding sources is limited and the financial market is underdeveloped. However, during financial and debt crises, debates intensify regarding the optimal management of public debt to ensure sustainable economic growth. While borrowing can initially stimulate economic expansion, excessive debt levels can create pressure on private investments and ultimately lead to a decline in overall national output.

The expansion of the state's financial activities and, consequently, the increase in indebtedness, always actualize the problem of determining the public debt limit. The last crises produced the dynamics of public debt growth, which in recent years grew at a rate higher than GDP growth in most countries. The analysis of the situation for the developing countries that we observed in this research shows its constant growth and requires special attention to how the borrowed money is spent and the degree of sustainability of the public debt. Taking into account the appearance of deflationary pressures and a possible recession with a fall in GDP, there are justified concerns about

the growth of the deficit/GDP and public debt/GDP ratios and the sustainability of the fiscal positions of individual countries.

In this paper, we examine the impact of public debt growth on economic growth. The subject of the research refers to the examination of the impact of the share of public debt in GDP on the economic growth of 50 post-socialist countries in Europe, Asia and Africa in the period from 2000 to 2019. The selected timeframe preceded the emergence of the coronavirus for several reasons. The pandemic caused abrupt and widespread economic disruption, including lockdowns, travel restrictions and supply chain disruptions. These shocks are atypical and can distort long-term trends in the relationship between public debt and GDP. Governments and central banks have taken extraordinary measures, such as large-scale quantitative easing and fiscal stimulus, that are not typical of non-crisis times. These measures have had a major impact on both debt levels and GDP, making causal analysis difficult. Governments also borrowed extraordinarily heavily to finance pandemic relief measures such as stimulus packages, corporate subsidies and healthcare spending. This debt accumulation was driven by emergencies rather than routine fiscal policy. Many countries experienced a sharp drop in GDP during the pandemic, followed by a rapid rebound. These extreme fluctuations make it difficult to assess the normal relationship between public debt and economic performance. Typical economic indicators such as employment, consumption, investment and productivity were significantly disrupted. The usual economic relationships broke down during the pandemic, making it difficult to draw reliable conclusions. The pandemic year is considered an "outlier" in the statistics. Including this year in analyses can distort the results and lead to misleading conclusions that cannot be generalised to periods outside the pandemic.

In our work, we applied the panel model. In the research, we use GDP as a dependent variable, and one independent variable - the share of gross public debt in GDP. Macroeconomic variables of gross investment, trade openness and human capital and unemployment indices were used as control variables in the model. A group of works important for this research also uses the population by share of education level, total investments, savings, openness of countries, as well as the fiscal balance and total external debt of the considered countries, inflation, as control variables important for developing countries.

Previous relevant literature indicates that at a certain level of the share of debt in GDP, there is a change in the effects of borrowing on economic growth. Although there are opinions that the budget deficit and the growth of public debt under certain conditions can have a positive effect on economic growth, the dominant opinion is that in the long term, the growth of public debt leads to a decline in GDP. The extensive study that is the subject of the most controversy regarding the results obtained is the one by the authors Reinhart and Rogoff from 2010. They determined the existence of a reference level of about 90% of the share of public debt in GDP, up to which the effect of public debt is weak, after which it becomes significantly negative on GDP growth. Also, Casaresu (2015) concludes that external public debt can have a non-linear impact on economic growth. At low levels of indebtedness, an increase in the share of external public debt in GDP could stimulate economic growth; however, at high levels of indebtedness, an increase in this ratio could harm economic growth.

A significant number of studies indicate that the least developed countries, as a rule, have a lower reference level, after which public debt begins to negatively affect GDP, while more developed countries, due to a more efficient fiscal policy, have a higher reference level. However, recent empirical studies question this result and conclude that there is no simple threshold for public debt, given several factors not considered in the aforementioned studies. Nevertheless, the conclusion obtained in most research inevitably points to one thing: excessive public debt will at a given moment negatively affect the economic growth of the observed country, regardless of the nature of the variables involved.

The structure of this paper consists of five chapters. The second chapter provides an overview of relevant literature so far that considers the effects of public debt on economic growth. The third chapter presents the methodology used in this research, which focuses on the formation of panel models with which we will examine the impact of the share of public debt in GDP on economic growth. The fourth chapter presents the results of the empirical analysis together with the discussion, while the last, fifth chapter summarizes the results and presents concluding considerations.

2. LITERATURE OVERVIEW

In the classic doctrine, public debt is treated as explicit income for budgetary difficulties and to cover extraordinary public expenditures. The monetary theory of public debt, rejecting the classical doctrine, develops the concept of modern functions of public debt. As an instrument of financial policy, public debt assumed: the function of balancing budget expenditures, the function of economic stabilization and the function of economic development (Ristić 2010).

Economic-theoretical assumptions state that an acceptable level of external debt should help economic growth and development. Debt theories used to better understand the implications of debt on economic growth (Krugman 1988; Cohen 1995) advocate the view that higher levels of debt suppress economic growth due to increased internal state borrowing. An increase in borrowing will increase the interest rate, which increases the cost of borrowing for both investment and consumption.

However, economic theory suggests that developing countries need a certain level of external debt in order to accelerate economic growth. However, if the external debt grows above a certain limit, then the external and total public debt puts pressure on private investments, reduces the competitiveness of the real economy, reduces production and wages. Governments borrow abroad due to the lack of long-term sources of financing in the country, but also to achieve lower interest rates (Stiglitz 2004).

The expansion of the economy and consumption also leads to an increase in the general price level. Under circumstances of increased money supply, indebted individuals need less money to pay off existing debts, and new loans become "cheaper", leading to growth in consumption, employment and investment (Topić-Pavković and Šoja 2023).

After the first major financial crisis in the 21st century, which turned into a public debt crisis, debates are intensifying regarding the negative effects of public debt growth on economic growth. The public debt ratio as a percentage of GDP stands out as the most significant indicator of this process. This is when the most significant works related to this issue are created, which start from the extensive research of the authors Reinhart and Rogoff from 2010, and a series of studies that try to confirm or refute the theses from the mentioned research (Cecchetti et al. 2011; Presbitero 2012; Afonso and Jalles 2013; Woo and Kumar 2015 and others).

Cecchetti et al. (2011) based on the analysis of 18 OECD economies claims that there is a threshold of 85% of debt to GDP which, if exceeded, leads to a reduction in future economic growth. They believe that a high initial level of public debt is significantly associated with a subsequent slowdown in economic growth in a large number of countries that make up both developed and developing market economies. This confirms the previous thesis of Reinhart and Rogoff.

External borrowing can have negative and positive effects on economic growth (Presbitero 2012). Presbitero found that industrialized countries are more efficient than developing countries in the productive use of debt. The aforementioned author came to the conclusion that public debt negatively affects economic growth when the debt amounts to more than 90% of GDP. His study is based on a sample of 114 developing countries during the period 1980 - 2004.

Woo and Kumar (2015) use initial debt levels to analyze the impact on future growth. Due to the problem of finding suitable external instrumental variables, the standard system GMM estimator is used to solve the issue of potential endogeneity. They find that a high initial level of public debt is significantly associated with a subsequent slowdown in growth in a large number of countries comprising developed and developing countries.

Research conducted by Gomez-Puig and Sosvilla-Rivero (2017), on a sample of central and peripheral countries of the Eurozone (EA) in the period 1961-2013, shows that public debt always has a long-term negative impact on the economic performance of these countries, although its short-term effect can be positive depending on the analyzed country.

Applying the OLS method to panel data on a sample of Western Balkan countries in the period from 1998 to 2019, Bacovic (2021) obtained results that when public debt increases by one unit, the GDP growth rate decreases by 0.042 units. Also, an increase in public debt by one unit leads to a decrease in the productivity growth rate by 0.086 units.

Observing the interdependence of the public debt/GDP ratio and the solvency of the member countries of the monetary union, as a result of constant debt growth, the author Topić-Pavković (2015) confirms in his research that an increase in the share of debt in GDP reduces the country's ability to settle the current value of foreign liabilities. As a result, the sustainability of the external debt decreases, i.e. the solvency of the country decreases and the negative perception of the country's rating

among investors increases, which ultimately leads to a higher risk premium in the price of government bonds, i.e. an increase in borrowing costs.

Another group of authors in their research finds a weak causal effect and a low level of connection between the level of public debt and subsequent GDP growth (Yang and Su 2018; Ash et al. 2020; Bentour 2021). Several authors point to systematic differences in the (non-linear) impact of public debt on growth among countries, which implies a lack of evidence for defining a universal threshold in the ratio of public debt to GDP above which economic growth slows down.

Yang and Su (2018) highlight the key role of the time-varying threshold of the effect of public debt on economic growth. They used data from the US for the period 1791-2009 and applied a model to investigate the impact of debt on growth. They used Hansen's extended regression model with a constant threshold that allows for a state-dependent time-varying threshold. Their empirical results clearly indicate the non-linear effect of the debt threshold, and the threshold is time-varying and dependent on the state of the observed country.

Ash et al. (2020) looking back from the 1970s analyze the impact of endogenous variables and reverse causality using the trend and decline of GDP growth in relation to public debt. They find that the relationship between the public debt-to-GDP ratio and growth is close to zero and there is no evidence of a causal effect of public debt on growth. Using different data sets from important works in the literature, primarily Reinhart and Rogoff (2010), the authors provide a comprehensive assessment of the impact of public debt on GDP growth. These authors argue that earlier results obtained in the literature indicating a negative effect of public debt on growth are sensitive to small samples, outliers, and particular econometric choices.

The results of the analysis by Bentour (2020) confirm that the relationship between debt and growth is not constant and depends on the level of debt and the state of a national economy. In his study, he analyzed the relationship between public debt and economic growth in a sample of 20 advanced economies in the period from 1880 to 2010. Using the kink regression model (regression kink design) with an unknown threshold proposed by Hansen (2017) shows that the relationship between public debt and economic growth is time-varying and country-dependent. In particular, the relationship between public debt and economic growth is volatile for each country in the sample over the entire period 1880–2010, and the postwar period 1950–2010, and is subject to data and country heterogeneities. These findings reject the existence of any common threshold that fits all countries and call for more theory-based models that take into account the fundamentals that differ across countries and affect debt-growth interactions.

Checherita-Westphal et al. (2012) point out that one should adhere to the basic principles when borrowing a country, primarily that the capital borrowed abroad or in the country is invested in production and export-oriented projects with a higher rate of profit than the interest on the loans taken, in order to ensure long-term economic growth, servicing debt and minimizing losses. According to Marić (2012), only by increasing GDP, exports and competitiveness can higher revenues be achieved in the budget and the repayment of the public debt can be facilitated. Using foreign debt for non-productive purposes (financing budget deficits, current consumption from imports, etc.) necessarily reduces the available income for debt repayment and brings the economy into a debt crisis. Servicing external debt in the absence of economic growth reduces potential savings, investment and economic growth.

3. APPLIED METHODOLOGY AND EXPLANATION OF VARIABLES

3.1. The data

In this study, we apply a panel model to analyze the effect of public debt as a share of GDP on economic growth. The research sample includes 50 post-socialist countries from Europe, Asia, and Africa, with the period from 2000 to 2019 serving as the timeframe for analysis. The following table presents an overview of all 50 countries included in the study, along with the proportion of gross public debt in their respective GDPs:

Table 1. Country data on public debt

Country	Public debt in 2019	Average Public debt 2000-2019
Afghanistan	6.13	67.94
Albania	67.29	63.34
Angola	113.55	58.14
Armenia	50.09	35.34
Azerbaijan	17.66	12.69
Belarus	41.00	34.63
Benin	42.52	26.66
Bosnia and Herzegovina	32.53	34.55
Bulgaria	18.31	28.85
Cabo Verde	124.92	92.93
Cambodia	28.59	32.38
Czech Republic	30.05	32.30
Chad	51.11	39.18
Republic of Congo	81.70	92.04
Croatia	71.08	56.16
Egypt	84.21	83.86
Equatorial Guinea	42.99	16.83
Estonia	8.56	7.03
Ethiopia	54.70	61.72
Georgia	40.43	37.60
Guinea	38.37	61.84
Ghana	62.69	45.31
Hungary	65.48	68.29
Kazakhstan	19.94	13.42
Kyrgyz Republic	51.60	70.85
Latvia	36.70	28.20
Lithuania	35.87	29.24
Madagascar	38.52	49.88
Mali	40.73	36.57
Mauritania	56.83	65.66
Moldova	28.29	42.60
Montenegro	78.79	54.02
Mozambique	96.05	66.64
Myanmar	38.75	83.00
Poland	45.61	48.12
Romania	36.80	28.99
Russia	13.75	18.40
Senegal	63.58	40.93
Serbia	52.75	64.84
Seychelles	54.21	116.02
Sierra Leone	72.45	80.43
Slovak Republic	48.14	44.57
Slovenia	65.61	46.22
Tajikistan	43.09	49.44
Tunisia	68.97	53.34
Ukraine	50.49	41.82
Uzbekistan	28.36	17.41
Vietnam	41.29	35.83
Yemen	76.53	54.48
Zambia	99.73	80.27

Source: Author's calculations and IMF

In the research, we use one dependent variable, GDP, and one independent variable, the share of gross public debt in GDP (DEBT). Additionally, a set of control variables is included: gross investments (INV), the human capital index (HC), trade openness (OPEN), and unemployment (UNEM). The following table provides an overview of the variables used in the research, along with the sources from which the data were obtained:

Table 2. Specification of variables in the research

Variable	Label	Type	Description	Source
Gross domestic product	<i>GDP</i>	Dependent	GDP variable is given in levels	International Monetary Fund
Public debt	<i>DEBT</i>	Independent	DEBT = Public debt/GDP	International Monetary Fund
Investments	<i>INV</i>	Control	INV = Gross Fixed Capital Formation/GDP	International Monetary Fund
Human capital index	<i>HC</i>	Control	Based on years of schooling and returns to education	Penn World Table version 10.01
Trade openness	<i>OPEN</i>	Control	OPEN = (Export+Import)/GDP	World Development Indicators
Unemployment	<i>UNEM</i>	Control	UNEM = Unemployment population/Total population	International Monetary Fund

Source: Author's view

Based on the research object, i.e. the impact of the share of public debt in GDP on economic growth, the following part of the paper builds a panel model for 50 countries from the sample for the period from 2000 to 2019. In addition to the explanatory variable, we will use four control variables that we successively include in the model to observe the relationship between the independent variable (DEBT) and GDP.

3.2. Applied method

Based on the research model given by the equation 1 for 50 countries, we form a panel model. In the empirical part, we will apply several different panel models that use different control variables, while we will choose the optimal model based on relevant tests. There are several different panel models that are present in econometrics, namely: independently pooled panel, differenced panel, panel with fixed and panel with random effects. In this research, we will use a panel with fixed effects and a panel with random effects, because they are most often used in relevant research so far.

A fixed effects (FE) model specifies the individual effects of unobserved, independent variables as constants over time. These constants are fixed for all individuals from the panel during the observation time. Therefore, we can write the panel model with fixed effects as:

$$y_{it} = \alpha_i + \beta x_{it} + \varepsilon_{it}; i = 1, \dots, N, t = 1, \dots, T \quad (1)$$

where N is the total number of individuals, T is the time period of observation of observations and individuals, x_{it} is a vector of independent variables, β is a vector of parameters with independent variables, α_i is a constant that is different for each observed individual (for each country), ε_{it} is the random error. This fixed-effects approach takes α_i to be a group-specific constant in the panel model.

The random effects (RE) model determines the individual effects of unobserved, independent variables as random variables over time. These effects are able to "switch" between OLS and FE and can focus on both, depending on within-individual differences as well as between-individual differences in the panel model.

Therefore, RE can be formulated in the following form:

$$y_{it} = \mu + \beta x_{it} + \alpha_i + \varepsilon_{it}; i = 1, \dots, N, t = 1, \dots, T \quad (2)$$

where μ is a common constant and α_i is a random effect for each individual. RE assumes that in this model α_i are independently and identically distributed random variables per observed observation units with mean 0 and covariance. If the covariance is different from zero then fixed effects is applied, if the variance is equal to zero then OLS is applied.

In this paper, when choosing between FE and RE, we will use the test proposed by Hausman (1978). The RE model is more efficient than the FE model, therefore the Hausman test tries to confirm the null hypothesis that the RE model is used. The Hausman test uses a chi-square distribution with degrees of freedom equal to the number of time-varying regressors.

4. THE RESEARCH RESULTS AND DISCUSSION

Before the formation of econometric models, we will present indicators of descriptive statistics as well as a correlation matrix that shows the degree of agreement in which the variables we observe in the research move. For the six variables we use in the model, descriptive indicators are presented in the following table:

Table 3. Descriptive statistics

	lnGDP	lnDEBT	lnOPEN	lnINV	lnHC	lnUNEM
Mean	13.026824	3.63826	4.223439	3.174038	0.83666	1.920274
Median	12.883263	3.703176	4.230486	3.196158	1.019456	2.092481
Maximum	17.73562	5.857933	5.234287	4.374511	1.347823	3.437529
Minimum	11.495937	-0.71744	2.411171	0.3379	0.121717	-1.966113
Std. Dev.	1.91493	0.787302	0.459595	0.385033	0.361927	0.862913
Sum	23026.824	3638.26	4223.439	3174.038	836.6597	1920.274
Sum Sq. Dev.	27292.719	619.2246	211.0163	148.1019	130.8598	743.8741
Obs.	1000	1000	1000	1000	1000	1000

Source: Author's calculations

Since the variables we use in economics almost always have the problem of multicollinearity, the panel model is a very good way to overcome this problem. The problem of multicollinearity can disrupt the assessment of the influence of independent variables on the dependent variable, ie, the assessment of parameters and their direction. According to Baltaga (2008, 2015), a good way to detect multicollinearity between two or more independent variables is correlation coefficients between independent variables. Therefore, in the following table we form a correlation matrix with independent and dependent variables:

Table 4. Correlation matrix

	lnGDP	lnDEBT	lnOPEN	lnINV	lnHC	lnUNEM
lnGDP	1					
lnDEBT	-0.2910	1				
lnOPEN	0.1034	-0.1082	1			
lnINV	0.0103	-0.1563	0.3333	1		
lnHC	0.4539	-0.2231	0.4332	0.0653	1	
lnUNEM	-0.0352	0.0497	0.0976	0.0437	0.3865	1

Source: Author's calculations

From the previous table, we can see that there is no significant correlation between the set of independent variables that we use in the research. The exception is the correlation between the variables HC and OPEN, where the correlation coefficient is 0.4332, but this coefficient is below the level of 0.5, so we cannot confirm the existence of a correlation between these two independent variables. From the correlation matrix, we see that the correlation coefficient between the dependent variable GDP and the independent DEBT is negative -0.2910, which indicates that there is a negative direction of movement between these variables. Also, there is a negative direction of movement between the independent variable and the UNEM variable. Between the other independent variables OPEN, INV and HC and the dependent variable there is a positive correlation, which is only in the case of the relationship between GDP and HC with a higher level of correlation. Between the DEBT variable and other independent variables, a negative correlation can be observed, while a positive correlation is shown between DEBT and UNEM. The OPEN variable is positively correlated with INV, HC and UNEM. Also, the variables INV, HC and UNEM are positively correlated with each other.

Based on the previously shown correlation matrix between the dependent and the set of independent variables, we see that there is no multicollinearity. Therefore, we can approach the formation of a panel model for the defined research variables. In the paper, we will evaluate a total of 4 models (including fixed effects and random effects specification of models). In Model 1, we add only one independent variable, that is the variable DEBT. In Model 2, we form a model with three independent variables, namely DEBT, OPEN and INV. In Model 3 together with the DEBT variable we have HC and UNEM as independent variables, while in Model 4 we use all five independent

variables to observe their influence on the dependent variable. The following table gives us an overview of all the models we evaluated in the research:

Table 5. Results of panel analysis

Variable	Model 1		Model 2		Model 3		Model 4	
	FE	RE	FE	RE	FE	RE	FE	RE
Dependent: lnGDP								
lnDEBT	-.380*** (.034)	-.383*** (-0.034)	-.377*** (.035)	-.386*** (.035)	-.275*** (.023)	-.278*** (.024)	-.255*** (.024)	-.259*** (.025)
lnOPEN			.071 (.088)	.081 (.087)			-.043 (.061)	-.064 (.062)
lnINV			.024 (.070)	.0184 (.070)			.161*** (.049)	.147*** (.050)
lnHC					5.640*** (.193)	5.148*** (.183)	5.731*** (.194)	5.230*** (.184)
lnUNEM					-.311*** (.043)	-.358*** (.043)	-.294*** (.043)	-.343*** (.043)
Constant	4.411*** (.125)	4.423*** (.229)	4.011*** (.393)	4.012*** (.434)	-.095 (.220)	.419 (.277)	-.600* (.343)	.056 (.383)
R-squared	0.084	0.084	0.087	0.088	0.245	0.252	0.243	0.250
F-statistic	117.9***	127.3***	116.4***	128.5***	204.7***	207.0***	202.0***	226.9***
Hausman test	Prob>chi2 = 0.3359		Prob>chi2 = 0.7439		Prob>chi2 = 0.0000		Prob>chi2 = 0.0000	
Obs.	1000	1000	1000	1000	1000	1000	1000	1000

Source: Author's calculations

In the first model with one explanatory variable, we see a negative value of the coefficient with DEBT at the level of statistical significance of 1% in the model with Fixed Effects, as well as in the model with Random Effects. Based on the results of the Hausman test, we cannot reject the null hypothesis of the test, so we conclude that the random effects model is preferred over fixed effects. The values of the coefficient through these two specifications do not deviate to a significant extent, namely the value of the coefficient of -0.380 and -0.383 are approximately equal and both were obtained with a level of statistical significance of 1%. We can see that the coefficient of determination is identical in both models at the level of 0.084, which means that about 8.4% of the movement of the GDP variable is explained by variations in the DEBT variable. In Model 2, we include a total of three independent variables, namely DEBT, OPEN and INV. From the presented results in this model, we see that the value of the coefficients with the variable DEBT is negative with values of -0.377 and -0.386 for the model with fixed effects and the model with random effects, respectively. We interpret the coefficients in such a way that an increase in the share of public debt in GDP by 1% reduces GDP by about 0.37% and 0.38%, respectively, the constants of the OPEN and INV variables. In both cases, the calculated coefficients were obtained with a statistical significance level of 1%. Also, from the results we see that the coefficients with the variables OPEN and INV are not statistically significant. Based on the Hausman test, we see that the random effects model is preferred over fixed effects. As with Model 1, the value of the coefficient of determination is not at a high level.

In Model 3, we used DEBT, HC and UNEM as explanatory variables. The value of the regression parameter in both models is negative for the DEBT variable and in both cases the coefficients are statistically significant at the 1% level. Based on the Hausman test, we see that we prefer the fixed effects model over random effects. The parameter values for the DEBT variable indicate that a 1% increase in the share of public debt in GDP reduces GDP by about 0.28%. In both estimated models, the coefficients with the control variables are statistically significant at the 1% level. With the HC variable, the coefficient is positive, while with the UNEM variable, it is negative. The value of the coefficient of determination suggests that explanatory variables can explain 24.5% of the variation in the independent variable in the fixed effects model. In Model 4, we included all five variables that we use in the research as explanatory variables. The value of the coefficient with the DEBT variable is negative in both cases with a statistical significance level of 1%. The Hausman test suggests that the fixed effects model is preferred in Model 4. The parameter next to the DEBT variable tells us that a 1% increase in public debt in GDP reduces GDP by about 0.25%. The parameters with the control variables INV, HC and UNEM in both cases are statistically significant at the 1% significance level, while the parameter with the OPEN variable is not statistically significant. The

coefficient of determination tells us that the explanatory variables in Model 4 with fixed effects can explain 24.3% of the movement of the dependent variable.

From the observed results of the estimated panel models, we can conclude that the value of the regression parameter with the explanatory variable DEBT did not change, that is, the sign of the regression parameter is the same throughout all the estimated models with a statistical significance level of 1%. As Model 3 and Model 4 are models that use more control variables, we can rely on their validity when estimating parameters with an independent variable. Also, the coefficient of determination with these models is significantly higher compared to Model 1 and Model 2, so we make conclusions based on these models.

4. CONCLUSION

The fiscal role of public debt manifests itself in the financing of the budget deficit incurred, but at the same time it represents an effective economic policy instrument that has a certain impact on economic growth. Public debt can be justified if the borrowed funds are directed to development programs and capital projects to promote economic growth and development. The size and structure of public debt directly affect the volume of investment activity and thus the overall dynamics of economic growth. While economic theory suggests that developing countries need a certain level of external debt to accelerate economic growth, recent research shows that too much public debt can reduce economic growth beyond a certain point. Therefore, an appropriate public debt management policy that allows the government to achieve its fiscal objectives and sustainable economic growth is extremely important.

Our research contributes to the literature on the impact of public debt growth on economic growth and focuses on a sample of countries that have increased their public debt since the transition to a new economic system, as well as on the indicator most commonly used in this assessment - public debt as a share of GDP. We selected period before the coronavirus due to extraordinary measures taken by governments, such as large-scale quantitative easing and fiscal stimulus, that are not typical of non-crisis times. These measures have had a major impact on both debt levels and GDP, making causal analysis difficult. Debt accumulation was driven by finance pandemic relief measures such as stimulus packages, corporate subsidies and healthcare spending rather than routine fiscal policy. These extreme fluctuations make it difficult to assess the normal relationship between public debt and economic performance. The year of the coronavirus pandemic (2020 and, to some extent, 2021) was excluded from the analysis because it may distort the results and lead to misleading conclusions that cannot be generalised to periods outside the pandemic.

In general, our results suggest that high government debt has a negative impact on economic growth. Our main results can be summarized as follows: (i) there is a negative direction of movement between GDP and public debt, (ii) the obtained results proved to be robust, as the results did not change in all the evaluated models due to changes in the variables we used in the research and (iii) the calculated regression coefficients with the independent variables were obtained with a high statistical significance level.

In the models presented and through the empirical analysis performed, the results obtained show that the increase in public debt contributes to the decrease in GDP, with some intensity of differences depending on the control variables included. Model 3 and Model 4, which use more control variables and whose validity we can rely on when evaluating the parameters with an independent variable, show that a 1% increase in the ratio of public debt to GDP decreases GDP by about 0.28%, that is, a 1% increase in public debt to GDP decreases GDP by about 0.25%. The coefficient of determination in the above models is about 0.24, which means that about 24% of the variation in the dependent variable can be explained by changes in the independent variable.

Based on the findings, it can be concluded that the share of public debt in GDP is negatively correlated with GDP growth in transition economies. This can be attributed to the fact that many of these countries still need to implement essential reforms to fully benefit from a free-market economy. Additionally, the negative impact of public debt growth on GDP is exacerbated by high levels of corruption, weak institutional frameworks, and a lack of transparency in the management of public funds.

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TRADE LIBERALIZATION AND POVERTY IN ECONOMIC COMMUNITY OF WEST AFRICAN STATES

ЛИБЕРАЛИЗАЦИЈА ТРГОВИНЕ И СИРОМАШТВО У ЕКОНОМСКОЈ ЗАЈЕДНИЦИ ЗАПАДНОАФРИЧКИХ ДРЖАВА

Summary: This study investigates the relationship between trade liberalization and poverty reduction within the ECOWAS region, based on the premise that economic growth can serve as a pathway to poverty reduction. The primary objective is to evaluate the influence of trade liberalisation poverty levels, incorporating macroeconomic and institutional variables to capture a broader context. Using a dynamic panel data model, the study employs annual data across ECOWAS countries, specifying poverty as a function of trade liberalisations, per capita GDP, exchange rate, education, and institutional quality. Unit root tests, cross-sectional dependence assessments, and multicollinearity checks were conducted to ensure model validity. Empirical results reveal a significant negative relationship between trade liberalization and poverty, implying that increased trade liberalisation is associated with poverty reduction. However, higher per capita income and better institutional quality also correlate with reduced poverty, whereas the exchange rate shows a positive link with poverty, indicating potential inflationary pressures. Education shows an inverse but statistically weak association with poverty. The findings highlight disparities in trade flow among ECOWAS countries, reflecting varying degrees of integration with the global economy. Based on these results, the study recommends tailored trade policies that promote inclusivity, enhance institutional frameworks, and foster human capital development. Strengthening education systems and ensuring macroeconomic stability are essential to maximize the poverty-reducing benefits of trade liberalization in the region.

Keywords: Trade Liberalisation ,Poverty Reduction,Institutional Quality ,Multicollinearity and Macroeconomic Stability

JEL classification: F13, F14, I32, O19, O55

Резиме: Ова студија истражује везу између либерализације трговине и смањења сиромаштва у региону Економске заједнице западноафричких држава (ECOWAS), полазећи од претпоставке да економски раст може представљати пут ка смањењу сиромаштва. Основни циљ рада је пројена утицаја либерализације трговине на нивое сиромаштва, при чему су укључене и макроекономске и институционалне варијабле ради сагледавања ширег контекста. Коришћењем динамичког панел-модела, студија обухвата годишње податке за земље ECOWAS-а, са сиромаштвом као зависном варијаблом, док су либерализација трговине, БДП по глави становника, девизни курс, образовање и квалитет институција независне варијабле. У раду су извршени тестови стационарности, провере попречне зависности панела и тестови мултиколинеарности, како би се обезбедила валидност модела. Емпијски налази указују на значајну негативну везу између либерализације трговине и сиромаштва, што имплицира да већа либерализација трговине доприноси смањењу сиромаштва. Већи БДП по глави становника и бољи квалитет институција такође су повезани са нижим нивоом сиромаштва, док девизни курс показује позитивну везу са сиромаштвом, указујући на потенцијалне инфлаторне притиске. Образовање показује инверзну, али статистички слабију повезаност са сиромаштвом. Резултати указују на неједнакости у трговинским токовима међу земљама ECOWAS-а, што одражава различите нивое интегрисаности са глобалном економијом. На основу ових налаза, препоручује се креирање прилагођених трговинских политика које би промовисале инклузивност, побољшање институционалних оквира и развој људског капитала. Јачање образовних система и макроекономске стабилности неопходни су предуслови за максимизирање ефеката либерализације трговине на смањење сиромаштва у региону.

Кључне речи: либерализација трговине, смањење сиромаштва, квалитет институција, мултиколинеарност, макроекономска стабилност

ЈЕЛ класификација: F13, F14, I32, O19, O55

1. INTRODUCTION

Scholars, governments, and international organisations have all paid close attention to poverty, which has been a major focus of research, policy, and intervention efforts worldwide. Poverty rates are still among the highest in the world in the Economic Community of West African States (ECOWAS), highlighting the urgent need for focused initiatives and interventions (Maku et al. 2021). According to World Bank estimates, 40% of people worldwide lived on less than \$2.15 per person per day between 2015 and 2018, a 1.6% decrease in global poverty (Ogundipe 2022). As the economy recovered from the COVID-19 epidemic, over 23 million more people were living in extreme poverty by 2022 than in 2019, especially in Sub-Saharan Africa. About 60% of the world's extremely poor live in this region (Fajana 2019). Oil-rich Nigeria alone accounts for more than half of the ECOWAS Gross Domestic Product, and other nations including Côte d'Ivoire, Ghana, Niger, and Nigeria have had comparatively faster rates of economic growth.

Poverty is also widespread in the ECOWAS area, where a number of member states have low Human Development Index rankings. Rapid population growth, economic inequality, and a strong reliance on informal economies which frequently lack social safety nets define the region. Insurgencies and poor governance in nations like Nigeria, Niger, and Mali make matters worse by restricting access to jobs, healthcare, and education (Afolabi and Ndamsa 2025). Despite the introduction of regional programs and policy frameworks aimed at reducing poverty and promoting economic integration, implementation has been uneven, and the gains have not been shared equally. Poverty so still restricts the ECOWAS bloc's economic potential and the development of human capital (Balogun et al. 2024).

The literature on economic growth identifies a number of growth-promoting strategies, most notably trade liberalisation, which is particularly pertinent for regional organisations such as ECOWAS, where conventional economic theory maintains that commerce serves as a "engine of growth" (Iyioha 2017). Trade liberalisation can raise incomes, draw in foreign investment, and advance a nation's technical expertise. Productivity and competitiveness are fuelled by increased investments, technical innovation, and breakthroughs; these factors in turn increase trade and national wealth (Adelowokan et al. 2023).

By lowering trade barriers, improving market access, and promoting foreign direct investment, trade liberalisation has been sought as a means of boosting economic growth in the ECOWAS area. ECOWAS seeks to boost productivity, diversify exports, and integrate member states into the global economy by fostering both intraregional and international commerce (Mbah et al. 2022). Theoretically, trade liberalisation should boost economic growth by promoting innovation, increasing market competition, and better allocating resources. Because of better trade infrastructure and lower tariffs that have made cross-border business easier, several member nations have seen modest growth in industries including manufacturing and agriculture (Blecker 2002).

Trade liberalisation has had varying effects on ECOWAS poverty reduction, nevertheless. Although poverty can be decreased by economic expansion, the advantages have not been shared equally by nations and populations (Yameogo and Omojolaibi 2021). Due to their continued reliance on primary commodity exports, many of the region's economies are susceptible to price shocks and have limited capacity to create high-quality jobs. Because of better trade infrastructure and lower tariffs, which have made cross-border business activities easier, the poor are further prevented from fully engaging in or benefiting from trade-driven growth and manufacturing by inadequate infrastructure, weak institutions, and limited social protection measures (Onakoya, Johnson, and Ogundajo 2019). Therefore, trade liberalisation might not be enough on its own to drastically lower poverty in the ECOWAS region unless it is combined with complementary policies targeted at enhancing healthcare, education, and credit availability. improved trade infrastructure and lower taxes, which have made doing business across borders easier (Nwosu, Sunday and Caleb 2023).

In the light of above, this paper examines the effect of trade liberalization on poverty in Economic Community of West African States (ECOWAS). A vacuum exists on understanding the nexus and ways through which Trade liberalization reduces poverty in the region. Section two comprises of Literature review, section three details Methodology while section four contains Econometric techniques and the rest of the paper follows accordingly from Conclusions to Recommendations.

2. LITERATURE REVIEW

The literature posits that though there is no direct relationship between trade liberalization and Poverty but when liberalizing trade it creates growth while there is high tendency for the poverty to reduce after the attainment of Growth. This pathway of arguments is built to establish a relationship between them

Afolabi et al (2025) builds on previous research by using quantile regression to analyze the impact of trade integration on poverty in ECOWAS. The objective was to examine how trade openness, bilateral trade, FDI, import duties, and exchange rates affect poverty levels across countries with different poverty headcounts. The results showed that trade openness increases poverty, while bilateral trade reduces it, especially in low-poverty countries, but has no significant effect in high-poverty countries. FDI, though potentially beneficial, was insignificant due to low inflows. Import duties and exchange rates had varying, insignificant impacts across quantiles. The study highlights that disaggregating countries by poverty level provides a clearer understanding of trade's effect on poverty, contrasting with previous studies that generalized across the region. It recommends that policies consider these differences for more effective poverty reduction strategies.

Afolabi and Ndamsa (2024) examines the effect of trade integration on poverty reduction within ECOWAS using data from 15 member countries covering the period from 2010 to 2019. The analysis considers factors such as trade openness, bilateral trade, exchange rates, foreign direct investment, inflation, interest rates, and import tariffs. To address heteroscedasticity, the Feasible Generalized Least Squares (FGLS) method was employed. The results indicate that trade openness, bilateral trade, exchange rates, and import tariffs significantly impact poverty reduction. The study highlights the positive role of trade integration in alleviating poverty in the region and suggests policy measures such as enhancing productive capacities in smaller economies, establishing a common currency for smoother trade, increasing intra-regional trade, and promoting the export of finished goods to create jobs and reduce poverty

Balogun et al (2023) explores the link between trade openness, poverty, and human capital development in achieving sustainable development across ten ECOWAS countries from 1987 to 2020. It examines both direct effects and whether trade openness influences the poverty-sustainability relationship. Using panel ARDL techniques (PMG and CS-ARDL) and supported by robustness checks (AMG and P-OLS), the study finds that poverty negatively impacts sustainability, while human capital has a positive long-term effect. Trade openness shows no direct influence on sustainability but significantly moderates the poverty-sustainability relationship over the long run. The study suggests that policies should focus on reducing poverty, enhancing human capital, managing exchange rates prudently, and designing inclusive trade strategies to support sustainable development in the region.

Nwosu et al (2023) assesses Trade Liberalization Scheme (ETLS) and its impact on Nigeria's economic development using the Neo-functional approach. It found that despite numerous policy decisions, implementation remains poor, with member states trading more with external partners like China, India, and the EU than among themselves. Key challenges include lack of political will, mistrust among members, and weak enforcement of free movement protocols, language barriers, and persistent smuggling into Nigeria. The study recommends establishing a Border Defence and Management Agency (BODMA), investing in high-tech industries, and fostering stronger regional cooperation to improve trade integration and economic growth

Fambeu et al.(2021) This study investigates the effects of democracy and trade openness on poverty in sub-Saharan Africa, using data from 24 countries between 2005 and 2016 and applying the generalized method of moments (system-GMM). The results show that democracy increases income poverty in non-oil-producing countries but has no effect in oil-rich nations, while trade openness does not impact poverty. However, imports help improve living standards in democratic oil-producing countries and reduce monetary poverty in democratic non-oil countries. The findings emphasize the need for combined policies that consider both democracy and trade openness to effectively reduce poverty in the region.

Yameogo et al (2021) analyzes the links between trade openness, economic growth, and poverty levels in 40 sub-Saharan African countries from 1990 to 2017 using the Panel ARDL, Panel VAR, and SYS-GMM models, along with robustness tests. The findings show that, in the long run, trade openness, foreign direct investment, and institutional quality boost economic growth, though institutional quality negatively affects growth in the short term. Additionally, trade liberalization, institutional quality, and population growth help reduce poverty in the long term, while trade openness

has negative short-term effects on poverty. Poverty showed no significant response to trade and growth shocks. The Pairwise Dumitrescu-Hurlin Panel Causality test reveals feedback effects between trade, growth, and poverty. The study suggests that African governments should review their poverty reduction strategies to better align with sustainable development goals

Ul-Haq et al (2022) explored the impact of trade liberalization on poverty in Pakistan using panel data from 1990 to 2005. Applying the Feasible Generalized Least Squares (FGLS) model, the study found that reductions in import tariffs were linked to rising poverty, as reflected across multiple poverty indicators. The authors argue that the poor's limited access to external markets may explain this outcome. They recommend that trade policies be more inclusive and supported by social programs, skills training, and infrastructure to ensure that vulnerable populations benefit from trade reforms

Onakoya et al (2019) explores 21 African countries (2005–2014) on the link between trade liberalization and poverty using econometric methods, including descriptive statistics, correlation matrix, panel unit root test, pooled OLS, and Johansen co-integration. To ensure model robustness, tests for autocorrelation, heteroscedasticity, and cross-sectional dependence were conducted. The results showed that foreign direct investment and inflation positively affected the human development index, while trade openness and exchange rates were inversely related to poverty levels at the 5% significance level. The study recommended enhancing poverty alleviation programs, fostering South–South cooperation through market diversification, strengthening regional economic integration, and providing incentives for export-oriented production and human capacity development

3. MATERIAL AND METHODS

3.1 Theoretical Framework

The adoption of an export-led growth hypothesis in the ECOWAS region is strongly justified by its potential to stimulate economic development, reduce poverty, and enhance living standards through increased trade liberalisation. Trade liberalisation facilitates access to international markets, promotes competitive industries, and encourages the inflow of foreign direct investment (FDI), which is vital for infrastructure development and job creation. As trade barriers are reduced, the region becomes more attractive to foreign investors, resulting in capital inflows and technology transfer that boost productivity. Consequently, this leads to an increase in GDP per capita, reflecting improved economic performance and higher income levels. Furthermore, trade openness often creates a demand for skilled labor, incentivizing investments in education and human capital development. Improved educational outcomes, in turn, enhance workforce capabilities, leading to more inclusive growth and a reduction in poverty. By integrating these dynamics, export-led growth emerges as a viable strategy to drive sustainable development and poverty alleviation across ECOWAS member states

Against this background, extant studies and policy makers have advocated for the relevance of export-led growth hypothesis (Herzer et. al. 2004; Ee 2016). The export-led growth hypothesis is a developmental strategy appropriate to mitigate poverty (Bankole and Bankole 2014; Idoko 2023). It argues that export is the main determinant for economic growth. Policy makers seem to view it as stimulus engine efficient to enhance poverty reduction with the notion that export promotion stimulates economic progress sufficient to curb unemployment and poverty. Though, some studies have argued that the positive productivity effects expected of the export-led growth hypothesis may not be feasible in developing countries due to the fact that most developing countries depends heavily on the exports of primary products. Nevertheless, studies have documented evidence that most countries that have sustained growth in the past decades were committed to export expansion (Akanni, 2017). Also, World Bank (2019) study conceded that all the countries that have succeeded in reducing their domestic poverty level have all expanded their shares of global exports. Furthermore, the Heckscher-Ohlin theory argues that exports through international trade could significantly level the gap between rich and poor countries. Thus, exports-oriented growth could shift attention of countries from the competitive manufacturing sectors which have many externality factors required for sustainable growth.

Thus, in line with extant studies on export led-growth model, this study adapts Idoko (2023) exported led-growth model. Thus,

$$PO_{it} = f(TR_{it}, X_{it}) \quad (3.1)$$

where PO_{it} is the measure of poverty and X_{it} is a set of variables characterising trade regulations occasioned by liberalisation. The link between trade liberalization and poverty is captured in the works of Winter, et al (2004). The work identified four channels by which trade liberalization affects poverty

3.2. Model Specification

This study is anchored on the assumption of attaining Growth before reducing poverty through liberalizing trade . Extending the theoretical framework, this section details the construction of the empirical model to achieve the each of the stated objectives of the study. The baseline model for this study is based on the theoretical framework to investigate the effect of trade liberalization on poverty is specified in natural logarithms:

$$\ln PO_{it} = \beta_0 + \beta_1 \ln TR_{it} + \beta_2 Z_{it} + \varepsilon_{it} \quad (3.2)$$

Where i indicates countries and t indicates years. PO is the dependent variable (poverty). TR is the measure of trade liberalisation. Z represents a vector of control variables and ε_{it} is an idiosyncratic error term. β_1 and β_2 are the coefficients that are the focus of this study. Therefore ,the control variable in this model is expressed as Institutional quality . According to Hynes and Lammersen (2017) and Ul-Haq et al.(2022), trade liberalisation and poverty are intertwined in that trade openness could affect per capita income and consumption, both of which affect poverty. Therefore, the empirical strategy to examine the effect of trade liberalisation on poverty in ECOWAS region follows the works of Le Goff and Singh (2014); Thelle et al. (2015); Khan, Saera and Sang, (2019) and improvement over their works could be a substantial addition to the literature.

Hence, the generic model is specified thus:

$$PO_{it} = \beta_0 + \beta_1 TR_{it} + \beta_2 pGDP_{it} + \beta_3 EXCH_{it} + \beta_4 ED_{it} + \varepsilon_{it} \quad (3.3)$$

Where PO is the poverty, TR is trade openness which is the main explanatory variable of interest, $pGDP$ is per capita income, $EXCH$ is real exchange rate and ED is the primary school completion rate. Per capita GDP ($pGDP$), and real exchange rate ($EXCH$) are the included as macroeconomic factors influencing poverty, while primary school completion rate (ED) is the human capital factor included in the model. These factors serve as control variables because they can also affect poverty. β_0 to β_7 are the various parameters to be estimated

$$\Delta \ln PO_{it} = \beta_0 + \sum_{i=1}^p \gamma_{1it} \Delta \ln PO_{t-it} + \sum_{j=1}^{q_1} \gamma_{2it} \beta_1 TR_{t-it} + \sum_{j=1}^{q_2} \gamma_{3it} \beta_2 pGDP_{t-it} + \sum_{j=1}^{q_3} \gamma_{4it} \beta_3 EXCH_{t-it} + \sum_{j=1}^{q_4} \gamma_{5it} \beta_4 ED_{t-it} + \varepsilon_{it} \quad (3.4)$$

Where $\gamma_1 - \gamma_5$ are the vector parameters of the long-run estimates, Δ are the operators of the first difference, $\delta_1 - \delta_5$ are the vector parameters of the short-term estimates, p and $q_1 - q_4$ are the optimal lag length, β_0 is the parameter of the drift component, and ρ_{it} is the stochastic white noise.

In equation 3.3, the *a priori* expectations of the coefficients are:

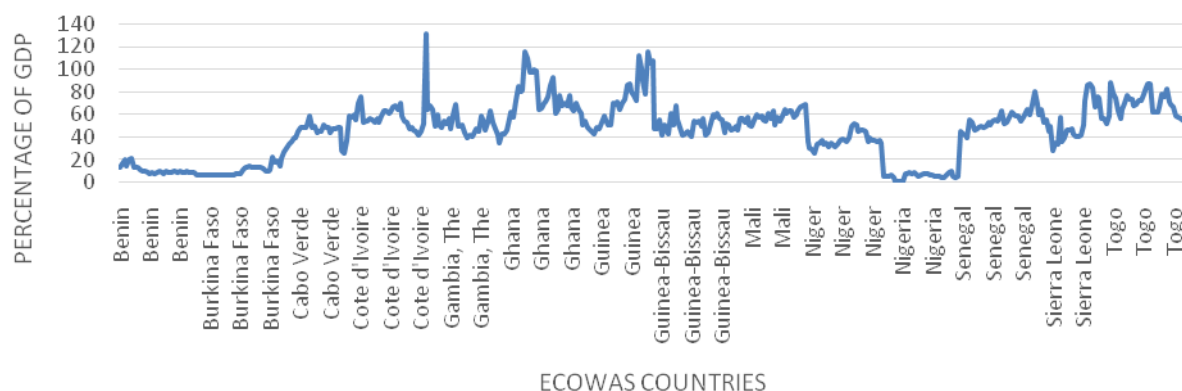
- $\beta_1 < 0$: An increase in poverty will lead to decrease in Trade Liberalisation
- $\beta_2 < 0$: An increase in poverty will lead to decrease in Real Gross Domestic Products
- $\beta_3 > 0$: An increase in poverty will lead to increase in Real Exchange Rate
- $\beta_4 > 0$: An increase in poverty will lead to decrease in Education

4. ANALYSIS OF RESULTS

4.1 Trend and Analysis

This figure displays the percentage contribution of trade to GDP across countries in the ECOWAS region. The data shows wide disparities in trade flows among member states. Countries like Côte d'Ivoire, Ghana, The Gambia, Senegal, and Togo register relatively high and variable trade-to-GDP ratios, suggesting a stronger link with international markets. On the other hand, nations such as Nigeria, Niger, Benin, and Burkina Faso exhibit lower trade percentages, which could be associated with large domestic markets or limited trade diversification.

Figure 1 :Trade flow in ECOWAS region



Author's Compilation, 2024

The recurring appearance of certain countries on the horizontal axis may suggest that the data spans multiple years or different trade segments. Several noticeable peaks in the data could reflect short-term surges in trade activities. Generally, the figure highlights the uneven nature of trade dependence within the region and underscores the importance of region-specific strategies to promote balanced trade growth and deeper economic integration.

Table 1: Descriptive Statistics

	Mean	Median	Max.	Min.	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Prob.
PO	44.3927	43.8000	63.9000	22.0000	9.1904	0.0263	3.4967	4.1053	0.1284
TR	54.5528	52.4944	117.8167	20.7225	19.0912	0.9252	3.8155	68.9965	0.0000
EXCH	968.2306	511.5524	10439.43	13.8540	1875.518	3.3822	14.0491	2832.288	0.0000
ED	60.9854	61.8675	105.9931	13.8540	18.4768	-0.0995	2.7672	1.5779	0.4543
PGDP	957.6790	690.0000	4550.000	100.000	784.9731	2.0840	7.6986	665.6970	0.0000

Note: PO: poverty, TR: trade openness, pGDP: per capita income, EXCH: exchange rate; ED: education; UMP: unemployment

Source: Author's compilation, 2024

4.2. Correlation Coefficients

The correlation coefficients of the variables for objectives were presented in Table 4.2 as follows:

Table 2. Correlation coefficients of the variables for objectives

	Po	TR	pGDP	ED	INST	EXCH
Po	1.0000					
TR	-0.3765***	1.0000				
pGDP	-0.2767***	0.3711***	1.0000			
ED	-0.4059***	0.4747***	0.4214***	1.0000		
INST	-0.0234	0.3977***	0.5900***	0.2781***	1.0000	
EXCH	-0.2267***	0.1273**	-0.1127**	-0.2193***	0.0005	1.0000

Note: "***" and "**" represent the probability values of 5% and 1% respectively

Source: Author's compilation, 2024

Table 3: Variance Inflating Factor

Variable	VIF	Tolerance $\left(\frac{1}{VIF}\right)$
TR, log	2.25	0.4446
pGDP, log	3.91	0.2560
ED	1.60	0.6241
INST	2.47	0.4041
EXCH, log	1.24	0.9154
Mean VIF	1.96	

Source: Author's compilation, 2024

Table 4.4: Test of Cross Sectional Dependence

Test	Statistic	Prob
Breusch-Pagan LM	650.0271	0.0000
Pesaran scaled LM	34.5051	0.0000
Pesaran CD	4.9521	0.0000
Slope Homogeneity Test		
Tests	Statistics	p-value
Pesaran and Yamagata (2008)		
$\Delta(\text{delta})$ test	9.406***	0.000
$\tilde{\Delta}(\text{delta})$ adj. test	11.520***	0.000
Blomquist and Westerlund (2013)		
Δ_{HAC}	20.736***	0.000
(Δ_{HAC}) adj.	25.396***	0.000

Note: "***" and "*" represent the probability values of 5% and 1% respectively

Source: Author's compilation, 2024

4.3. Panel Unit Root Tests

Summary of the results of unit root tests were presented in Table 4.5.

Table 4.5: 2nd Generation Panel Unit Root Tests

Variable	CIPS		Remark	CADF		Remark
	Level	First Diff		Level	First Diff	
Po	-0.677	-4.861***	I(1)	-6.126***		I(0)
TR, log	-0.346	-2.786***	I(1)	-7.996	-4.758***	I(1)
pGDP, log	-1.869	-4.013***	I(1)	-1.593	-4.838***	I(1)
ED	-1.988	-4.311***	I(1)	-1.354	-5.995***	I(1)
INST	-1.594	-4.402***	I(1)	-0.220	-5.006***	I(1)
EXCH, log	-2.712***		I(0)	-3.804***		I(0)

Note: "***" and "*" represent the probability values of 5% and 1% respectively

Source: Author's computation (2024)

$$\begin{aligned}
 \Delta \ln PO_{it} = & \beta_0 + \beta_1 TR_{it} + \beta_2 pGDP_{it} + \beta_3 EXCH_{it} + \beta_4 ED_{it} \\
 & + \sum_{i=1}^p \gamma_{1it} \ln PO_{t-it} + \sum_{j=1}^{q_1} \gamma_{2it} \beta_1 TR_{t-it} + \sum_{j=1}^{q_2} \gamma_{3it} \beta_2 pGDP_{t-it} + \sum_{j=1}^{q_3} \gamma_{4it} \beta_3 EXCH_{t-it} + \\
 & \sum_{j=1}^{q_4} \gamma_{5it} \beta_4 ED_{t-it} + \varepsilon_{it}
 \end{aligned} \quad (3.5)$$

In this model, Δ represents the first difference operators, while γ_1 to γ_5 denote the vector coefficients corresponding to the long-run relationships. Similarly, λ_1 to λ_5 are the coefficients for the short-run dynamics. The values of p and q_1 through q_4 indicate the selected optimal lag lengths. B_0 stands for the constant term, and p_t signifies the stochastic error term, assumed to be white noise. Following the framework proposed by Pesaran et al. (2001), the ARDL bounds testing approach employs the F-statistic to assess the presence of either short-run or long-run cointegration among variables. A rejection of the null hypothesis suggests the existence of a long-term equilibrium relationship. The cointegration test is thus carried out under this hypothesis framework.

$$H_0: \lambda_1 \neq \lambda_2 \neq \lambda_3 \neq \lambda_4 \neq \lambda_5 \quad (3.6)$$

Therefore, the ARDL bounds testing approach, using the computed F-statistic, provides two critical values—namely, the lower bound (I(0)) and the upper bound (I(1))—to evaluate whether there is short-run or long-run cointegration among the variables. According to the decision rule, if the F-statistic falls below the lower bound value, it implies the absence of cointegration among the variables; conversely, if it exceeds the upper bound, cointegration is confirmed. Based on the results presented in Table 4, a long-run association exists among human capital, institutional quality, and income inequality in Nigeria. This outcome indicates that the variables are cointegrated, highlighting the necessity to address any disequilibrium that may exist in their long-run relationship over the 1996–2022 period.

5. RESULTS AND DISCUSSION

The empirical analysis conducted in this study reveals mixed but insightful outcomes regarding the relationship between trade liberalization and poverty in the ECOWAS region. The descriptive statistics and trade flow data highlight the significant disparities in trade engagement among member countries. While nations such as Côte d'Ivoire and Ghana exhibit high trade-to-GDP ratios indicating stronger integration into international markets, others like Nigeria and Benin remain less diversified and more inward-focused. This disparity may partially explain the inconsistent impact of trade liberalization on poverty across the region, reinforcing the argument that a one-size-fits-all policy may not be effective.

Correlation analysis shows that trade openness (TR) and per capita income (pGDP) are negatively associated with poverty, suggesting that as these variables increase, poverty levels tend to decline. However, this relationship is nuanced. While trade openness is negatively correlated with poverty, supporting the theoretical proposition that increased trade leads to growth and potentially lower poverty, the quantile regression analysis by Afolabi et al. (2025) shows that this reduction is only significant in low-poverty countries. In contrast, bilateral trade has a more consistent and significant poverty-reducing effect, especially in countries with already low poverty headcounts, pointing to the importance of intra-regional trade and economic cooperation.

The regression outputs, including results from FGLS and panel ARDL techniques, provide a more robust understanding of these dynamics. Variables such as exchange rates and education display varying significance and direction across models and countries. While exchange rate depreciation may worsen poverty by increasing the cost of imports and reducing purchasing power, education (proxied by primary school completion rate) is shown to have a mitigating effect on poverty. This aligns with Balogun et al. (2023), who emphasized the role of human capital in enhancing sustainability and reducing poverty. Furthermore, the variance inflation factor (VIF) values confirm that multicollinearity is not a major concern in the model, supporting the reliability of the estimated coefficients.

Cross-sectional dependence and slope heterogeneity tests confirm the presence of structural differences across countries, justifying the use of second-generation panel techniques. These results underscore the importance of accounting for regional heterogeneities and country-specific characteristics when formulating trade and poverty alleviation policies. The unit root tests also validate the use of first-difference transformations, ensuring the stationarity of the series and the appropriateness of the econometric models used. The long-run and short-run dynamics further suggest that while trade liberalization may initially exacerbate poverty, it can lead to reductions over time, contingent on improvements in institutional quality, exchange rate stability, and education.

This study affirms the relationship between trade liberalization and poverty. Trade openness alone is insufficient to guarantee poverty reduction; rather, it must be complemented by strong institutions, targeted social programs, and investment in human capital. The findings call for tailored policy interventions that recognize country-specific dynamics, promote regional trade, and focus on inclusive growth strategies. Such nuanced approaches are crucial to achieving sustainable development and aligning with broader economic goals across the ECOWAS region.

6. CONCLUSION

The study highlights relationship between trade liberalization and poverty reduction in the ECOWAS region, emphasizing the importance of achieving economic growth as a precursor to poverty alleviation. The findings suggest that while trade liberalisation can stimulate growth, its direct impact on poverty is nuanced and varies across countries with differing poverty levels. The analysis underscores that factors such as foreign direct investment, education, and institutional quality play critical roles in shaping the poverty-reduction outcomes of trade liberalization. The study also points to the need for tailored policy interventions that account for the varying socio-economic contexts of ECOWAS member states. By focusing on enhancing human capital, fostering regional trade integration, and ensuring inclusive growth, policies can better leverage trade liberalization as a tool for sustainable development and poverty reduction.

Based on the findings of the study, the following recommendations were made:

- Policymakers should tailor trade liberalization strategies to the specific poverty levels of ECOWAS member states, focusing on targeted measures for high-poverty countries.
- Investing in education and skill development is crucial to enable the workforce to benefit from trade liberalization
- Strengthening institutional quality and governance will ensure trade reforms are effectively implemented and benefit all citizens.

Lastly, promoting intra-regional trade and economic integration will enhance resilience and foster collective economic growth within ECOWAS.

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ECONOMIC PERFORMANCE OF REGIONAL TRADE BLOCS IN AFRICA

ЕКОНОМСКЕ ПЕРФОРМАНСЕ РЕГИОНАЛНИХ ТРГОВИНСКИХ БЛОКОВА У АФРИЦИ

Summary: Despite the spread of trade blocs in Africa, the volume of intra-regional trade remained low. Meanwhile, study on the uneven growth patterns of trade blocs in Africa is scarce. This study analyses the economic performance of regional trade blocs in Africa. The time series data on four trade blocs were sourced from United Nations Conference Trade and Development databases from 1995 to 2022. The study employed the Autoregressive Distributed Lag approach. The result shows that while intra trade does not affect economic performance across the trade blocs, extra-trade shows a negative significant effect in Economic Community of West African States (ECOWAS) and a positive effect in Economic Community of Central African States (ECCAS) in the short run. Although, in the long run, intra-trade does not affect on economic performance across the trade blocs, extra trade show a positive significant effect only in ECCAS. The study submitted that the economic performance of trade blocs in Africa is not uniform, while ECCAS benefited from both intra trade and extra trade, the performance of other trade blocs is not impacted by both component of trade in both the short and long run except in ECOWAS which suffers a negative short run effect of extra trade. Policymakers need to promote intra-regional trade by streamlining customs procedures and fostering conducive business environment. Also, there is need to explore new markets and trading opportunities both with members and with other trade blocs in Africa. The study contributes to a broader understanding of the differences and similarities in trade effects across different regions.

Keywords: Economic performance, trade blocs, trade integration, Africa, ARDL

JEL classification: F15, F14, O55, O32

Резиме: Упркос ширењу трговинских блокова у Африци, обим унутаррегионалне трговине и даље остаје низак. Истовремено, истраживања о обрасцима неуједначеног раста трговинских блокова у Африци релативно су ријетка. Ова студија анализира економске перформансе регионалних трговинских блокова у Африци. Временске серије података за четири трговинска блока прикупљени су из база Конференције Уједињених нација за трговину и развој (UNCTAD) за период од 1995. до 2022. године. У раду је коришћен приступ ауторегресивне дистрибуиране временске лаг структуре (ARDL). Резултати указују да, док унутрашња трговина нема значајан утицај на економске перформансе међу анализираним блоковима, спољна трговина у кратком року има негативан ефекат на Економску заједницу западноафричких држава (ECOWAS), а позитиван на Економску заједницу држава централне Африке (ECCAS). Дугорочно, док унутрашња трговина и даље нема утицаја на економске перформансе у блоковима, спољна трговина показује значајно позитиван утицај само у ECCAS-у. Студија закључује да економске перформансе трговинских блокова у Африци нису униформне. Док ECCAS има корист од оба типа трговине, перформансе осталих блокова нису значајно погођене ни унутрашњом ни спољном трговином, осим ECOWAS-а који трпи негативне краткорочне ефекте спољне трговине. Креатори економске политике треба да подстичу унутаррегионалну трговину кроз поједностављење царинских процедура и стварање повољнијег пословног окружења. Поред тога, потребно је истражити нова тржишта и трговинске могућности, како међу земљама чланицама тако и са другим трговинским блоковима у Африци. Ова студија доприноси ширем разумијевању разлика и сличности у трговинским ефектима у различитим регионима.

Кључне речи: економске перформансе, трговински блокови, трговинска интеграција, Африка, ARDL

ЈЕЛ класификација: F15, F14, O55, O32

1. INTRODUCTION

Trade integration continued to gain prominence and acceptance of government and policy makers all over the world. The increasing acceptance of the regional agreement has been attributed not only to the success story of a number of the earliest trade alliance in developed countries such as the World Trade Organisation (WTO) and European Union (EU) but also due to the numerous benefits of

such agreements for member state and regional economic progress. Trade integration promotes convergent economic trajectories and shared economic prosperities of member nations (Seck *et al.* 2020), and provides access to large market, raise productivity and knowledge transfer benefits (Rodríguez Pose and Sotiriou 2019). It also enhances effective mobilization of capital, and regional value chains (Gammadigbe 2021)

The effect of trade integration on economic performance differs based on the levels of economic development of the region (Rodríguez-Pose 2012; Rodríguez Pose and Sotiriou, 2019). With regional integration, a more advanced neighbouring economies or groupings are more likely to grow faster than the less developed neighbouring economies (Seck *et al.* 2020). However, when the timing of the opening to trade is considered, the increase in trade through integration does not necessarily always benefit the more developed regions or nations at the expense of the poorer ones as the territorial impact of trade can be quite different. Hence, more advanced and industrialised regions or nations with weak industrial structures are bound to suffer significant employment losses following increases in trade and economic integration with more advanced economies or regions. Thus, trade integration can have positive and negative economic impacts for a more developed and less developed region or country (Rodríguez Pose and Sotiriou 2019).

In Africa, trade integration is characterized by large variations in national competitiveness even among integrating nations. Worst still, economic growth has not kept pace with the goals and objective of integration in the region despite a host of policy changes to boost the benefit of many of the trade blocs that were formed (Menyah *et al.* 2014). The low volume of intra-regional trade and the disparity in national competitiveness among the member nations is partly blamed on the low status of development of the region compared to the developed region (IMF 2021). Despite several years of regional economic integration, the countries are poorly integrated and the region has continued to trade primarily with their former colonizers and increasingly with emerging economies including China. Furthermore, there is weak complementarity of economies in the region in relation to their poorly diversified structures (Gammadigbe 2017).

In the literature, several studies have explored the associated benefits and cost of trade integration (see Choe 2001; Arribaset *al.* 2020; Piton 2021; Fetahi-Vehapi *et al.* 2015). However, limited studies abound providing empirical based test on the uneven growth patterns of a trade blocs at regional and sub-regional levels (Rodríguez Pose and Sotiriou, 2019). Meanwhile, there is increasing evidence that trade integration creates uneven growth patterns (Paluzie 2001; Kallioras and Pinna 2015; Rodríguez Pose and Sotiriou 2019). This study is motivated to address this gap by investigating the mechanisms behind the relatively poor growth rate of regional trade blocs in Africa in the context of the deepening trade integration of the region. The broad objective of this study is to investigate the economic performance of regional trade blocs in Africa. The specific objectives of the study are to:

- analyse the effect of intra trade on economic performance of trade blocs in Africa; and
- estimate the effect of extra trade on economic performance of trade blocs in Africa.

The analysis of the heterogeneous growth effects of trade integration in ECOWAS will help in formulating regional-wide policy to achieve the age-long objectives of regional trade blocs in Africa. This study provides insight for a better understanding of the uneven growth pattern effect of trade integration of trade blocs in Africa. The study takes a comparative approach by accounting for regional specifics and as such will provide insights to the underlying factors responsible for spatially generated growth spillovers associated with trade integration.

2. LITERATURE REVIEW

The evolution of Regional Economic Communities (RECs) in Africa started in 1970s (Awad and Yussof 2017). However, out of the seventeen (17) regional trade blocs in existence, only eight (8) comprising of Common Market for Eastern and Southern Africa (COMESA), Southern African Development Community (SADCS), East African Community (EAC), Arab Maghreb Union (AMU), Economic Community of Central African States (ECCAS), Economic Community of West African States (ECOWAS), Intergovernmental Authority on Development (IGAD) and Community of Sahel-Saharan Community (CEN-SAD) are officially recognised by the African Union (Anyanwu, 2014; Awad, 2019). Although each country in the continent belongs to at least one of the eight major

Regional Economic Communities (RECs), they differ in many respects including economic or population size, age, main objectives and actual level of implementation (Seck, *et al.*, 2020). Among the eight officially recognised regional trade blocs in the continent, the five major ones comprises of COMESA, AMU, ECCAS, ECOWAS, and SADC while the remaining three are either overlapping with others or too large and heterogeneous. For instance, the West African Economic and Monetary Union (WAEMU) overlap with ECOWAS and; both IGAD and EAC are overlapping with COMESA excluding Somalia, South Sudan, and Tanzania. The Community of Sahel-Saharan States which is composed of 24 member countries is very large with heterogeneous counties (Seck et al. 2020).

The core theories on the welfare gains and losses that follows the formation of trade union include the Viner's customs union theory, and the general equilibrium theory. Viner (1950) in his custom union theory laid the foundation of the theory of economic integration where the interregional flow of goods and services as a result of integration caused by changes in customs tariffs was believed to either translate to trade creation or trade diversion in the economies of trade bloc. He associated trade creation which is the replacement of domestic production with a lower cost imports from a partner with welfare gains and trade diversion which is the replacement of lower costs cheaper costs imports from the world market by more expensive imports from a partner with welfare loss. Hence, whether or not trade bloc or integration is welfare increasing depends upon the relative magnitudes of trade creation and trade diversion (Viner 1950). Mende (1955) general equilibrium analysis pointed out that the relative magnitudes of trade creation and trade diversion alone are insufficient to determine the welfare effect of a bloc because the benefits of preferential liberalization depends not only on the extent of trade creation but also on trade costs. Mende (1955) theory stated that in the presence of distortion, if all conditions under Pareto optimality are fulfilled, then neither the removal of some or all of the distortion will necessarily increase welfare, nor the addition of other distortions. When one sub-optimal is replaced by another sub-optimal situation, welfare may remain un-affected, increased or decreased. From this analysis, welfare comparisons between economies that are integrated are ambiguous. When some Pareto optimality conditions are met while others are not, welfare comparison needs to be done, so that no one is left worse off.

Several studies abound on the effect of trade integration on economic growth and on the welfare gains and losses of trade blocs. For instance, on the welfare gains and losses of members of trade bloc, Were (2015) examines the differential effects of trade on economic growth and investment based on cross country data from 1991 to 2011. Results on different categories of countries show that whereas trade has positively impacted economic growth in developed and developing countries, its effect is insignificant for least developed countries (LDCs) which largely include African countries. In the same vein, Fetahi-Vehapiet al. (2015) analyse the effects of openness to trade on economic growth of South East European (SEE) countries using a panel data of 10 SEE countries over the period 1996 to 2012. The results of the GMM estimation method show that the positive effects of trade openness on economic growth are conditioned by the initial income per capita and other explanatory variables, otherwise there is no robust evidence between these two variables. Moreover, the trade openness is more beneficial to countries with higher level of initial income per capita and as well favours countries with higher level of FDI and with higher gross fixed capital formation.

Rodríguez Pose and Sotiriou (2019) examine the link between increased trade and regional GDP growth across the regional income distribution in Greece during the post European Economic and Monetary Union (post-EMU) period (2000–2013). The result of the Quantile regression, panel fixed effects, generalized method of moments (GMM) production-function method shows that the impact of EU trade is highly heterogeneous and mainly affects negatively the economy of the richer regions in Greece. In contrast, the effects of EU trade display insignificant results for the lower-income regions, attributed to the absence of direct substitution effects. Similar result was established by Gammadigbe (2021) analyze the relationship between the quality of institutions and the performance of intra-community trade in West Africa from 1996 to 2018. Results show that the consolidation of regional integration in the WAEMU zone through the introduction of the CET in 2000 produced a positive effect, whereas the introduction of the ECOWAS CET in 2015 has not yet produced the expected effects. Similarly, Tinta et al. (2018) analyse the potential of regional integration through the advantage of global value chains in accelerating economic growth and achieving food security in ECOWAS. This study examines whether countries must develop strategies to raise international trade or adopt policies to reinforce regional trade. The result of the panel fixed effects shows that regional integration needs to be strengthen and better promoted to stimulate the potential of each country to move from discontinuous to sustained growth. In another study, Seck et al.

(2020) assess the regional growth potential of economic integration in Africa. The study develops a spatial dynamic panel data model to capture any spatial dependence of national growth trajectories through trade linkages. Results show strong evidence of a positive growth spillover effect across the continent as a whole, and trade turns out to be more conducive to these spillover gains than geographic proximity.

3. METHODOLOGY

This study is anchored on endogenous growth theory and the choice of this theory is because it provides a theoretical basis for explaining the channels through which trade influences economic growth. In order to compare the effect of trade integration on economic performance of trade blocs in Africa, the Seck *et al.* (2020) model was also adapted. In the model, aggregate economic performance (GDP_p) of trade blocs in Africa is expressed as a function of their respective intra-regional trade (IRT) and extra regional (ERT) trade measured by trade openness computed based on the ratio of the sum of export and import to GDP of the trade blocs respectively and the control variables comprising of investment (KF), labour force (LFP) and inflation (INF) of the trade blocs in a panel model.

$$GDPp_i = f(IRT_i, ERT_i, KF_i, LFP_i, INF_i) \quad (3.1)$$

Where i is the trade bloc identifier representing ECOWAS, COMESA, ECCAS and SADC. The other trade blocs in Africa were ignored because they are either overlapping with others or too large and heterogeneous. In the analysis of the model, the dependent variable is GDP per capita growth is at first difference ($D(GDPP)$), and the independent variables include the lagged dependent variable, initial real trade (IRT), exchange rate (ERT), capital formation ($\ln(KF)$), labour force participation (LFP), and inflation ($\ln(INFL)$). The model captures short-run dynamics and long-run relationships with appropriate transformations and lag specifications as shown in equation 3.2:

$$\begin{aligned} D(GDPP_t) = & \alpha_0 + \sum_{i=1}^p \alpha_1 D(GDPP_{t-i}) + \sum_{j=0}^q \alpha_2 D(IRT_{t-j}) + \sum_{k=0}^r \alpha_3 D(ERT_{t-k}, 2) \\ & + \sum_{m=0}^s \alpha_4 D(\ln(KF)_{t-m}) \\ & + \sum_{n=0}^u \alpha_5 D(LFP_{t-n}) + \sum_{v=0}^w \alpha_6 D(\ln(INFL)_{t-v}) + \lambda CointEq_{t-1} + \varepsilon_t \quad 3.2 \end{aligned}$$

The short-run coefficients (α_i) capture immediate effects of changes in independent variables on $D(GDPP_t)$ with lagged effects as specified. Transformations include: $D(GDPP(-1))$: First-differenced lagged dependent variable; $D(IRT)$: First-differenced initial real trade; $D(ERT, 2)$: First-differenced exchange rate, lagged by two periods; $D\ln(KF)$: Log-differenced capital formation; $D(LFP)$: First-differenced labor force participation; and $D\ln(INFL)$: Log-differenced inflation. The long-run relationship is specified as:

$$GDPP_t = \beta_0 + \beta_1 GDPP_{t-1} + \beta_2 IRT_t + \beta_3 ERT_t + \beta_4 \ln(KF_t) + \beta_5 LFP_t + \beta_6 \ln(INFL_t) + \mu_t \quad 3.3$$

Where:

$CointEq_{t-1}$ is the error correction term capturing long-run equilibrium adjustments and λ is the speed of adjustment coefficient, expected to be negative and statistically significant. The Short-Run Dynamics can be stated as follows:

$$\begin{aligned} D(GDPP_t) = & \alpha_0 + \alpha_1 D(GDPP_{t-1}) + \alpha_2 D(IRT_t) + \alpha_3 D(ERT_{t-2}) + \alpha_4 D(\ln(KF_t)) \\ & + \alpha_5 D(LFP_t) + \alpha_6 D(\ln(INFL_t)) + \lambda CointEq_{t-1} + \varepsilon_t \quad 3.4 \end{aligned}$$

The long-run relationship is given as:

$$GDPP_t = \beta_0 + \beta_1 GDPP_{t-1} + \beta_2 IRT_t + \beta_3 ERT_t + \beta_4 \ln(KF_t) + \beta_5 LFP_t + \beta_6 \ln(INFL_t) + \mu_t \quad 3.5$$

The main variables in the study include economic performance (GDPP), intra-trade (IRT); extra-trade (ERT) on trade blocs in Africa. The other variables are investment (KF), labour force (LFP), and inflation (INF). The measurement of the variables is presented in Table 3.1.

Table 3.1: Definition of Variables, Unit and Measurement

S/N	Description	Variables	Measurement	Unit	Source
1.	Economic Performance	GDPP	This is the total GDP per capita	annual US dollars at current prices in millions	UNCTAD database
3	Intra-trade	IRT	This is the aggregate trade flows between member countries of the trade bloc measured by trade openness	US dollars at current prices in millions	UNCTAD database
4	Extra-trade	ERT	This is the aggregate trade flows of the trade bloc with all with other trade blocs in Africa.	US dollars at current prices in millions	UNCTAD database
5	Investment	KF	Investment measured by gross capital formation	US dollars at current prices in millions	WDI database
6	Labour force participation	LFP	This is the percentage of the working-age population between aged 15 to 64 years	In rate	WDI database
7	Inflation	INF	Inflation is measured by consumer price index.	Annual average growth rate of CPI all items	WDI database

Source: Authors Compilation, 2024

This study analyses aggregated time series data of four trade blocs in Africa comprising of ECOWAS, COMESA, ECCAS and SADC was used in the study. The data were sourced from United Nations Conference Trade and Development statistics databases (UNCTAD) covering a period of twenty eight (28) years from 1995 to 2022. The limitation in the scope is primary due to availability of data on intra and extra regional trade. In the database of the United Nations Conference Trade and Development (UNCTAD) statistics databases, the records of regional data on intra trade and extra trade across trade blocs of the world started in 1995.

In analysing the data, the Autoregressive Distributed Lag (panel-ARDL) technique was used. The estimation technique was developed by Peseran and Shin (1999) and used by Peseran et al. (2001). ARDL allows for joint estimation of relationships between variables in both the short-run and long-run; it also helps to verify if explanatory variable, have impact on the endogenous variable. It is an unbiased estimation of a long-run model which has advantages over some other conventional techniques. The choice of the estimation technique is because of its suitability in accounting for both the time series and cross-sectional dimensions of panel model simultaneously. Also, compared to other cointegration techniques, it is more suitable in dealing with small sample in cases of limited data, accommodates both stationary and non-stationary series which makes it flexible for analysing a wide range of economic and financial data.

4. RESULTS AND DISCUSSION

The preliminary results comprising of descriptive statistics, pairwise correlation coefficients, unit root tests are presented before the actual empirical analysis of the research objectives.

Table 4.1: Descriptive Statistics

	GDPP	IRT	ERT	KF	LFP	INFL
Mean	420954.6	0.000451	0.004516	92159.47	2.678885	12.67387
Median	443322.3	0.000313	0.003977	94230.83	2.683353	10.57808
Maximum	766133.3	0.003977	0.013197	182952.9	2.781739	58.88863
Minimum	102919.4	-0.002693	-0.000120	29154.94	2.486078	5.604255
Std. Dev.	250541.0	0.001498	0.003496	51253.39	0.085689	9.841668
Skewness	-0.055709	0.377709	1.212032	0.367945	-0.578195	3.919858
Kurtosis	1.366591	2.901985	3.837221	2.037813	2.237791	18.80677
Jarque-Bera	3.127179	0.676972	7.673201	1.711894	2.237898	363.2009
Probability	0.209383	0.712849	0.021567	0.424881	0.326623	0.000000
Observations	28	28	28	28	28	28

Source: Authors Computation, 2024

The descriptive statistics presented in Table 4.1 shows that the mean economic performance stands at 420,954.6 units. The variation is notable, ranging from a minimum of 102,919.4 to a maximum of 766,133.3. The standard deviation of 250,541.0 indicates a considerable dispersion around the mean. The skewness is slightly negative (-0.055709), suggesting a minor leftward asymmetry in the distribution, while the kurtosis of 1.366591 indicates a moderately peaked distribution. The Jarque-Bera statistic of 3.127179, with a p-value of 0.209383, does not provide strong evidence against normality. The variability in mean GDP, as indicated by the range and standard deviation, suggests economic disparities among member states. The negative skewness implies that there are relatively fewer extremely high GDP values. The moderate kurtosis indicates a somewhat peaked distribution. The normality test does not strongly reject normality, suggesting that the GDP distribution is reasonably close to a normal distribution. The implications are that while the trade blocs exhibits economic diversity, there is a tendency for stability and predictability in economic performance

For intra-trade (IRT) and extra-trade (ERT), mean values of 0.000451 and 0.004516, respectively, demonstrate relatively small average proportions. Both variables exhibit positive skewness, indicating a rightward skew in the distribution. The Jarque-Bera statistics, with p-values of 0.712849 for IRT and 0.021567 for ERT, suggest that the distributions may deviate from normality. The low mean values of intra-trade (IRT) and extra-trade (ERT) suggest that trade within and outside trade blocs, respectively form a relatively small part of the overall economic activity in Africa. The positive skewness in both variables indicates that there are fewer instances of extremely high trade values. The normality tests suggest that the distributions deviate from normal, implying that there high and low values intra-trade (IRT) and extra-trade (ERT)

The mean investment (KF) is 2.678885, with a standard deviation of 0.085689. The skewness of -0.578195 indicates a leftward skew, and the kurtosis of 2.237791 suggests a moderately peaked distribution. The Jarque-Bera statistic of 2.237898, with a p-value of 0.326623, does not provide strong evidence against normality. The mean investment signifies the average investment level within trade blocs. The leftward skewness suggests that there are fewer instances of extremely low investment values. The normality test does not provide strong evidence against normality, indicating a relatively stable trend in investment. This suggests that, on average, the region maintains a moderate level of investment without significant outliers.

Labour force participation (LFP) has a mean value of 12.67387, with a range from 5.604255 to 58.88863. The skewness of 3.919858 indicates a highly rightward-skewed distribution, and the kurtosis of 18.80677 suggests a heavily peaked distribution. The Jarque-Bera statistic of 363.2009, with a p-value of 0.000000, strongly rejects normality. The highly rightward-skewed distribution and high kurtosis suggest that there are instances of very high labour force participation rates, possibly due to specific economic activities or industries dominating certain periods. The normality test strongly rejects normality, indicating a distribution significantly deviating from a normal pattern. The

implications are that the labour force participation in Africa is characterized by periods of intense engagement, potentially linked to specific economic sectors or events.

Inflation (INF) has a mean value of 12.67387, with a standard deviation of 9.841668. The skewness of 3.919858 indicates a highly rightward-skewed distribution, and the kurtosis of 18.80677 suggests a heavily peaked distribution. The Jarque-Bera statistic of 363.2009, with a p-value of 0.000000, strongly rejects normality. The mean inflation rate of 12.67387, combined with the high standard deviation and positive skewness, indicates a notable variability in inflation within the region. The highly rightward-skewed distribution and high kurtosis suggest periods of relatively high inflation. The normality test strongly rejects normality, emphasizing the presence of non-normal patterns in inflation trends. The implications is that the region experiences periods of volatility, potentially influenced by economic events, policy decisions, or external factors.

Table 4.2: Unit root Tests

Variables		Augmented Dickey-Fuller test		Phillips-Perron test	
		Level	First Difference	Level	First Difference
GDPP		1.875931 (0.9828)	-3.357030 (0.0017)	1.607949 (0.9703)	-3.357030 (0.0017)
IRT		-4.942749 (0.0000)	-8.697386 (0.0000)	-4.942749 (0.0000)	-10.88882 (0.0000)
ERT		-1.182306 (0.2106)	-5.607957 (0.0000)	-1.162116 (0.2173)	-5.731586 (0.0000)
KF		2.120141 (0.9898)	-3.327507 (0.0018)	1.838403 (0.9814)	-3.327507 (0.0018)
LFP		-1.119540 (0.2312)	-7.241658 (0.0000)	-0.532675 (0.4767)	-3.191879 (0.0026)
INFL		-5.433068 (0.0000)	-2.542637 (0.0138)	-4.353408 (0.0001)	-25.12463 (0.0000)
Test critical values	1% level	-2.653401	-2.656915	-2.653401	-2.656915
	5% level	-1.953858	-1.954414	-1.953858	-1.954414
	10% level	-1.609571	-1.609329	-1.609571	-1.609329

Source: Authors Computation 2024

Both the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests suggest diverse stationarity properties among the key economic variables. While intra-trade and inflation appear to be stationary, other variables such as economic performance, extra-trade, investment, and labour force participation exhibit non-stationary behaviour at the level, becoming stationary after differencing.

In the analysis, economic performance (GDP_p) of each of the four trade blocs in Africa is expressed as a function of their respective intra-regional (IRT) and extra regional (ERT) trade and the control variables comprising of investment (KF), labour force (LFP) and inflation (INF). The result is presented in Table 4.3 as follows:

Table 4.3: ARDL Estimates of Model Two

ARDL Bounds Test		ECOWAS	COMESA	ECCAS	SADC
Test Statistic		Value	Value	Value	Value
F-statistic (k)		6.974344(6)	9.236928(6)	3.914256(5)	5.309431(6)
		I1 Bound	I1 Bound	I1 Bound	I1 Bound
Significance (5%)		3.61	3.61	3.79	3.61
Short Run Coefficients					
Variable		Coefficient	Coefficient	Coefficient	Coefficient
D(GDPP(-1))		0.000000 (0.7340) [0.390259]	0.000001 (0.4560) [0.91679]	-0.297193 (0.0394) [-2.622608]	-0.000001 (0.0457) [-2.100864]
D(IRT)		22.205639 (0.3698) [1.147888]	-2.757815 (0.8368) [-0.2339]	-2.040722 (0.7627) [-0.316029]	-0.710648 (0.7820) [-0.282461]

D(ERT, 2)	-19.954424 (0.0361) [-5.120918]	9.294192 (0.2420) [1.643300]	6.286987 (0.0041) [4.497321]	6.705491 (0.5821) [0.564408]
DLOG(KF)	0.474405 (0.0494) [4.328851]	0.619833 (0.0294) [5.702837]	0.000011 (0.0263) [2.929102]	0.000003 (0.0335) [2.376861]
D(LFP)	-2.705995 (0.2119) [-1.810597]	0.022932 (0.4941) [0.829361]	0.373793 (0.2386) [1.308316]	-0.530228 (0.5817) [-0.564963]
DLOG(INFL)	-0.019703 (0.8285) [-0.246167]	0.104506 (0.1514) [2.268013]	0.000629 (0.21370) [1.390631]	-0.000464 (0.7669) [-0.302703]
CointEq(-1)	-2.894380 (0.0464) [-4.478106]	-3.054772 (0.0235) [-6.413046]	-0.371734 (0.0028) [-4.872310]	-1.144961 (0.0009) [-4.269321]
Long Run Coefficients				
C	-2.768677 [0.1276] [-2.523655]	-2.284834 (0.0356) [-5.159317]	1.843804 (0.4893) [0.736424]	0.582551 (0.3397) [0.991223]
GDPP(-1)	-0.000001 (0.0247) [-6.243891]	-0.000000 (0.0347) [-5.227007]	-0.000001 (0.1267) [-1.631596]	-0.000001 (0.1267) [-1.631596]
IRT	4.619742 (0.7983) [0.291261]	-5.187737 (0.3940) [-1.077343]	-31.575627 (0.3448) [-1.025140]	-0.620674 (0.7752) [-0.291525]
D(ERT)	-8.169327 (0.1078) [-2.793643]	3.847040 (0.3293) [1.278676]	16.912609 (0.0098) [3.727300]	5.856522 (0.5936) [0.547089]
LOG(KF)	0.173988 (0.0463) [4.484809]	0.221071 (0.0344) [5.251881]	-0.000002 (0.8305) [-0.223610]	0.000003 (0.0670) [1.998723]
LFP	0.404066 (0.2393) [1.657101]	0.013393 (0.3389) [1.246139]	3.416924 (0.0082) [3.878032]	-0.463097 (0.5587) [-0.600156]
LOG(INFL)	-0.002631 (0.9516) [-0.068482]	0.008138 (0.6539) [0.521725]	-0.001015 (0.5157) [-0.690527]	-0.003735 (0.0262) [-2.507442]
R-squared	0.994662	0.993064	0.880279	0.754646
Adjusted R-squared	0.946622	0.934108	0.600929	0.584785
F-statistic	20.70494	16.84422	3.151169	4.442734
Prob(F-statistic)	0.047027	0.057445	0.082790	0.007849
Durbin-Watson stat	2.143295	2.081469	1.776808	2.382640

Note: Value outside, within the parentheses () and [] are the coefficients, probability and t-values values respectively

Source: Authors Computation, 2024

In the result in Table 4.3, the F-statistics and associated I1 bounds are instrumental in determining the cointegration relationship among the variables. For ECOWAS, the F-statistic of 6.974344 is greater than the upper bound value of 3.61, indicating a significant cointegration relationship. Similarly, COMESA, ECCAS and SADC also exhibit significant cointegration relationships with the F-statistic of 9.236928, 3.91425 and 5.309431 above the upper bound value of 3.61, 3.61, 3.79 and 3.61 respectively.

In the short run, IRT in ECOWAS has a positive coefficient of which is not statistically significant, suggesting an insignificant positive impact of ECOWAS intra-trade ($\beta = 22.205639$, $t = 1.147888$, $p\text{-value} = 0.3698 > 0.05$) on economic performance. The coefficient is not statistically significant. In COMESA, the coefficient is negative but insignificant. The lack of significance implies that intra-trade ($\beta = -2.757815$, $t = 0.8368$, $p\text{-value} = -0.2339 > 0.05$) in COMESA does not significantly affect economic performance in COMESA. ECCAS exhibits insignificant negative coefficient. The lack of significance suggests that ECCAS intra-trade ($\beta = -2.040722$, $t = 0.7627$, $p\text{-value} = -0.316029 > 0.05$) does not significantly influence economic performance. SADC exhibit negative insignificant coefficients being statistically significant. The economic implication is that intra-trade in SADC ($\beta = -0.710648$, $t = 0.7820$, $p\text{-value} = -0.282461 > 0.05$) does not have a significant impact on economic performance in SADC.

ERT in ECOWAS has a large negative significant coefficient, indicating a significant negative impact of extra-trade in ECOWAS ($\beta = -19.954424$, $t = -5.120918$, $p\text{-value} = 0.0361 < 0.05$) on

economic performance, and it is statistically significant. The highly significant negative impact indicates that an increase in extra-trade negatively influences economic performance in ECOWAS. In COMESA, the coefficient is positive but insignificant. The positive impact suggests that extra-trade in COMESA ($\beta = 9.294192$, $t = 0.2420$, $p\text{-value} = 1.643300 > 0.05$) has a positive insignificant effect on economic performance. ECCAS show positive and statistically significant coefficients. The highly significant positive impact indicates that an increase in extra-trade ($\beta = 6.286987$, $t =$, $p\text{-value} = 4.497321$) significantly improves economic performance in ECCAS. SADC show positive and statistically significant coefficients. The lack of significance suggests that extra-trade ($\beta = 6.705491$, $t = 0.564408$, $p\text{-value} = 0.5821 > 0.05$) does not significantly influence economic performance in SADC.

KF in ECOWAS has positive and significant coefficients, implying a positive significant impact of investment in ECOWAS ($\beta = 0.474405$, $t = 0.0494$, $p\text{-value} = 4.328851 > 0.05$) on economic performance. The highly significant positive impact indicates that an increase in investment of COMESA ($\beta = 0.619833$, $t = 0.0294$, $p\text{-value} = 5.702837 > 0.05$) significantly improves economic performance in COMESA. ECCAS also exhibit positive significant coefficients. The positive impact suggests that an increase in investment ($\beta = 0.000011$; $t = 0.0263$, $p\text{-value} = 2.929102 > 0.05$) has a significant positive effect on economic performance in ECCAS. SADC also exhibit a significant positive coefficients. The significant positive impact indicates that an increase in investment ($\beta = 0.000003$, $t = 0.0335$, $p\text{-value} = 2.376861 > 0.05$) significantly improves economic performance in SADC.

LFP in ECOWAS has a negative and statistically insignificant coefficient, indicating a negative impact of labour force participation on economic performance. The lack of significance suggests that labour force participation in ECOWAS ($\beta = -2.705995$, $t = -1.810597$, $p\text{-value} = 0.2119 > 0.05$) does not significantly influence economic performance in ECOWAS. COMESA shows an insignificant positive coefficient. COMESA shows an insignificant positive coefficient. The lack of significance implies that labour force participation in COMESA ($\beta = 0.022932$, $t = 0.829361$, $p\text{-value} = 0.4941 > 0.05$) does not significantly affect economic performance in COMESA. ECCAS display positive insignificant coefficients. The positive insignificant impact suggests that labour force participation in ECCAS ($\beta = 0.373793$, $t = 1.308316$, $p\text{-value} = 0.2386 > 0.05$) does not significantly improves economic performance in ECCAS. SADC display insignificant negative coefficients. The lack of significance implies that labour force participation in SADC ($\beta = -0.530228$, $t = -0.564963$, $p\text{-value} = 0.5817 > 0.05$) does not significantly influence economic performance in SADC.

INFL in ECOWAS has a negative and statistically insignificant coefficient. The lack of significance suggests that inflation ($\beta = -0.019703$, $t = -0.246167$, $p\text{-value} = 0.8285 > 0.05$) does not significantly affect economic performance in ECOWAS. COMESA exhibit insignificant positive coefficients. The positive impact indicates that an increase in inflation in COMESA ($\beta = 0.104506$, $t = 2.268013$, $p\text{-value} = 0.1514 > 0.05$) does not significantly improves economic performance in COMESA. ECCAS exhibits positive insignificant coefficients. The lack of significance suggests that inflation on ECCAS ($\beta = 0.000629$; $t = 1.390631$, $p\text{-value} = 0.2137 > 0.05$) does not significantly affect economic performance in ECCAS. SADC exhibit insignificant positive coefficients. The lack of significance implies that inflation in SADC ($\beta = -0.000464$, $t = -0.302703$, $p\text{-value} = 0.7669 > 0.05$) does not significantly influence economic performance in SADC.

In the long run, the coefficient of the constant term in ECOWAS is negative (-2.768677), not significant ($\beta = -2.768677$, $t = -2.523655$, $p\text{-value} = 0.1276 > 0.05$). The lack of significance suggests that the constant does not significantly affect economic performance in ECOWAS. COMESA has negative coefficient (-2.284834) and highly significant ($\beta = -2.284834$, $t = 5.159317$, $p\text{-value} = -0.0356 < 0.05$). The highly significant negative impact indicates that the constant significantly hampers economic performance in COMESA. ECCAS has a positive coefficient (1.843804) but insignificant coefficient ($\beta = 1.843804$, $t = 0.736424$, $p\text{-value} = 0.4893 > 0.05$). The lack of significance suggests that the constant does not significantly influence economic performance in ECCAS. SADC has a positive coefficient (0.582551) but insignificant ($\beta = 0.582551$, $t = 0.991223$, $p\text{-value} = 0.3397 > 0.05$). The lack of significance implies that the constant does not significantly affect economic performance in SADC.

Intra trade in ECOWAS has a positive (4.619742) insignificant coefficient ($\beta = 4.619742$, $t = 0.7983$, $p\text{-value} = 0.291261 > 0.05$). The lack of significance suggests that intra-trade does not significantly affect economic performance in ECOWAS. COMESA has a negative (-5.187737) insignificant coefficient ($\beta = -5.187737$; $t = 0.3940$, $p\text{-value} = -1.077343 > 0.05$). The lack of significance implies that intra-trade does not significantly affect economic performance in COMESA. ECCAS has

a negative (-31.575627) but insignificant coefficient ($\beta = -31.575627$, $t = 0.3448$, $p\text{-value} = -1.025140 > 0.05$). The lack of significance suggests that intra-trade does not significantly affect economic performance in ECCAS. SADC: Negative coefficient (-0.620674), not significant ($\beta = -0.620674$, $t = 0.7752$, $p\text{-value} = -0.291525 > 0.05$). The lack of significance implies that intra-trade does not significantly affect economic performance in SADC.

Extra trade in ECOWAS has a negative (-8.169327), insignificant coefficient ($\beta = -8.169327$, $t = -2.793643$, $p\text{-value} = 0.1078 > 0.05$). The insignificant negative impact suggests that extra-trade has an insignificant negative effect on economic performance in ECOWAS. COMESA has a positive insignificant coefficient ($\beta = 3.847040$, $t = 1.278676$, $p\text{-value} = 0.3293 > 0.05$). The lack of significance implies that extra-trade does not significantly affect economic performance in COMESA. ECCAS has a positive highly significant coefficient ($\beta = 16.912609$, $t = 3.727300$, $p\text{-value} = 0.0098 < 0.05$). The highly significant positive impact indicates that extra-trade significantly improves economic performance in ECCAS. SADC has a positive coefficient insignificant coefficient ($\beta = 5.856522$, $t = 0.547089$, $p\text{-value} = 0.5936 > 0.05$). The lack of significance suggests that extra-trade does not significantly affect economic performance in SADC.

Investment in ECOWAS has a positive coefficient and highly significant ($\beta = 0.173988$, $t = 4.484809$, $p\text{-value} = 0.0463 > 0.05$). The highly significant positive impact suggests that investment significantly improves economic performance in ECOWAS. COMESA has a positive (0.221071) highly insignificant coefficient ($\beta = 0.221071$, $t = 5.251881$, $p\text{-value} = 0.0344 < 0.05$). The highly insignificant positive impact indicates that investment does not significantly improve economic performance in COMESA. ECCAS has a negative but insignificant coefficient ($\beta = -0.000002$, $t = -0.223610$, $p\text{-value} = 0.8305 > 0.05$). The lack of significance suggests that investment does not significantly affect economic performance in ECCAS. SADC has a positive (0.000003) but insignificant coefficient ($\beta = 0.000003$, $t = 1.998723$, $p\text{-value} = 0.0670 > 0.05$). The lack of significance implies that investment does not significantly affect economic performance in SADC.

LFP in ECOWAS (has a positive and statistically significant coefficient, indicating a positive insignificant long-term impact of labour force participation ($\beta = 0.404066$, $t = 1.657101$, $p\text{-value} = 0.2393 > 0.05$) on economic performance. COMESA shows an insignificant positive coefficient, indicating a positive insignificant long-term impact of labour force participation ($\beta = 0.013393$, $t = 1.246139$, $p\text{-value} = 0.3389 > 0.05$) on economic performance in COMESA. ECCA shows a significant positive coefficient, indicating a positive significant long-term impact of labour force participation ($\beta = 3.416924$, $t = 3.878032$, $p\text{-value} = 0.0082 < 0.05$) on economic performance in ECCAS. SADC exhibit negative insignificant coefficients, indicating a positive insignificant long-term impact of labour force participation ($\beta = -0.463097$, $t = -0.600156$, $p\text{-value} = 0.5587 > 0.05$) on economic performance in SADC.

INFL in ECOWAS has negative insignificant coefficients, implying that inflation ($\beta = -0.002631$, $t = -0.068482$, $p\text{-value} = 0.9516 > 0.05$) in ECOWAS does not have a significant effect on economic performance in ECOWAS. INFL in COMESA has negative insignificant coefficients, implying that inflation in COMESA ($\beta = 0.008138$, $t = 0.521725$, $p\text{-value} = 0.6539 > 0.05$) does not have a significant effect on economic performance in COMESA. ECCAS exhibit negative insignificant coefficients, implying that inflation ($\beta = -0.001015$, $t = -0.690527$, $p\text{-value} = 0.5157 > 0.05$) does not have a significant effect on economic performance in ECCAS. SADC exhibit negative significant effect coefficients, implying that inflation ($\beta = -0.003735$, $t = -2.507442$, $p\text{-value} = 0.0262 < 0.05$) have a significant negative effect on economic performance in SADC.

Overall, the ARDL estimates show that in the short run, the lagged of GDPP have a positive significant effect on economic performance in both ECCAS and SADC. Intra trade does not show any effect across the trade blocs while investment shows a significant positive effect across the trade blocs. Extra-trade has a negative significant effect in ECOWAS and a positive effect in ECCAS. The CointEq(-1) coefficients in all trade blocs are negative and statistically significant, suggesting a long-term negative impact of the lagged cointegrating equation on economic performance. In the long run, the lagged of economic performance also shows a negative significant effect on economic performance in ECOWAS and COMESA. Intra-trade also does not show any effect on economic performance across the trade blocs. It is only in ECCAS that extra trade and labour force participation shows a positive significant effect on economic performance in the long run. In both ECOWAS and COMESA, investment maintains its short-run positive significant effect on economic performance in the long run. Inflation shows a significant long run effect on economic performance only in SADC.

5. CONCLUSION AND RECOMMENDATIONS

This study analyses aggregated time series data of trade blocs in Africa. The time series data are analysed using the Autoregressive Distributed Lag (ARDL) bound testing approach. The result shows that while intra trade does not affect economic performance across the trade blocs, extra-trade shows a negative significant effect in ECOWAS and a positive effect in ECCAS in the short run. Although, in the long run, intra-trade does not affect on economic performance across the trade blocs, extra trade and labour force participation show a positive significant effect on economic performance only in ECCAS. The study submitted that the economic performance of trade blocs in Africa is not uniform, while ECCAS benefited from both intra trade and extra trade, the performance of other trade blocs is not impacted by both component of trade in both the short and long run except in the short run where ECOWAS suffer a negative effect of extra trade. The findings is supported by the study of Were (2015) which suggests that the positive effects of trade openness on economic growth are conditioned by initial income per capita and other explanatory variables. Equally, Ma (2022) found that the Belt and Road Initiative improved economic performance, particularly for lower-income countries.

Based on the findings of the study, the following recommendations are made: Policymakers should implement measures to promote intra-regional trade by reducing trade barriers, streamlining customs procedures, and fostering conducive business environment. Efforts should be made to explore new markets and trading opportunities both with members' states and with other trade blocs in Africa. Policymakers should focus on creating an attractive environment for both domestic and foreign investment. This includes implementing policies that support entrepreneurship, improving infrastructure, and providing incentives for investment in key sectors.

This study contributes to knowledge in several dimensions. By assessing the role of intra-regional and extra-regional trade, the study unravels the effect of intra-regional trade (trade among member countries) and extra-regional trade (trade with non-member African countries) on the economic performance. This assessment helps to show the significance of trade with both internal and external partners. Also, the study contributes to a broader understanding of the differences and similarities in trade effects across different regions. Future research could conduct a more dynamic analysis of intra-trade patterns within ECOWAS, considering how these patterns evolve over time and their impact on economic performance. Investigating the sector-specific impact of trade integration could provide insights into which industries benefit the most and contribute significantly to economic growth.

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REVIEW PAPERS

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P2P LENDING: FINANCING ALTERNATIVE IN THE DIGITAL ERA

П2П КРЕДИТИРАЊЕ: ФИНАНСИЈСКА АЛТЕРНАТИВА У ЕРИ ДИГИТАЛИЗАЦИЈЕ

Summary: *Recently, the fast development of information technologies and digitalization in numerous economic sectors has completely transformed traditional business models and caused irreversible changes. Digitalization had a particular impact on the finance and financing field. Aided by financial technologies (FinTech), it led to democratization in access to finance, especially for those entity categories that previously had limited access to traditional financial services. P2P lending is financial innovation made possible by digitalization and is alternative to a bank loan. The primary goal of this paper is to point out the potential of P2P lending as an innovative financial solution that can help borrowers (companies and individuals) meet their financial needs, especially in times of economic, health and geo-political crises and disruptions in the supply of loans by traditional financial intermediaries. Regarded from the point of view of the investment public (lenders), P2P lending is an efficient and straightforward way to invest in diverse projects, and investors can potentially expect high rates of return on invested funds. Due to all of the above, the paper will point out the many advantages of using this innovative financial solution compared to traditional forms of financing and shed light on the future and the prospect of financing companies and individuals in the digital economy.*

Keywords: *P2P lending platform, borrower, lender, bank lending, alternative finance.*

JEL classification: *G21, G23, G32*

Резиме: *Последњих година, брз развој информационих технологија и дигитализација у многим привредним секторима потпуно је трансформисала традиционалне пословне моделе и довела до неповратних промијена. Посебан утицај дигитализација је имала у области финансија и финансирања, те посредством финансијских технологија (FinTech) довела до демократизације у приступу финансијама посебно за оне категорије субјеката који су до тада имали ограничен приступ традиционалним финансијским услугама. П2П кредитирање је финансијска иновација коју омогућава дигитализација и представља алтернативу банкарском кредиту. Основни циљ овога рада је да укаже на потенцијал П2П кредитирања као иновативног финансијског рјешења које може помоћи зајмопримцима (предузећима и појединцима) да задовоље своје финансијске потребе посебно у вријеме економских, здравствених и геополитичких криза, те поремећаја понуде кредита од стране традиционалних финансијских посредника. Посматрано из угла инвестиционе јавности (зајмодаваца) П2П кредитирање је ефикасан и једноставан начин за улагање у различите пројекте и потенцијално инвеститори могу очекивати високе стопе поврата на уложена средства. Због свега наведеног, у раду ћемо указати и на вишеструке предности коришћења овога иновативног финансијског рјешења у односу на традиционалне облике финансирања, те освјетлити будућност и могућност финансирања предузећа и појединаца у дигиталној економији.*

Кључне речи: *П2П кредитне платформе, зајмопримац, зајмодавац, банка кредитор, алтернативне финансије.*

ЈЕЛ класификација: *G21, G23, G32*

INTRODUCTION

Regarding P2P lending, the underlying technology (the connection of peer-to-peer) has previously been successfully applied outside the financial sector. Peer-to-peer is a term that refers to a logical model of computer network architecture, indicating a direct interaction between two parties (facilitated and enabled by a digital platform) without a central intermediary. P2P lending introduces digital technology into the financial industry in such a way that P2P lending platforms connect a party that has a lack of financial resources (borrowers) with a party that wants to invest financial resources, i.e. has surplus financial resources (lenders), all without the participation of traditional financial intermediaries. Thus, P2P lending can be considered part of a broader space of technological innovations in finance (FinTech) with potentially transformative implications for the financial system, its intermediaries and users.

Modern P2P lending started in 2005 with the launch of the P2P lending Zopa platform in the UK. Shortly after, P2P platforms LendingClub and Prosper began operating in the USA. Two decades later, P2P lending has gained overall acceptance and become an established segment of modern (digital) finance, shifting its focus from exclusively individual to institutional investors and leading to hundreds of P2P platforms globally, thus allowing lenders to invest and lend billions of dollars annually while supplying borrowers with the necessary financial resources.

As the percentage of financing for companies and individuals from traditional sources of financing declines, P2P lending as an alternative form of financing is gaining importance. The research question was formed precisely around this: whether, despite being based on a different concept (FinTech) and decentralization, P2P lending has the potential to fill the gaps in case of credit supply disruption by traditional financial intermediaries.

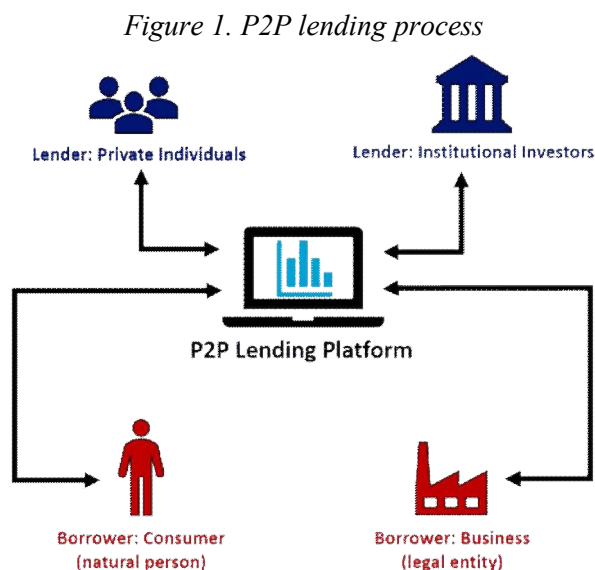
This paper not only contributes to the ongoing discussion on alternative forms of financing in the digital age but also provides valuable insights for potential borrowers, investors (lenders), policymakers and supporters of the sharing economy who want to harness the power of FinTech to improve financial inclusion, equitable economic growth and poverty reduction.

This paper aims to accentuate P2P lending as a new form of financing in the digital age with the potential to be an alternative especially during economic, health and geopolitical crises and supply disruptions of traditional financial intermediaries.

The paper is organized as follows: the next part considers the P2P lending process, its essence, and the nature of the connections, responsibilities and obligations of the model participants. To offer a more comprehensive understanding of P2P lending, the second part of the paper reviews the theories relevant to this model to show that the key theories influencing the approach to financing companies in traditional finance are also significant for this alternative financing model. The final part of the paper analyses the fundamental characteristics of P2P lending compared to conventional sources of financing. Although flexible fundraising is a key advantage of using P2P lending, this model also has numerous other advantages which favor it as an alternative to bank credit. Finally, the paper ends with concluding remarks.

1. P2P LENDING PROCESS

As an alternative financing method, P2P lending allows businesses and/or individuals to borrow money from individual or institutional investors directly through a P2P platform (Figure 1). Thus, this model eliminates traditional financial intermediaries such as banks and enables direct interaction between borrowers and lenders. In his work, Ferretti (2021) states that the platform in the P2P model is a third party – a new intermediary that enables digital optimization of the service and automation of processes to achieve the desired outcome.



Source: Christensen 2025

According to this method, borrowers disclose the amount they require or want to borrow. After that, the P2P platform conducts due diligence for each loan application, as it must protect both companies or individuals (borrowers), and the interests of investors (lenders) and usually requires financial accounts and trading records (EC, n.d.). The P2P lending model is particularly appealing to borrowers because the missing funds can be obtained shortly and under highly favourable conditions, with low transaction costs and without falling into the hidden fees trap. Mollick (2014) points out that the borrowers determine the interest rate on the borrowed funds, i.e. they find the set interest rate is acceptable and comfortable. Thus, they can guarantee the repayment within the agreed period. In their paper, Vidal-García and Vidal (2016) point out that this basically means that borrowers do not have to borrow money at interest rates dictated by the other party or predetermined and unacceptable to them. Instead, they determine the interest rate they are willing and able to pay and, as a result, can guarantee the repayment of the borrowed fund (Vidal-García and Vidal 2016). As for other fees and costs, in P2P lending, borrowers only have to pay a fee for processing the funds deposited through the P2P platform and agree on a flexible repayment plan.

When it comes to lenders, they decide on their own whether they are willing to lend financial resources at the interest rate set by the borrower, mainly based on an assessment of the potential of the company or project, its risks or benefits, reputational factors – the biography of the development team behind the company or project, any previous successful ventures implemented through P2P lending, and the like.

Therefore, P2P lending is very similar to a bank loan, but the main difference is that the borrower determines the interest rates and repayment dynamics. In addition, from the borrowers' perspective, another significant advantage of P2P lending compared to conventional forms of financing is that they are usually not obliged to provide collateral. We will discuss the comparison of P2P lending with traditional forms of financing, as well as the numerous advantages of its use from the borrower's perspective, in more detail in the final part of this paper.

When a borrower seeks to raise the lacking funds through P2P lending, the most important aspects that should be given special attention, according to the claims made by Vidal-García and Vidal (2016), are the quality and potential of the company and/or project and the credible presentation of the ideas. The same authors state that potential borrowers should direct resources and dedicate their time to presenting the project to as many people as possible through their social networks. In addition, proper planning is also crucial for a potential borrower who wants to raise the missing funds within the given deadlines and be able to settle their obligations according to the dynamics they have set.

Today, a considerable number of P2P lending platforms operate in the world, and according to numerous criteria, the most popular of them during 2024 were Prosper, LendingClub, Funding Circle, Upstart, Avant, Happy Money, LightStream, and SoFi (Hivenet 2024).

2. THEORIES RELEVANT FOR P2P LENDING

After considering the nature and functioning of P2P lending in the first part, this part of the paper reviews the theories relevant to P2P lending to understand the model itself better and to show that the key theories that influence the approach to financing companies in traditional finance are also significant for this model. In his scientific paper, Imarhiagbe (2016) states that these theories are agency cost, discouraged borrower, pecking order, stakeholder, signalling, credit rationing, network exchange and social capital theories.

Multiple authors (Agrawal, Catalini, and Goldfarb 2014; Giudici et al. 2012) consider information asymmetry, moral hazard, and adverse selection to be one of the fundamental problems of P2P lending. According to the arguments presented by Jensen and Meckling (1976), agency theory identifies information asymmetry, moral hazard, and adverse selection, while agency cost is defined as the sum of monitoring costs, binding costs, and residual losses (Imarhiagbe 2016). According to the agency theory, potential lenders can conduct adequate due diligence on a project before deciding on P2P lending. Providing financial contributions without prior due diligence can be catastrophic because the company or individual (potential borrower) who initiates the project has insider information that may be unknown to those who want to finance the project (Imarhiagbe 2016). If potential lenders were to hire a third party to gather more information about the campaign initiator and the project viability for financing, Imarhiagbe (2016) states that this activity would cause additional financial costs. On the

other hand, according to the same author, to enable potential lenders to make a financing decision based on insider information, the company or project initiator should provide detailed and relevant information about the project during the campaign.

In their paper, Jaffee and Modigliani (1969) defined credit rationing as a situation in which there is an excess demand for bank loans at the prevailing interest rate. Nevertheless, the concept of credit rationing attracted more attention from the scientific community only after the publication of the papers of Jaffee and Russell (1976) and Stiglitz and Weiss (1981), who explained credit rationing based on asymmetric information. Imarhiagbe (2016) claims that credit rationing in P2P lending, among other things, limits access to company financing. To eliminate credit rationing, he recommends a potential borrower provide adequate information about the project to reduce information asymmetry so potential lenders can make positive financing decisions.

The pecking order theory stems from the asymmetric information concept and was first brought to scientific attention by Myers and Majluf (1984) and Myers (1984). According to this theory, when considering financing sources, financial managers are to follow a hierarchy starting from the cheapest source of financing – internal capital (retained earnings), debt financing, and equity financing. In P2P lending, the pecking order approach is preferable because it allows potential borrowers, who typically have no internal capital or do not have it in the required amount, to choose a financing option while retaining complete ownership control.

The discouraged borrower theory presented by Kon and Storey (2003) indicates the existence of good borrowers (companies or individuals) who are generally discouraged from applying for bank loans due to fear of rejection. As an example of self-assessment, Stefani and Vacca (2015) mention that women-owned businesses apply for bank loans less often because they fear rejection. They also face a higher percentage of disapproved loan applications. Mijid's paper (2014) studies what discourages women business owners from applying for bank loans more often than their male counterparts, concluding that it is likely that facing a loan application rejection prevents them from applying. Golić (2019) states that women business owners in developing countries are even more prone to self-evaluation and self-deprecation, partly due to their cultural and historical heritage and the overall socio-economic situation, having an even greater fear of rejection of loan applications, which prevents them from applying. Imarhiagbe (2016) states that in P2P lending, potential lenders may withdraw from financing companies and/or projects with inadequate prospects and those unable to conduct due diligence, which can discourage campaigners.

Signaling theory describes scenarios where signalers send observable signals that carry credible information about unobservable qualities (Connelly et al. 2025). The theory applies to decision-making and communication between stakeholders because when decision-makers have incomplete or imperfect information, the signals that reach them can help them make better decisions. Viewed from the perspective of P2P lending, signaling theory is a way for a project initiator to communicate to potential lenders their decision on the method of raising funds, provide them with the necessary information about the credibility and potential sustainability of the project, and information about the professional experience and education of the development team behind the project (Imarhiagbe 2016). Therefore, signaling theory is directly relevant to P2P lending because the above can serve as a positive signal to potential lenders.

In their paper, Zvilichovsky, Inbar and Barzilay (2015) examine network exchange theory and find a principle of reciprocity that can be applied in the P2P lending environment because, according to them, potential borrowers who are dual participants (backers) have an advantage and a higher success rate in financing. It implies that it is rather significant for a potential borrower to make their financial contribution and to participate in other P2P lending campaigns, i.e. to be recognized as a dual active participant in the P2P lending market (Imarhiagbe 2016).

Stakeholder theory was first presented by Freeman (1984). According to it, organizations aim to generate multiple benefits for different stakeholders – groups and individuals (e.g. employees, shareholders, suppliers, customers, civil society, governments). From the perspective of P2P lending, Imarhiagbe (2016) notes that stakeholder theory places responsibility on the company or project initiator (potential borrower) to diligently manage the affairs of the project to create ethical value for the lenders because a good entrepreneur and business owner should be able to efficiently and successfully manage the affairs of multiple stakeholders. It indicates that the potential borrower is responsible to all stakeholders for ensuring the project's success in P2P lending.

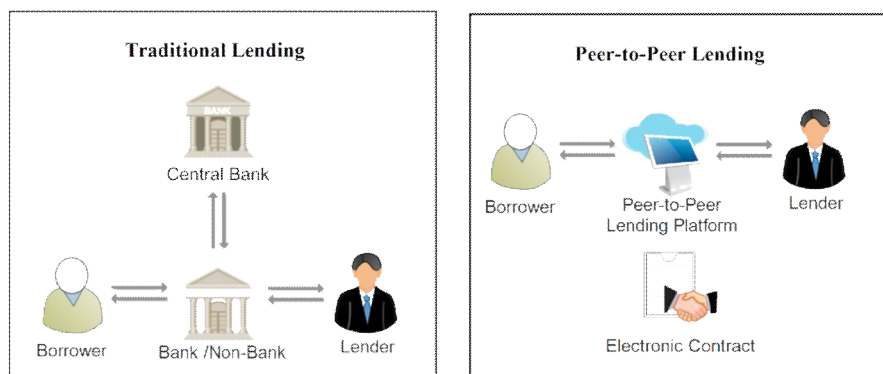
Social capital theory holds that “relationships matter” and social networks are valuable assets (Claridge 2018). In his paper, Imarhiagbe (2016) states that the digital environment is an effective

place for creating and developing social networks that can contribute to expanding social capital. On the other hand, Zheng et al. (2014) consider the multidimensional aspect of social capital in P2P lending, believing that social capital is embedded in the social network and that the social networks of the potential borrower affect the success of financing through P2P lending.

3. ADVANTAGES – COMPARING P2P WITH TRADITIONAL LENDING

In the digitalization era, companies and individuals can either stick with traditional lenders or enter the world of P2P lending. Technological progress has led to the expansion of financial technologies (FinTech) and the emergence of alternative forms of financing consequently. This change is driven by the need for more flexible and accessible financing (Malkova and Weng 2024), more precisely, the decentralization of finance, especially in today's turbulent economic times, in times of conflict (Russia-Ukraine, Israel-Palestine), geo-political and health crises (the COVID-19 pandemic), and simple global uncertainty and instability. To gain a better insight into P2P lending as a business model, it is necessary to analyse its elemental characteristics in light of traditional lending (Figure 2 and Table 1).

Figure 2. Traditional lending vs P2P lending



Source: Chulawate and Kiattisin 2023

According to the diagram presented in Figure 2, it is evident that P2P lending is much more straightforward compared to traditional forms of lending. In addition, in his paper, Ölvedi (2024) states that it is barely embedded in the economic cycle and, hence, there are significant differences between these two types of financial service providers. The same paper highlights that some of the fundamental functions of traditional financial intermediaries do not apply to P2P lending platforms, especially because they do not collect deposits, do not provide payment services and do not traditionally transform funds, etc. (Ölvedi, 2024). Bearing this in mind, the remainder of the paper elaborates on why potential borrowers in such conditions might choose P2P lending over traditional financial intermediaries, first presenting a comparative analysis of P2P lending and traditional lending in certain aspects (Table 1) and then examining specifically the most dominant advantages of using P2P lending over conventional lending, but exclusively from the perspective of a potential borrower.

Table 1. Key differences between P2P lending and traditional lending

Observed aspect	P2P Lending	Traditional Lending
The intermediaries and their economic role	P2P platforms are predominantly specialized websites acting as intermediaries in decentralized financial models (DeFi), such as P2P lending. They connect supply and demand for financial resources through an online auction. They contribute to financial inclusion by improving access to economic resources for traditionally excluded and neglected groups of individuals and legal entities (e.g. women-owned businesses), thus contributing to reducing poverty in society (Golić, 2020).	It includes banks, MCOs, NBFCs, etc. The role of banks is particularly dominant in bank-centric financial systems. They are responsible for the efficient allocation of capital in the economy. A few decades ago, financial institutions were the only entities offering lending services. In the event of macroeconomic instability, they buffer economic shocks.

Availability	P2P platforms are available to borrowers with no collateral, credit history, and even financially excluded and neglected categories (see section above).	More accessible to borrowers with good credit ratings, i.e. those with a satisfactory credit history. Due to the information asymmetry between investors and borrowers, the bank has vital role in monitoring potential borrowers and their credit ratings.
Loan approval process	The process is in accordance with the rules of the specific P2P platform being used and is generally more flexible concerning criteria that must be adhered to. To improve the efficiency of this process, P2P platforms most often apply artificial intelligence (AI) and machine learning (ML) as one of its forms of application.	The loan approval process follows a strictly defined procedure and requires the submission of specified, often extensive, documentation. Depending on the amount of loan demanded, it can take a long time and is associated with specific costs (processing the loan application, bills of exchange, supporting documentation, court experts, notaries, etc., depending on the type of loan).
Risk Management	P2P platforms perform an in-depth assessment of credit risk based on the borrower's credit rating, his previous activities on other P2P platforms, provided information, and even their social network activities, all with the help of modern tools - AI.	It includes traditional checks on the applicant. Besides, traditional financial intermediaries have a comprehensive risk management framework that covers credit risk, liquidity risk, market risk and operational risk (Ölvedi, 2024).
Interest Rates	Unlike banks, P2P platforms do not approve loans from collected term and savings deposits, they have no high overhead costs, interest rates are relatively lower, and specified by the borrowers themselves, with no hidden fees.	Due to the method of collecting funds that are later placed through loans, high overhead costs, and the like, interest rates are inherently higher.
Loan Amount	The potential borrower determines the loan amount depending on the need for financial resources. However, the amount of funds paid depends on the lender and their assessment of the quality of the project.	The loan amount, depending on the type of loan, is determined by the bank's acts, and the amount of the approved loan depends on the borrower's creditworthiness, collateral, etc.
Loan Types	They include short-term and long-term loans, and Ziegler et al. (2019) distinguish between P2P Business Lending, P2P Consumer Lending, and P2P Property Lending.	Banks offer a variety of short-term and long-term loan products, ranging from consumer loans, loans for businesses, general and replacement loans, loans for the purchase of movable and immovable property, mortgages, etc.
Collateral	None, except in the P2P Property Lending model in which the loan is secured – secured by the assets (real estate) of the user or business debtor.	Collateral is mandatory, especially in the case of larger loans.
Loan Repayment	In P2P lending, repayment is usually flexible and depends on the type of P2P platform, the borrower's capabilities, and the lender's needs.	The loan is repaid according to a pre-determined (and provided to the borrower) repayment plan, usually in equal monthly annuities.
Fee Transparency	Costs and fees in P2P lending are usually published on each P2P lending platform.	It may happen that traditional financial intermediaries have hidden costs and fees on loans.
Legal Regulations	<p>Until recently, P2P lending in the EU was subject to different national legislations tailored to the features and requirements of local markets and investors. In 2020, the European Parliament and the Council adopted Regulation (EU) 2020/1503 (EU, 2020a) and Directive (EU) 2020/1504 (EU, 2020b), which have been in force since 10 November 2021, with a transitional period of one year (i.e. from 10 November 2022) for all P2P platforms authorised by national legislators to carry out this activity. This Regulation (EU, 2020a) harmonised the existing regulations in all 27 EU member states, enabling the cross-border provision of P2P lending services and neutralising legal costs for small creditors, who often faced difficulties determining the rules applicable to cross-border P2P lending services.</p> <p>Unlike the EU, legal regulation of P2P lending in the USA is fragmented. SEC is responsible for the investing side of P2P platforms, while the Consumer Financial Protection Bureau and the Federal Trade Commission regulate the</p>	Conventional financial intermediaries are under strict supervision of the state, its institutions, agencies, and regulatory bodies and operate in accordance with national and international legislation regulating this area.

	borrowing side (Nemoto, Storey, and Huang 2019). In the UK, P2P platforms are assessed individually by the Financial Conduct Authority (FCA) and must obtain authorization to operate (FCA 2019). In Japan, the Financial Service Agency (FSA) is the single authority charged with the regulation of P2P lending (Morita 2022).	
Creditor protection	Principally, investors bear the risk because they make the decision on financing. Nevertheless, with the adoption of a new legal framework in the EU – the adoption of Regulation (EU) 2020/1503 (EU 2020a) – a higher level of protection has been provided for both borrowers and lenders (investors). In addition, some P2P platforms assume the claim and settle the investors in the event of default.	Considering that loans are placed from collected term and savings deposits of legal and natural persons, in the case of traditional financial intermediaries, depositors are protected to a certain extent. Depending on national legislation, different institutions are responsible for deposit insurance, i.e. usually deposit insurance agencies. Depending on the loan amount and the repayment period, traditional financial intermediaries require security instruments and/or collateral (mortgage, loan insurance policy, guarantors, promissory notes, etc.).

Source: Author's elaboration

After comparing P2P lending and traditional sources of financing (Table 1), we conclude that the primary advantages of using P2P lending for the borrower (company or individual) are the following: more flexible access to finance, simplified application process, more flexible lending conditions, faster loan approval, improved creditworthiness assessment due to the use of modern tools – AI, diversification of financing sources. Since the above advantages are not the only ones, we will focus on other advantages of P2P lending from the borrower's perspective in the following article.

Flexibility in raising funds is a key, but not the only, advantage of using this model, as potential borrowers can use P2P lending for market research – product marketability, and as a powerful marketing tool for promoting new products and projects (De Buysere et al. 2012). In addition to these non-financial (marketing) advantages of using P2P lending, we also highlight the following: the retention of management control over the company; the wisdom of the crowd argument; removing geographical obstacles to investment; facilitated information flow to potential backers; cost savings concerning the development of products with specific characteristics. The mentioned advantages are also directions for some future research.

CONCLUSION

Financial innovations enabled by digital technology, or FinTech, have recently begun to play an influential role in many financial services. P2P lending is one of these innovations that has drawn particular attention because it has emerged as an alternative to traditional bank lending. Claessens et al. (2018) define P2P lending as credit activity facilitated by digital platforms not operated by commercial banks. P2P lending has established itself over time as a reliable source of financing because it has the potential to fill the gaps left by traditional financial intermediaries (Elgammal, Al Bakri, and AlJanahi 2023).

Evidence presented by Malkova and Weng (2024) suggests that P2P becomes a more appealing financing option in the event of disruptions in the supply of credit by traditional financial intermediaries. The authors reached these conclusions by analysing the behaviour of potential borrowers during the introduction of movement and numerous other restrictions during the COVID-19 pandemic when many companies and individuals made a decisive turn towards alternative sources of financing, such as P2P lending (Malkova, and Weng 2024). They emphasize that this turn is driven by the need for more flexible and accessible financing, especially in turbulent times. Other authors argue that digital P2P lending platforms, unlike traditional financial intermediaries, have facilitated the process of currently coping with the spread of the disease (Cumming, Martinez-Salgueiro, and Reardon 2022).

This fast-growing model of financing companies and individuals was first used in developed countries but soon spread. At the same time, it represents a challenge and the right solution for countries that are still in recession and suffer from low economic activity (Golić, 2016).

In addition to contributing to the diversity of the financial system, this model has a positive effect on digital and economic inclusion and poverty reduction (Golić 2020). In their paper, Jia and Kanagaretnam (2025) established that digital inclusion is positively associated with the penetration of P2P lending, and this association is more pronounced in areas with limited penetration of commercial bank loans and a more significant number of minority communities. Many present and future finance professionals, investors (lenders) and those who need alternatives to finance their businesses and projects (borrowers) feel the need for a solid introduction and insight into the fundamental concepts of P2P lending, and this paper is a modest contribution to that.

Nowadays, when it is difficult to obtain funds to finance business ventures and interesting investment opportunities with high rates of return, P2P lending is an innovative model that satisfies both parties, borrowers and investors (lenders). Previous studies indicate that the banking sector, primarily large banks, is not motivated enough and ready to finance companies and individuals, which, on the other hand, can be and certainly is a limiting factor for long-term economic development. Digital technologies are changing how financial services are provided, but not the nature of the services. Therefore, a timely understanding of the P2P lending model is crucial for recognizing its economic and developmental advantages.

Although this paper provides a theoretical and conceptual contribution to understanding the P2P lending model and its elemental characteristics in the light of traditional lending - the advantages of using P2P lending compared to conventional lending, this research also has certain limitations as any other. One of the paper's limitations is the fact that the advantages of using the P2P lending model are considered only from the potential borrowers' (companies and individuals) point of view. However, the advantages of using it from the lender's (investors) point of view were neglected. In addition, pointing out the advantages of using the P2P lending model, the paper did not analyze the disadvantages of P2P lending, which can also be considered one of the limitations of this research.

Possible directions for future research can be derived from the limitations of the work, which may refer to, but are not limited to:

- Potential advantages of using P2P lending from the point of view of the investor (lender);
- Disadvantages of P2P lending financing of companies and projects from the perspective of the borrower;
- Disadvantages and risks of the P2P lending model for the investor (lender);
- Comparative analysis of the advantages and disadvantages of the P2P lending model for both categories of business participants;
- The importance of choosing a platform (intermediary) for the success of P2P lending;
- Motivation and expectations of lenders and borrowers from P2P lending.

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PUBLIC EXPENDITURE ON HUMAN CAPITAL DEVELOPMENT IN NIGERIA

ЈАВНА ПОТРОШЊА И РАЗВОЈ ЉУДСКОГ КАПИТАЛА У НИГЕРИЈИ

Summary: This paper analyzes the impact of public expenditure on human capital development in Nigeria from 1990 to 2022. Annual time series data were obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin and UNDP Human Development Reports. The Auto-Regressive Distributed Lag (ARDL) technique was used to estimate the short- and long-run relationships. The ARDL model was used to capture both the short-run and long-run dynamics between public expenditure and human capital development. In the short run, lagged human capital index, mortality rate, and lagged education expenditure negatively influenced HDI, while in the long run, enrollment rate and mortality rate continued to have negative effects. For the human capital per person index, lagged education expenditure, health expenditure, foreign aid, and GCF were significant in the short run, with foreign aid and GCF exerting a positive effect while health expenditure negatively impacted the index. Public expenditure, particularly on education and health, plays a crucial role in shaping human capital development. However, mortality rates and low enrollment rates remain significant barriers, especially in the long term. Additionally, health expenditure has an unexpected negative impact on human capital per person, suggesting inefficiencies in healthcare spending.

Keywords: Public Expenditure, Human Capital Development, Nigeria, ARDL

JEL classification: H51, I15, I25, O55

Резиме: Овај рад анализира утицај јавне потрошње на развој људског капитала у Нигерији у периоду од 1990. до 2022. године. Годишње временске серије података преузете су из Статистичког билтена Централне банке Нигерије (CBN) и Извјештаја о људском развоју УНДП-а. У истраживању је примјењена техника ауторегресивне дистрибуиране временске лаг структуре (ARDL), чиме су процијењени краткорочни и дугорочни односи између јавне потрошње и развоја људског капитала. ARDL модел је омогућио анализу краткорочне и дугорочне динамике између јавних издатака и развоја људског капитала. У кратком року, индекса људског капитала са временским заостатком, стопа морталитета и подриња у образовање за временским заостатком негативно су утицале на индекс људског развоја (HDI), док су дугорочно стопа уписа у школе и стопа морталитета наставиле имати негативан ефекат. У случају индекса људског капитала по особи, у кратком року значајне варијабле биле су заостали издаци за образовање, здравствена потрошња, страна помоћ и бруто улагање у дугорочну имовину (GCF), при чему су страна помоћ и GCF имали позитиван ефекат, док је здравствена потрошња негативно утицала на овај индекс. Јавна потрошња, посебно у области образовања и здравства, има кључну улогу у развоју људског капитала. Међутим, високе стопе морталитета и ниске стопе уписа у школе и даље представљају значајне препреке, нарочито у дугом року. Осим тога, здравствена потрошња неочекивано негативно утиче на људски капитал по особи, што указује на неефикасности у систему здравствене заштите.

Кључне речи: јавна потрошња, развој људског капитала, Нигерија, ARDL

ЈЕЛ класификација: H51, I15, I25, O55

1. INTRODUCTION

Economic growth and development experts, academicians, and researchers widely acknowledge that a nation's human capital development is a cornerstone of prosperity and societal well-being. Investing in human capital is paramount to achieving sustainable economic growth and alleviating poverty. Technological advancements, the driving force behind modern economic progress, are inextricably linked to human capital development. Consequently, economic development experts increasingly recognize human capital development as a fundamental pillar for fostering broad economic growth and societal advancement (Azevedo and Leitão 2021).

According to the World Bank (2023), human capital development consists of the knowledge, skills, and health that people accumulate throughout their lives, enabling them to realize their potential as productive members of society. We can end extreme poverty and create more inclusive societies by developing human capital. Human capital development refers to the process of developing the skills, knowledge, and productivity of people, and has become a key priority for governments around the world. According to a report by the Organization for Economic Cooperation and Development (OECD) published in 2022, investment in human capital is essential for addressing inequality, promoting social mobility, and driving economic growth (OECD 2022).

In recent years, the concept of human capital has evolved to include a broader range of skills and abilities beyond education and health. The World Economic Forum has identified five key capabilities that contribute to human capital development, including cognitive, socio-behavioral, physical and mental health, digital, and job-specific skills (World Economic Forum 2023). By investing in these capabilities, governments and organizations can create a more resilient and adaptable workforce that can thrive in an ever-changing world.

Investment in education produces new skills, knowledge, and incentives that drive economic expansion by making individuals more proficient and generating a more industrious economy. Expenditure on education creates new technology, inventions, and innovations leading to wealth creation and human capital development. Health, on the other hand, mirrors a state of complete well-being that leads to a competent workforce and improved human capital development through the acquisition of skills and knowledge. From the aforementioned, it becomes conspicuously clear that emphasis should be laid on developing human capital since it constitutes the labor force, and a well-formed labor force is an asset not just at the microeconomic level, but also at the macroeconomic level of the nation.

A number of studies have explored the relationship between public expenditure and human capital development. In 2021, the World Bank published a report that highlighted the positive correlation between public spending and human capital outcomes in Latin America and the Caribbean (World Bank 2021). Additionally, the report noted that well-targeted social assistance programs can help improve human capital development, particularly among disadvantaged groups. Similarly, a study by the IMF found that countries with higher levels of public spending on social protection tend to have lower levels of poverty and inequality, which in turn can lead to better human capital outcomes. Thus, it is clear that public expenditure on key sectors such as education, health, and social protection is an important driver of human capital development. The basic philosophy is that an exceptionally educated and healthier labor force is projected to be relatively more industrious. Oluwakemi et al. (2020) asserted that investment in education is pivotal to human capital development because it has social benefits of increasing the number of skilled workers, enhanced occupational mobility, and reduced rate of unemployment in the economy. Also, a report by the World Health Organization (WHO) found that increased spending on public health is associated with improved health outcomes, including lower infant mortality rates, increased life expectancy, and reduced rates of communicable diseases (WHO 2022). Additionally, the report noted that public health spending can generate significant economic returns, as healthier populations are more productive and contribute more to economic growth. This presupposes that to develop human capital, the promotion of education and health services must be a priority.

In Nigeria, human capital development has been a key priority of the government since independence. The Nigerian government has implemented several policies and programs aimed at improving human capital development in the country. For instance, the Universal Basic Education (UBE) program was introduced in 1999 by President Olusegun Obasanjo to provide free and compulsory basic education for all children in Nigeria. Similarly, the National Health Insurance Scheme (NHIS) was established in the same year to provide affordable healthcare for all Nigerians; the Economic Recovery and Growth Plan (ERGP), launched in 2017, outlines strategies for improving human capital through enhanced funding for education and healthcare sectors; the National Social Investment Program (NSIP), which includes initiatives such as the N-Power program, aims to reduce poverty and improve skills among the youth by providing training and employment opportunities (Federal Ministry of Humanitarian Affairs, Disaster Management and Social Development 2020). Similarly, the Home-Grown School Feeding Program seeks to improve educational outcomes and child nutrition by providing free meals to primary school children (Akinyemi, Owopetu, and Agbejule 2021).

Although the Nigerian government has implemented several policies and programs aimed at improving human capital development, the impact of public expenditure on human capital development is still limited. Nigeria has one of the highest rates of poverty, illiteracy, and disease burden in the world. According to the United Nations Development Programme (UNDP) Human Development Index (HDI), Nigeria ranks 163 out of 189 countries (UNDP 2022). The country also has a high rate of unemployment and underemployment, especially among young people. The fiscal policies and engagement of Nigerian government expenditure have over time failed to address the necessary human capital development shortfalls within the economy. Available records show that the Nigerian education sector has consistently received less allocation than advocated by the United Nations Educational Scientific and Cultural Organization (UNESCO). Following UNESCO's recommendation, the standard funding requirement for education for every country is to allocate at least 26 percent of its annual budget to its education sector. Nigeria spends less than nine percent (9%) of its annual budget on education on average. Nigeria's education sector is characterized by consistent strikes by lecturers for non-payment of salaries and other benefits leading to the closure of schools.

According to the latest WHO data in 2023, Nigeria still faces many challenges in the health sector. One of the most significant challenges is the limited availability of health workers. The country has a severe shortage of qualified doctors, nurses, and other health workers, which makes it difficult to provide adequate health care to the population. In addition, the country's health infrastructure is inadequate, with most hospitals lacking basic facilities and equipment. As a result, many Nigerians still have to travel long distances to seek health care, and some still do not have access to basic medical services. Furthermore, the quality of health care is often compromised by a lack of funding and corruption. Corruption and mismanagement of public funds have undermined the effectiveness of public expenditure on human capital development in Nigeria. Corruption has led to the misallocation of resources, with funds being diverted away from the critical areas of education and health. This has led to a shortage of qualified teachers and poor infrastructure, making it difficult for children to access quality education, and an increase in infant and maternal mortality rates and the prevalence of infectious diseases in health.

Given the foregoing, the current study aims to examine the impact of public expenditure on human capital development in Nigeria, focusing specifically on education and health. The study will address the following objectives: to examine the impact of public expenditure on education on human capital development in Nigeria, and to examine the impact of public expenditure on health on human capital development in Nigeria. By investigating these areas, the study will provide a comprehensive understanding of the relationship between public expenditure and human capital development in Nigeria. It will also highlight the challenges and opportunities for improving human capital development through effective public spending. By doing so, the study will contribute to the ongoing efforts to achieve sustainable economic growth and development in Nigeria through the enhancement of human capital development.

2. LITERATURE REVIEW

2.1. Conceptual Review

2.1.1. *Public Expenditure*

Public expenditure generally refers to the money that a government spends on education, healthcare, infrastructure, and other social services (Raineri 2023). It is also often referred to as government spending. Economists have classified public expenditure into two categories: recurrent expenditure and capital expenditure. Recurrent expenditure is the money that governments spend on daily operations, such as salaries for public servants, maintenance of facilities, and other operational costs. Capital expenditure, on the other hand, is money spent on investments such as roads, bridges, hospitals, and other physical infrastructure (UN 2023). This distinction is important, as it helps to understand how public money is being spent and where it is going. It is also helpful in understanding the long-term implications of government spending, as capital expenditure typically leads to improved productivity and economic growth over time.

The importance of education in human capital development has been widely acknowledged in the literature of economic growth. According to the latest research, education can affect growth in many ways, such as improving workforce efficiency, reducing inequality, promoting health, reducing

fertility rates, and creating better conditions for good governance (Dana 2023; Kardia 2023). Education can also increase the knowledge and innovation capacity of an economy (Hanushek and Woessmann 2008), contributing to long-term economic growth. However, It's also important to consider the quality of education when discussing its impact on human capital development. A growing body of research has shown that the quality of education, measured by student achievement scores, has a more significant impact on economic growth than the quantity of education, such as years of schooling (Hanushek 2013; Hanushek 2022). In other words, it's not just about increasing the number of years people spend in school, but also about ensuring that they receive a high-quality education. Education being one of the major components of human capital ought to be given adequate attention.

The World Health Organization (WHO 2023) defines public health expenditure as all expenditure from government budgets, external borrowings and grants, and obligatory health insurance funds. It has been widely acknowledged that major improvements in public health, disease control, and nutrition have led to significant economic growth in the past. Nigeria's health transformation agenda is clearly outlined in the National Economic Empowerment and Development Strategy (NEEDS), developed by the National Planning Commission in 2004. The NEEDS strategy aims to improve the health of Nigerians and reduce poverty to internationally acceptable levels. A key component of this strategy is the National Health Insurance Scheme (NHIS), which was established in 2005 to provide universal access to quality and affordable health care for all Nigerians. However, despite these efforts, the health sector in Nigeria continues to face significant challenges, including inadequate funding, poor infrastructure, and a shortage of qualified health workers (Durojaiye 2022).

According to Aranda (2023), the primary motivation for health expenditure is the desire for improved health status, which is influenced by health investment. The demand for health care is derived from the demand for health itself. Health care spending and improved health outcomes are both means to an end; the end goal is higher productivity and national economic growth. This suggests that there is a strong link between health expenditure and economic growth, and that improving health outcomes should be a key focus of public policy.

2.1.2. *Human Capital Development*

Human capital has long been recognized globally as a fundamental factor accountable for the wealth of nations. Adam Smith, in his seminal work of 1776, emphasized the importance of the acquired and valuable abilities of all residents or members of the public. This concept has been further explored and defined by various empirical researchers, each contributing to a more comprehensive understanding of human capital development.

Romele (2013) characterized human capital as the entirety of knowledge and skills accumulated throughout life via education, training, and work experience, all of which significantly influence labor productivity. The Organisation for Economic Co-operation and Development (OECD) in 2009 expanded this definition, stating that human capital is a combination of factors such as education, experience, training, intellect, energy, work habits, steadfastness, and inventiveness that collectively determine a worker's marginal product value. This definition underscores that human capital encompasses the methods of acquiring and developing citizens with the skills, good health, schooling, and experience necessary for economic growth.

Aluko (2015) further elucidated human capital development as a process aimed at enhancing the skills, knowledge, efficiency, and resourcefulness of citizens through human capital formation. He emphasized that this approach is centered on individuals rather than goods or production, marking it as a citizen-centric strategy of growth. Similarly, Torruam and Abur (2014) described human capital development as the process of increasing the skills, knowledge, productivity, and resourcefulness of citizens, recognizing it as a critical agent of nationwide growth.

Both Aluko and Torruam and Abur highlighted the procedural aspect of human capital formation, which involves acquiring and expanding the number of people equipped with the necessary skills, good health, education, and experience vital for economic and political development. This investment in human beings is viewed as essential for fostering an inventive and productive workforce, contributing to the broader economic and societal prosperity.

Thus, human capital development is a multi-faceted process involving education, health, and training, aiming to cultivate a capable and dynamic populace. This development is not merely an

economic endeavor but a holistic approach to national growth, prioritizing the enhancement of human potential and resourcefulness as the cornerstone of sustainable development.

2.2. Theoretical Review

Human Capital Theory, propounded by economists such as Adam Smith in the 18th century and later advanced by scholars like Gary Becker and Theodore Schultz in the 20th century, posits that investments in human capital—through education, training, and health—enhance the productivity and economic value of individuals. The theory rests on several key assumptions. Firstly, it assumes that individuals and societies derive substantial returns from investing in human capital, which include higher earnings, improved health outcomes, and enhanced societal well-being. Secondly, it presupposes that education and training equip individuals with skills and knowledge that increase their productivity. Lastly, it posits that these investments yield not only private benefits to individuals but also significant public benefits by fostering economic growth and development.

The basic principles of Human Capital Theory emphasize that the skills and knowledge accumulated by individuals are akin to physical capital investments such as machinery and infrastructure. Just as investments in physical capital lead to increased productivity, investments in human capital are expected to yield higher returns in terms of improved economic performance and productivity. Schultz and Becker emphasized that the returns on education and training could be measured in terms of increased earnings and economic output, thereby framing education and health as critical components of economic planning and policy.

Human Capital Theory has been widely applied in various studies to explain differences in economic growth rates across countries. It has provided a framework for understanding how education and training contribute to the economic prosperity of nations by developing a skilled and knowledgeable workforce. Researchers have used the theory to advocate for policies that promote educational access and quality, health improvements, and lifelong learning as essential strategies for economic development. The theory's relevance extends to its role in shaping labor market policies, guiding investments in education, and informing public health interventions.

On the other hand, the Musgrave Theory of Public Expenditure Growth, propounded by Richard A. Musgrave in his work "The Theory of Public Finance" (1959), explores the patterns and determinants of government expenditure. Musgrave's theory is grounded in three core assumptions. Firstly, it assumes that public expenditure is influenced by the need to address market failures and provide public goods that the private sector cannot efficiently supply. Secondly, it posits that as economies grow, the demand for public goods and services such as education, healthcare, and infrastructure also increases. Lastly, it assumes that government intervention is necessary to redistribute income and achieve greater economic equity.

The basic principles of Musgrave's theory are categorized into three functions of public expenditure: allocation, distribution, and stabilization. The allocation function addresses the provision of public goods and services that the market would underprovide. The distribution function involves using public expenditure to achieve a more equitable distribution of income and wealth. The stabilization function focuses on using fiscal policy to stabilize the economy, mitigate business cycles, and maintain full employment and price stability.

Musgrave's theory has been instrumental in explaining the growth of public expenditure in advanced economies, particularly in the context of increasing demands for social welfare programs and public services. It provides a theoretical basis for understanding the expansion of government roles in education, healthcare, social security, and infrastructure development as economies mature and public expectations evolve. Musgrave's theory underscores the importance of fiscal policy in managing economic stability and promoting equitable growth.

The relevance of Musgrave's theory is evident in its application to contemporary fiscal policy analysis and public finance management. It has influenced the design of tax policies, public budgeting processes, and the allocation of resources to various sectors of the economy. By highlighting the necessity of public expenditure in achieving economic and social objectives, Musgrave's theory continues to inform debates on the size and scope of government intervention in the economy.

2.3. Empirical Review

Nabil et al. (2007) examined the dynamic effects of public investment in human capital in the context of Canada's ageing population using a computable overlapping generations (OLG) model. Their objective was to understand the impact of tax-financed increases in public spending on education. The study found that while such increases crowded out other investments in the short run, higher education significantly contributed to human capital accumulation in the long run. Additionally, it was observed that these investments had negative effects on the ageing population, indicating a complex interaction between education spending and demographic changes.

Michael (2017) investigated the effect of human capital investment on economic growth in sub-Saharan Africa, focusing on Nigeria, South Africa, and Ghana from 1980 to 2013. Using various proxy variables for human capital, the study aimed to determine their impact on growth. The analysis revealed that health (GIH) and education (GIE) had a significant positive effect on growth in Nigeria, while the literacy ratio (LR) was insignificantly positive in all three countries. This highlights the differential impact of various aspects of human capital investment on economic growth across different national contexts.

Ngozi and Samuel (2019) explored the relationship between government educational expenditure and human capital development in West African countries. Their objective was to determine how increased government spending on education and health influences school enrollment. The results showed that increased expenditure had a positive and significant impact on both primary and secondary school enrollment. Granger causality tests indicated a bidirectional relationship between government educational expenditure and secondary school enrollment, suggesting a reinforcing cycle between investment in education and human capital development.

Christopher and Utpal (2020) analyzed the impact of government expenditure on human capital and economic growth in Namibia from 1980 to 2015 using a time series analysis. Their objective was to understand the long-term relationship between government spending on education and various educational outcomes. The study found a significant long-run positive relationship between government spending on education and literacy rate, net primary enrollment, and gross tertiary enrollment rates. However, there was no co-integration between government spending and gross enrollment rates at the primary and secondary levels. The vector error correction regression (VCR) analysis revealed that expenditure on healthcare and education significantly impacted GDP in the long run through improved human resources.

Adenuga (2002) focused on government spending on education and health in Nigeria using ECM techniques. The study stressed that the government spending purportedly allocated to education was inadequate or not fully utilized as intended. Similarly, Olaniye and Adam (2002) observed a declining trend in government expenditure on education and health relative to GDP, indicating a reduced commitment to human capital development.

Lawanson (2009) examined the role of education and health on human capital development in Nigeria using ordinary least squares (OLS) techniques. The objective was to identify the conditions necessary for human capital development. The study found that education and health are critical for human capital development, but government expenditure on health and primary education enrollment had negative effects on growth, suggesting inefficiencies in spending.

Dauda (2010) used the endogenous growth model to review the relationship between government spending on education and human capital development. By employing enrollment at different educational levels as proxies, the study aimed to establish a long-term relationship between educational investment and human capital development. The findings indicated a long-run relationship with feedback effects, highlighting the importance of sustained educational investments.

The World Bank (2010) studied the impact of education and health infrastructure on developing economies, using Nigeria as a case study. The objective was to understand the challenges impeding Nigeria's transition to a knowledge-based economy. The study identified poor access to education, high costs, poor quality, inadequate ICT infrastructure, and insufficient governmental funding as major obstacles.

Adamu (2011) analyzed the impact of government spending on education and health in Nigeria from 1980 to 2010 using co-integration and error correction mechanisms. The study found that investment in human capital, particularly in education and training, stimulates economic growth, underscoring the importance of these investments for long-term development.

Kanayo (2013) explored the impact of human capital formation in Nigeria using ECM as an analytical tool. The objective was to assess the significance of investment in education and health on economic growth. The study found that such investments significantly impacted economic growth and recommended restructuring and better equipping educational and health institutions for greater output.

Ehimare et al. (2014) investigated Nigerian government expenditure on human capital development. Utilizing unit root tests and data envelopment analysis, the study aimed to assess the efficiency of government spending. Findings revealed a significant reduction in the efficiency of government expenditure on education and health since 1990, leading to poor quality and outputs. The study recommended improvements in education and healthcare delivery.

Ogbonna et al. (2017) empirically examined the relationship between government human capital spending and human capital development in Nigeria from 1990 to 2015 using ARDL methods. The objective was to determine the impact of government spending on health and education on human capital development. The results showed that government health spending had a positive but largely insignificant impact on human capital development, while education spending did not significantly affect the human development index, indicating the need for better-targeted investments.

3. METHODOLOGY

To analyse the effect of Public expenditure on Human Capital Development in Nigeria, this study adopted the model used in the study of Naraina (2010) assessing the effect of public social expenditure and human capital development on Malaysian. The model is framed in the following form:

$$HCD = f(EXPEDU, EXPHT) \dots \dots \dots (1)$$

Where:

HCD is human capital development;

EXPEDU represent expenditure on education;

EXPHT represent expenditure on health;

The model will be adopted to investigate the relationship between Public expenditure and Human Capital Development in Nigeria. This is important so as to find out the case maybe in Nigeria. Public expenditure was proxied by education and health expenditure while human capital development was proxied by human development index with other controlling variables such as enrollment rate and life expectancy rate. The functional model was written in explicit form, using log linear model as follows:

$$HDI = f(EXPEDU, EXPHT, ENRATE, MORATE, FORAID, GCF) \dots \dots \dots (2)$$

The general ARDL model is:

$$Y = \alpha + \sum \beta_i Y_{t-i} + \sum \delta_i X_{t-i} + \phi Y_{t-1} + \sum \theta_i Z_{t-i} + \varepsilon$$

Where:

- Y is the dependent variable

- α is the intercept

- β_i is the coefficient for the lagged dependent variable

- δ_i is the coefficient for the lagged independent variable

- ϕ is the coefficient for the lagged dependent variable

- θ_i is the coefficient for the lagged exogenous variable

$$\log HDI = \beta_1 \log EXPEDU + \beta_1 \log EXPHT + \beta_1 \log ENRATE + \beta_1 \log MORATE + \beta_1 \log FORAID + \beta_1 \log GCF + \varepsilon$$

Where:

HDI = Human Development Index

EXPEDU = Expenditure on Education

EXPHT = Expenditure on Health

ENRATE = Enrollment Rate

MORATE = Mortality rate

FORAID = Foreign aid

GCF = Gross capital formation

ε = error term

This study employs ARDL approach to estimate long run as well as short run relationship between the dependent and the independent variables. By Distributed Lag (DL) variables, we imply lagged values of observed exogenous predictor variables while Autoregressive (AR) variables are lagged values of observed endogenous response variables. In ARDL approach a dynamic error correction model (ECM) is derived from ARDL that integrates the short-run dynamic with the long-run equilibrium without losing long run information. The data for public expenditure on education and health were sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin, various issues. The HDI values are from the UNDP Human Development Report for various years. All the data were annual time series data from 1990 to 2022 and secondary in nature. The choice of this period is justified by the availability of data during this period.

4. DATA ANALYSIS AND RESULTS

4.1 Pre-Estimation Technique

The pre-estimation technique includes descriptive statistics, correlation analysis, unit root and bound testing and autoregressive distributed lag (ARDL).

Table 4.1: descriptive statistics, correlation analysis, unit root and bound testing and ARDL

	HDI	HCPPI	EXPEDU	EXPHT	ENRATE	MORATE	FORAID	GCF
Mean	0.472	1.636	5.155	4.877	37.133	96.222	20.630	2.159
Median	0.480	1.642	5.032	5.172	35.276	92.400	21.217	2.552
Maximum	0.547	2.065	6.555	7.136	54.883	124.200	23.160	40.389
Minimum	0.390	1.223	3.686	2.722	23.545	65.035	18.839	-23.747
Std. Dev.	0.048	0.260	0.826	1.094	7.881	19.061	1.330	12.251
Skewness	-0.270	0.002	0.082	-0.113	0.259	0.176	0.003	0.325
Kurtosis	2.004	1.723	1.941	2.284	2.401	1.597	1.491	4.935
Jarque-Bera	1.765	2.242	1.580	0.776	0.864	2.878	3.129	5.732
Probability	0.414	0.326	0.454	0.678	0.649	0.237	0.209	0.057
Sum	15.586	53.978	170.115	160.939	1225.393	3175.335	680.801	71.238
Sum Sq. Dev.	0.073	2.161	21.818	38.295	1987.650	11626.26	56.602	4803.124
Observations	33	33	33	33	33	33	33	33

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Source: Author's Computation 2024

The descriptive statistics provide insights into the distributional characteristics of various variables. The Human Development Index (HDI) exhibits a mean of approximately 0.472, with a median close to this value at 0.480. The distribution is slightly skewed to the left and slightly platykurtic, but not significantly different from a normal distribution. This suggests a relatively balanced distribution around the mean, indicating a moderate level of human development across the observed entities.

The Human Capital Per Person Index (HCPPI) demonstrates a mean around 1.636, with a median of 1.642. The distribution is approximately symmetrical and slightly platykurtic, indicating a similar level of human capital per person across the entities. The distribution is not significantly different from a normal distribution.

Expenditure on education (EXPEDU) and expenditure on health (EXPHT) both show somewhat dispersed distributions. While EXPEDU exhibits a slight skew to the right and is slightly platykurtic, EXPHT is slightly skewed to the left and slightly leptokurtic. However, both distributions are not significantly different from normal distributions, indicating typical patterns of expenditure in education and health across the observed entities.

The enrollment rate (ENRATE) and mortality rate (MORATE) have dispersed distributions, with ENRATE slightly skewed to the right and slightly leptokurtic, and MORATE showing approximately symmetrical distribution and slightly platykurtic kurtosis. However, both distributions are not significantly different from normal distributions, implying typical patterns in enrollment and mortality rates across the entities.

Foreign aid (FORAID) displays a distribution close to symmetrical, with slight platykurtosis. The distribution is not significantly different from normal, indicating a balanced pattern in foreign aid across the entities.

Gross capital formation (GCF) exhibits a widely dispersed distribution with a skew to the right and leptokurtosis. However, this distribution is significantly different from a normal distribution, suggesting variations in gross capital formation among the observed entities.

Table 4.2: Correlation Matrix

	HDI	HCPPI	EXPEDU	EXPHT	ENRATE	MORATE	FORAID	GCF
HDI	1							
HCPPI	0.978	1						
EXPEDU	0.777	0.083	1					
EXPHT	0.399	0.419	0.755	1				
ENRATE	0.714	0.279	0.288	0.496	1			
MORATE	-0.097	-0.299	-0.784	-0.351	-0.778	1		
FORAID	0.578	0.184	0.653	0.237	0.695	-0.688	1	
GCF	-0.055	-0.046	0.0004	-0.004	0.018	0.033	0.157	1

Source: Author's Computation 2024

Where HDI is human development index, HCPPI is human capital per person index, EXPEDU is expenditure on education, EXPHT is expenditure on health, ENRATE is enrollment rate, MORATE is mortality rate, FORAID is foreign aid and GCF is gross capital formation

The correlation matrix in Table 4.2 shows the correlation coefficients between the eight variables: human development index (HDI), human capital per person index (HCPPI), expenditure on education (EXPEDU), expenditure on health (EXPHT), enrollment rate (ENRATE), mortality rate (MORATE), foreign aid (FORAID), and gross capital formation (GCF). The correlation coefficient is a measure of the strength and direction of the linear relationship between two variables. A correlation coefficient of 1 indicates a perfect positive correlation, meaning that the two variables are perfectly related in a positive direction. A correlation coefficient of -1 indicates a perfect negative correlation, meaning that the two variables are perfectly related in a negative direction. A correlation coefficient of 0 indicates no correlation, meaning that there is no linear relationship between the two variables. The correlation matrix in Table 4.2 shows that there are strong positive correlations between HDI and HCPPI (0.978), HDI and EXPEDU (0.777), HDI and ENRATE (0.714), and HDI and FORAID (0.578). These correlations indicate that there is a positive relationship between HDI and these other variables. In other words, as HDI increases, HCPPI, EXPEDU, ENRATE, and FORAID also tend to increase.

The correlation matrix also shows that there are strong negative correlations between HDI and MORATE (-0.097) and between MORATE and GCF (0.033). These correlations indicate that there is a negative relationship between these variables. In other words, as HDI increases, MORATE tends to decrease, and as MORATE decreases, GCF tends to increase. The remaining correlations in the matrix are weaker. The correlations between EXPEDU and EXPHT (0.755) and between ENRATE and EXPHT (0.496) are moderately strong. The correlations between EXPEDU and FORAID (0.653), EXPHT and FORAID (0.237), and FORAID and GCF (0.157) are also moderately strong. The remaining correlations are all weak.

Table 4.3: VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-237.1237	NA	0.001020	15.81443	16.18449	15.93506
1	4.489198	342.9345	1.23e-08	4.355536	7.686087	5.441212
2	129.4786	112.8937*	6.21e-10*	0.420733*	6.711774*	2.471456*

* indicates lag order selected by the criterion, LR: sequential modified LR test statistic (each test at 5% level), FPE: Final prediction error, AIC: Akaike information criterion, SC: Schwarz information criterion, HQ: Hannan-Quinn information criterion

Source: Author's Computation 2024

Table 4.3 presents the results of various lag order selection criteria for a vector autoregressive (VAR) model. The table shows the lag order, log-likelihood (LogL), sequential modified LR test statistic (LR), final prediction error (FPE), Akaike information criterion (AIC), Schwarz information criterion (SC), and Hannan-Quinn information criterion (HQ) for each lag order. The lag order selection criteria are used to determine the appropriate number of lags to include in a VAR model. The goal is to choose a lag order that balances the fit of the model with its parsimony. A model with too many lags may be overfitted, while a model with too few lags may not capture the full dynamics of the

data. The LR test is a statistical test that can be used to determine whether the addition of a lag improves the fit of the model. The FPE, AIC, SC, and HQ are information criteria that can be used to compare the fit of models with different lag orders. In Table 4.3, the lag order that is selected by the majority of the criteria is 2. This means that the model with 2 lags has the best trade-off between fit and parsimony.

Table 4.4: Unit Root Test

Variable		Augmented Dickey-Fuller (ADF) Test	Phillip Perron (PP) Test
HDI	Level	-0.751[0.819]	-0.807 [0.804]
	First Diff.	-6.215[0.000]***	-6.641[0.000]***
HCPPI	Level	0.191 [0.968]	0.733 [0.991]
	First Diff.	-2.774 [0.074]*	-2.705 [0.085]*
EXPEDU	Level	-1.012 [0.737]	-0.842 [0.793]
	First Diff.	-7.314 [0.000]***	-7.519 [0.000]***
EXPHT	Level	-2.352 [0.163]	-2.352 [0.163]
	First Diff.	-6.077[0.000]***	-6.201[0.000]***
ENRATE	Level	-1.362 [0.588]	-1.362 [0.588]
	First Diff.	-7.167[0.000]***	-7.142[0.000]***
MORATE	Level	1.285[0.998]	0.249[0.972]
	First Diff.	-0.61[0.056]*	-0.751[0.019]*
FORAID	Level	-0.887[0.778]	-1.062[0.719]
	First Diff.	-5.500[0.000]***	-5.395[0.000]***
GCF	Level	-10.139[0.000]***	-10.766[0.000]***
	First Diff.		
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$			

Source: Author's Computation 2024

Where HDI is human development index, HCPPI is human capital per person index, EXPEDU is expenditure on education, EXPHT is expenditure on health, ENRATE is enrollment rate, MORATE is mortality rate, FORAID is foreign aid and GCF is gross capital formation

Table 4.4 presents the results of the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests for the eight variables: human development index (HDI), human capital per person index (HCPPI), expenditure on education (EXPEDU), expenditure on health (EXPHT), enrollment rate (ENRATE), mortality rate (MORATE), foreign aid (FORAID), and gross capital formation (GCF). The unit root tests are used to determine whether a variable has a unit root. A variable has a unit root if it is non-stationary, meaning that it does not have a fixed mean and variance over time. If a variable has a unit root, it is not appropriate to include it in a VAR model without taking its first difference. In Table 4.4, the null hypothesis of the unit root tests is that the variable has a unit root. The alternative hypothesis is that the variable is stationary. The tests are conducted at the 5% significance level. The results of the ADF and PP tests are very similar. For all eight variables, the null hypothesis of a unit root is rejected at the 5% significance level for the first difference of the variable. This means that all eight variables are stationary in their first difference.

Table 4.5: Bounds testing for Co-integration Test

	HDI		HCPPI	
	Computed Wald F-statistic: 3.981; K = 6		Computed Wald F-statistic: 49.391; K = 6	
Bounds Level	Lower Bound	Upper Bound	Lower Bound	Upper Bound
10% critical bounds value	1.99	2.94	1.99	2.94
5% critical bounds value	2.27	3.28	2.27	3.28
2.5% critical bounds value	2.55	3.61	2.55	3.61
1% critical bounds value	2.88	3.99	2.88	3.99
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$				

Source: Author's Computation 2024

Table 4.5 present the result of bounds testing for co-integration for the two models. Since the unit root test confirmed the combination of order zero and one that $I(0)$ and $I(1)$, the next step is ARDL bounds test for co-integration. The result of the bound testing shows that computed F-Statistics for Wald test of HDI is 3.981 and for HCPPI is 49.391. The values exceed both the upper bounds and lower bounds critical values for all level of significance. Therefore, the statistics test yields evidence of long-run relationship among the variables at 1%, 2.5%, 5% and 10% levels of significance.

4.2 Estimation Technique

4.2.1 Result of Objective One: Public Expenditure on Human Development Index

Table 4.6 presents the results of the ARDL-ECM (Auto-Regressive Distributed Lag - Error Correction Model) analysis concerning the relationship between public expenditure variables and the Human Development Index (HDI).

Table 4.6: Parsimonious Short-Run and Long-Run ARDL-ECM Results

Dependent Variable: HDI		
Bounds Level	Short-Run	Long-Run
HDI(-1)	-0.456 [0.016]**	
EXPEDU(-1)	0.006 [0.307]	
EXPEDU		0.012 [0.324]
EXPHT	0.003 [0.225]	0.006 [0.244]
ENRATE	-0.001 [0.112]	-0.001 [0.000]***
MORATE	-0.001 [0.095]*	-0.002 [0.001]***
FORAID(-1)	-0.0002 [0.919]	-0.001 [0.917]
GCF	0.00002 [0.853]	0.00005 [0.857]
D(EXPEDU)	-0.002 [0.799]	
D(EXPEDU(-1))	-0.010 [0.018]**	
D(FORAID)	0.003 [0.347]	
C		0.668 [0.003]***
ECT(-1)	-0.019 [0.000]***	
R-Square	0.984	
Adjusted R-Square	0.975	
Durbin-Watson Stat	2.385	
Akaike info criterion (AIC)	-6.838	
Schwarz criterion (SIC)	-6.330	
Serial Correlation Test	1.046 [0.372]	
Normality Test	1.021 [0.600]	
Heteroskedasticity Test	11.614 [0.000]***	
Ramsey RESET Test	0.568 [0.577]	
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$		

Source: Author's Computation 2024

Where HDI is human development index, EXPEDU is expenditure on education, EXPHT is expenditure on health, ENRATE is enrollment rate, MORATE is mortality rate, FORAID is foreign aid and GCF is gross capital formation.

The short-run result shows that lagged of human capital index, mortality rate and lagged of expenditure on education are statistically significant in determining human development index in the short-run and they all have a negative significant effect on human development index. The short-run results show that there is a statistically significant negative relationship between HDI(-1) and HDI. This means that a one percentage increase in HDI in the previous period leads to a 0.456% decrease in HDI in the current period. This negative relationship suggests that there may be some short-run adjustment mechanisms that dampen the effect of public expenditure on HDI. The short-run results also show that there is a statistically significant negative relationship between D(EXPEDU(-1)) and HDI. This means that a percentage increase in expenditure on education in the previous period leads to a 0.010% decrease in HDI in the current period. This negative relationship suggests that expenditure on education may have a negative impact on HDI in the short run. The short-run results also show that there is a statistically significant negative relationship between MORATE and HDI. This means that a percentage decrease in mortality rate leads to a 0.001% increase in HDI. This negative relationship suggests that improvements in health may have a positive impact on HDI in the short run. The error-correction term (ECT(-1)) is statistically significant and negative. This means that there is a strong long-run equilibrium relationship between the variables in the model. This implies that any short-run deviations from the long-run equilibrium will be corrected over time.

In the long-run, enrollment rate and mortality rate are statistically significant in determining human development index with a negative effect on human development index. The long-run results also show that there is a statistically significant negative relationship between ENRATE and HDI. This means that a percentage increase in enrollment rate leads to a 0.001% decrease in HDI in the long run. This negative relationship suggests that increases in enrollment rates may have a negative impact on HDI in the long run. Also, the long-run results also show that there is a statistically significant

negative relationship between MORATE and HDI. This means that a percentage decrease in mortality rate leads to a 0.002% increase in HDI in the long run. This negative relationship suggests that improvements in health may have a positive impact on HDI in the long run.

The R-squared (0.984) and Adjusted R-squared (0.975) suggest that the model explains a substantial portion of the variation in HDI. The Durbin-Watson statistic (2.385) indicates no significant autocorrelation and AIC and SIC values (-6.838 and -6.330, respectively) suggest a good fit of the model while the serial correlation test and normality test are not statistically significant, indicating no serial correlation or deviation from normality. Also, the Ramsey RESET test is not statistically significant, indicating no omitted variables in the model.

4.2.2 Result of Objective Two: Public Expenditure on Human Capital per Person Index

Table 4.7 presents the results of the ARDL-ECM (Auto-Regressive Distributed Lag - Error Correction Model) analysis for the relationship between public expenditure variables and the Human Capital per Person Index (HCPPI). The short-run result shows that lagged of expenditure on education, expenditure on health, foreign aid and gross capital formation are statistically significant in determining human capital per person index in the short-run while lagged of expenditure on education, foreign aid and gross capital formation have a positive significant effect on human capital per person index while expenditure on health has a negative significant effect on human capital per person index.

Table 4.7: Parsimonious Short-Run and Long-Run ARDL-ECM Results

Dependent Variable: HCPPI		
Bounds Level	Short-Run	Long-Run
HCPPI(-1)	0.019 [0.507]	
EXPEDU(-1)	0.007 [0.083]*	
EXPEDU		-0.362 [0.565]
EXPHT	-0.003 [0.097]*	0.148 [0.504]
ENRATE	-0.0002 [0.188]	0.0131 [0.607]
MORATE	-0.0004 [0.299]	-0.022 [0.147]
FORAID	0.002 [0.065]*	-0.086 [0.504]
GCF	0.00008 [0.071]*	0.004 [0.504]
D(EXPEDU)	0.003 [0.304]	
D(EXPHT)	-0.0002 [0.821]	
D(EXPHT(-1))	0.001 [0.179]	
D(ENRATE)	0.00002 [0.855]	
D(MORATE)	0.001 [0.504]	
D(MORATE(-1))	-0.005 [0.005]***	
C		0.668 [0.003]***
ECT(-1)	-0.019 [0.000]***	
R-Square	0.999	
Adjusted R-Square	0.999	
Durbin-Watson Stat	2.550	
Akaike info criterion (AIC)	-8.929	
Schwarz criterion (SIC)	-8.281	
Serial Correlation Test	0.724 [0.501]	
Normality Test	10.520 [0.005]***	
Heteroskedasticity Test	0.985 [0.502]	
Ramsey RESET Test	0.196 [0.824]	
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$		

Source: Author's Computation 2024

Where HCPPI is human capital per person index, EXPEDU is expenditure on education, EXPHT is expenditure on health, ENRATE is enrollment rate, MORATE is mortality rate, FORAID is foreign aid and GCF is gross capital formation

The coefficient of EXPEDU(-1) is 0.007 (p-value: 0.083) for lagged expenditure on education. The lagged variable shows a positive and marginally significant association indicating that a percentage increase in EXPEDU(-1) will lead to 0.007% increase in HCPPI. The coefficient of EXPHT is -0.003 (p-value: 0.097), indicating a negative and marginally significant short-run relationship between health expenditure and the current HCPPI. A percentage increase in EXPHT will bring about 0.003% decrease in HCPPI. Foreign Aid (FORAID) and Gross Capital Formation (GCF) exhibit a positive significant short-run effects on HCPPI. FORAID has a positive but marginally significant association (0.002, p-value: 0.065), while GCF shows a positive and marginally significant effect (0.00008, p-value: 0.071). A percentage increase in FORAID will bring about 0.002% increase

in HCPPI and a percentage increase in GCF will bring about 0.00008% increase in HCPPI. The error-correction term (ECT(-1)) is statistically significant and negative. This means that there is a strong long-run equilibrium relationship between the variables in the model. This implies that any short-run deviations from the long-run equilibrium will be corrected over time.

The R-squared (0.999) and Adjusted R-squared (0.999) suggest an excellent fit of the model, explaining almost all the variation in HCPPI. The Durbin-Watson statistic (2.550) indicates no significant autocorrelation. AIC and SIC values (-8.929 and -8.281, respectively) suggest a good fit of the model. The serial correlation test, heteroskedasticity test, and Ramsey RESET Test are not statistically significant, indicating no issues with serial correlation, heteroskedasticity, or omitted variables.

5. CONCLUSION AND RECOMMENDATIONS

The study examined the impact of public expenditure on human capital development in Nigeria from 1990 to 2022. The variables of interest in the study are human development index, human capital per person index, expenditure on education, expenditure on health, enrollment rate, mortality rate, foreign aid and gross capital formation which were sourced from Central Bank of Nigeria and UNDP Human Development Report for various years. The techniques used for the study is auto-regressive distributed lag (ARDL). Two variables were used to proxy human capital developments which are human development index, human capital per person index and based on this, two models were specified since human capital development is the dependent variable.

The result from human development index revealed that lagged of human capital index, mortality rate and lagged of expenditure on education are statistically significant in determining human development index in the short-run and they all have a negative significant effect on human development index while enrollment rate and mortality rate are statistically significant in determining human development index with a negative effect on human development index in the long-run. Also, the result on human capital per person index revealed that lagged of expenditure on education, expenditure on health, foreign aid and gross capital formation are statistically significant in determining human capital per person index in the short-run while lagged of expenditure on education, foreign aid and gross capital formation have a positive significant effect on human capital per person index while expenditure on health has a negative significant effect on human capital per person index.

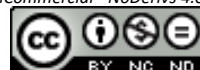
From the outcomes of this study, the followings policy recommendations are given.

- **Investment in Education and Health:** Increase public expenditure on education and health to enhance human capital development. Policies should focus on improving the quality of education and healthcare services to positively impact the human development index and human capital per person index.
- **Mortality Rate Reduction:** Implement measures to reduce mortality rates, as this has been identified as a significant factor negatively affecting human development. Healthcare interventions and public health campaigns can contribute to achieving this goal.
- **Long-Term Planning:** Develop long-term strategies for sustained investment in education and health to ensure a positive impact on human capital development over time. Consistency in policies and budget allocations is crucial for achieving meaningful results.
- **Foreign Aid Allocation:** Optimize the utilization of foreign aid by directing it towards initiatives that directly contribute to human capital development. Ensure effective monitoring and evaluation mechanisms to assess the impact of foreign aid on education and health outcomes.
- **Enrollment Rate Improvement:** Implement policies to improve enrollment rates in education, particularly in the long run. Strategies may include addressing barriers to access, promoting awareness, and enhancing the overall quality of education to encourage higher enrollment.

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Reference list entries (in alphabetical order)

Grazer, Brian, and Charles Fishman. 2015. *A Curious Mind: The Secret to a Bigger Life*. New York: Simon & Schuster.

Smith, Zadie. 2016. *Swing Time*. New York: Penguin Press.

In-text citations

(Grazer and Fishman 2015, 12)

(Smith 2016, 315–16)

For more examples, see [15.40–45](#) in *The Chicago Manual of Style*.

Two or more authors

In references:

Ward, Geoffrey C., and Ken Burns. 2007. *The War: An Intimate History, 1941–1945*. New York: Knopf.

In text:

(Ward and Burns 2007, 52)

For four or more authors, list all of the authors in the reference list; in the text, list only the first author, followed by *et al.* (“and others”):

In references:

Johnson, Norine G., Michael C. Roberts, and Judith Worell. 2001. *Beyond Appearance: a New Look at Adolescent Girls*. Washington, DC: American Psychological Association.

In text:

(Johnson et al. 2010)

CHAPTER OR OTHER PART OF AN EDITED BOOK

In the reference list, include the page range for the chapter or part. In the text, cite specific pages.

Reference list entry

Thoreau, Henry David. 2016. “Walking.” In *The Making of the American Essay*, edited by John D’Agata, 167–95. Minneapolis: Graywolf Press.

In-text citation

(Thoreau 2016, 177–78)

In some cases, you may want to cite the collection as a whole instead.

Reference list entry

D’Agata, John, ed. 2016. *The Making of the American Essay*. Minneapolis: Graywolf Press.

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(D’Agata 2016, 177–78)

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TRANSLATED BOOK

Reference list entry

Lahiri, Jhumpa. 2016. *In Other Words*. Translated by Ann Goldstein. New York: Alfred A. Knopf.

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Reference list entries (in alphabetical order)

Austen, Jane. 2007. *Pride and Prejudice*. New York: Penguin Classics. Kindle.

Borel, Brooke. 2016. *The Chicago Guide to Fact-Checking*. Chicago: University of Chicago Press. ProQuest Ebrary.

Kurland, Philip B., and Ralph Lerner, eds. 1987. *The Founders’ Constitution*. Chicago: University of Chicago Press. <http://press-pubs.uchicago.edu/founders/>.

Melville, Herman. 1851. *Moby-Dick; or, The Whale*. New York: Harper & Brothers. <http://mel.hofstra.edu/moby-dick-the-whale-proofs.html>.

In-text citations

(Austen 2007, chap. 3)

(Borel 2016, 92)

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LaSalle, Peter. 2017. "Conundrum: A Story about Reading." *New England Review* 38 (1): 95–109. Project MUSE.

Satterfield, Susan. 2016. "Livy and the *Pax Deum*." *Classical Philology* 111, no. 2 (April): 165–76.

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(LaSalle 2017, 95)

(Satterfield 2016, 170)

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Reference list entry

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In-text citation

(Bay et al. 2017, 465)

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Articles from newspapers or news sites, magazines, blogs, and the like are cited similarly. In the reference list, it can be helpful to repeat the year with sources that are cited also by month and day. Page numbers, if any, can be cited in the text but are omitted from a reference list entry. If you consulted the article online, include a URL or the name of the database.

Reference list entries (in alphabetical order)

Manjoo, Farhad. 2017. "Snap Makes a Bet on the Cultural Supremacy of the Camera." *New York Times*, March 8, 2017. <https://www.nytimes.com/2017/03/08/technology/snap-makes-a-bet-on-the-cultural-supremacy-of-the-camera.html>.

Mead, Rebecca. 2017. "The Prophet of Dystopia." *New Yorker*, April 17, 2017.

Pai, Tanya. 2017. "The Squishy, Sugary History of Peeps." *Vox*, April 11, 2017. <http://www.vox.com/culture/2017/4/11/15209084/peeps-easter>.

Pegoraro, Rob. 2007. "Apple's iPhone Is Sleek, Smart and Simple." *Washington Post*, July 5, 2007. LexisNexis Academic.

In-text citation

(Manjoo 2017)

(Mead 2017, 43)

(Pai 2017)

(Pegoraro 2007)

Readers' comments are cited in the text but omitted from a reference list.

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(Eduardo B [Los Angeles], March 9, 2017, comment on Manjoo 2017)

For more examples, see [15.49](#) (newspapers and magazines) and [15.51](#) (blogs) in *The Chicago Manual of Style*.

BOOK REVIEW

Reference list entry

Kakutani, Michiko. 2016. "Friendship Takes a Path That Diverges." Review of *Swing Time*, by Zadie Smith. *New York Times*, November 7, 2016.

In-text citation

(Kakutani 2016)

INTERVIEW

Reference list entry

Stamper, Kory. 2017. "From 'F-Bomb' to 'Photobomb,' How the Dictionary Keeps Up with English." Interview by Terry Gross. *Fresh Air*, NPR, April 19, 2017. Audio, 35:25.
<http://www.npr.org/2017/04/19/524618639/from-f-bomb-to-photobomb-how-the-dictionary-keeps-up-with-english>.

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(Stamper 2017)

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Google. 2017. "Privacy Policy." Privacy & Terms. Last modified April 17, 2017.
<https://www.google.com/policies/privacy/>.

Yale University. n.d. "About Yale: Yale Facts." Accessed May 1, 2017. <https://www.yale.edu/about-yale/yale-facts>.

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Souza, Pete (@petesouza). 2016. "President Obama bids farewell to President Xi of China at the conclusion of the Nuclear Security Summit." Instagram photo, April 1, 2016. <https://www.instagram.com/p/BDrmfXTtNCt/>.

In-text citations

(Chicago Manual of Style 2015)

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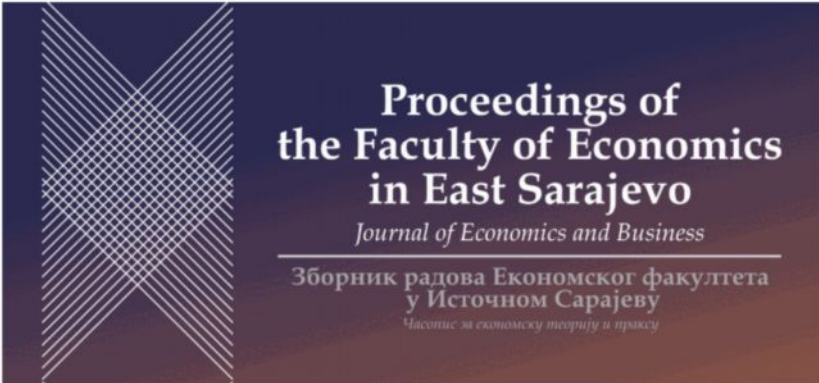
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