Evaluation of the Determinants of Economic Growth in Nigeria

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ABSTRACT

This project examines the determinant of economic growth in Nigeria using time series economic data spanning from 1990 to 2022. Macroeconomic variable used includes foreign direct investment foreign aid population and GDP. The stationarity process of the variables was tested using ADF and PP unit root test. The study also employs Auto regressive distributed lag model in assessing the determinants of economic growth in Nigeria. Johansson cointegration test is applied in testing cointegration relation while direction of causality among the variable was analyzed using granger causality test. Unit root test result reveals that all the variable becomes stationary after first differencing. Finding based on ARDL estimation indicates significant and insignificant impacts of GDP lagged, FDI, POP and AID on economic growth in Nigeria. Cointegration test result reveals the presence of cointegration relation among the variable. Other findings based on the direction of causality shows the absence of causal relationship among the variable. It is recommended that Nigerian Governments should provide an enabling environment to attract foreign direct investment.

INTRODUCTION

Economic growth is a fundamental goal for government and societies worldwide. It is closely link to improving living standard, reducing poverty and fostering social welfare. Understanding the determinants of economic growth is crucial for policy makers as it allows for the identification of strategic intervention that can boost economic performance.

An evaluation into the factors affecting economic growth has been one of the central issue amongst theoretical and empirical growth researchers. Within the framework of economic growth theory, there have been two important expositions that have led much of the existing discussion on economic growth. That is the neoclassical growth theory and endogenous growth theories (Chirwa, & Odhiambo, 2016). Their main focus has been on the importance of state factors such as the accumulation of physical capital and human capital development (see, among others, Solow 1956; Romer 1986; Lucas 1988). However, there have been other equally important contributions to economic growth literature that focus either on the impact of efficiency factors on economic growth (see Easterly and Wetzel 1989; Barro 1990; World Bank 1990; Barroand Sala-i-Martin 1992, among others) or on the importance of fundamental sources of economic growth, such as institutions and legal, demographic, geographic, socioeconomic and political factors (see Barro 1999, 2003; Sachs and Warner 1997; Burnside and Dollar 2000; Radelet, Sachs, and Whang-Lee 2001, among others).

Macroeconomic factors play a vital role in determining a country's economic growth. Factors such as investment, saving, technological progress, foreign direct investment, export, and human capital are

essential for accelerated growth. Investment for instance. brings about capital accumulation and technological advancement, leading to the productivity gain and overall economic growth. Saving facilitate investment, as they provide the necessary funds for productive activities. Technological progress is a key driver of economic growth, as it allows for efficiency improvement and innovation across sectors. The proponent of growth theorist Solow-Swan (1956) advocates for the accumulation of physical capital as a short run driver of economic growth, while technological progress is the key determinant growth in the long run. An important extension of the neoclassical growth model was the inclusion of human capital stock as one of the key factors driving economic growth to complement physical capital accumulation (Mankiw, et, al. 1992; Islam, 1995). Endogenous growth theorists' major contribution to theory of economic growth is the inclusion of productivity factors such as learning-by-doing and useful technological knowledge as important drivers of economic growth (Romer 1986 & Lucas 1988) There is consensus that state factors such as investment and human capital stock, on the one hand, and productivity factors (technological growth) on the other, are important macroeconomic determinants of economic growth in almost any country (Solow 1956). There are other proponents who postulate that factors affecting the efficiency of savings and investment are equally important determinants in influencing economic growth (Easterly & Wetzel 1989). These efficiency factors became prominent in the 1990s, with three key outcomes being targeted: stability of the macro-economic environment; effectiveness of the institutional framework of an economy related to political and economic governance, incentive

FDI facilitate economic growth by enhances competitiveness and expanding market asset. According to Thirlwall, (1999) & Zhang, (2001) FDI is a composite package that includes physical capital, production techniques, managerial skills, products and services, marketing expertise, advertising and business organizational processes. It is disputed that FDI has important growth effects on host economies. Exogenous Growth-theory view that FDI can boost the economy of host country through capital accumulation, the introduction of new goods, and foreign technology. Elboiashi, (2011) emphasis that it can also enhance the stock of knowledge in the host country by the transfer of skills. Moreover, Herzer et al. (2008) stresses the fact that FDI plays a significant function in the host country's economic growth by increasing the amount of investable capital, and by way of technological spill-overs (see: Mahembe & Odhiambo,2014) Foreign direct investment flow to Nigerian economy from 1976-2006 indicates that nominal FDI fluctuated from 212.5 million in 1976 to N184 million in 1979, to –N404.1 million in1980, to N434.1 million in 1985, to N4686 million in 1990, to N75940.6 million in 1995, N115995.7 in 2000, to N132, 433.65 in 2001 and to N573, 835.0 million in 2006. The flow of FDI in real terms also decline ranging from N830.2 million in 2000, to N4164.05 in 2005 and to N7119.89 million in 2006. Moreso, FDI forms only a small percentage of GDP. It stood at 0.78% in 1976, 0.79 in 1980, 1.80% in 1990, 2.33% in 2000, 2.79% in 2005 and 3.39% in 2006. The increase in the 1990s was due to abandonment of restrictive measures which the indigenization decree brought against the flow of FDI and the move towards trade liberalization that favours more foreign participation in the economy. (CBN Statistical Bulletin, 2001 & 2006. Anyanwu, 1998 & Awe,2013). GDP in Nigeria average 147.15 USD billion from 1960 until 2022, reaching an old time high of 574.18 USD billion in 2014 and a record low of 4.20 USD billion. Nigerian GDP for 2022 was $477.39B, a 8.29% increase from 2021. GDP for 2021 was $440.83B, a 2% increase from 2020. In 2020 it was $432.20B, a 8.92% decline from 2019. For the 2019 was $474.52B, a 12.51% increase from 2018.

Over the years there are divergence in views and lack of consensus among macroeconomist on the actual determinant of economic growth. Literature and factual issue concerning macrocosmic variables and GDP growth nexus has been an unresolved issue among economic growth theorists. The degree to which a particular variable been a main determinant of economic growth in either developed or developing countries is still under investigation. Most theoretical foretelling which assume that a single specific factor makes some countries richer than others do not find consistent empirical confirmation. Many exceptions, for example that are opposed to the idea that human capital is the only factor which is vital for growth: In terms of level of education, Countries like Poland, Russia, South Korea are almost close to those of richest

economies nevertheless their GDP per capita is much lower Barro, 1998) With regard to population density, today we cannot say that poverty is always associated with high density as some economists, following Malthusian predictions, initially believed. Switzerland, Germany (and in particular the former West Germany) and newly industrialized Asian countries have a high population density and this was not an obstacle to their economic development. In contrast, many Latin American countries such as Brazil and Mexico have a low population density but this did not bring development.

A lot of theoretical and empirical evidence are advance by researcher on macroeconomic determinant of economic growth. Similar studies are conducted elsewhere around the world ad Africa in particular Most research finding shows conflicting results in both the developed and developing nation. The born of contention was that Nigeria been one of the largest African oil economy with abundant human and natural resources and the country has been battling with insecurity, pipelines vandalism, epileptic power supply, foreign exchange pressure among other. This factors assume to be generally affected the growth process of the economy. It affects foreign direct investment, foreign aid and livelihood. The ever increasing population is also left with vulnerability to insurgency, famine, joblessness among other thing. This trend has a serious implication on the phase of Nigeria economic growth. The quest for this study is not far from the postulation of various growth theories which may or may not be consistent to the state of Nigeria economy within the study time frame. It is against this background that this study seeks to ascertain the extent and magnitude of some selected macroeconomic variable in influencing Nigeria economic growth

The broad objective of the study is to examine the determinant of economic growth in Nigeria.

LITERATURE REVIEW

Many researchers like Mihaela, et.al, (2017) Ledyaeva, (2008) Chirwa, & Odhiambo (2016) Alemu et,al. (2019) have earlier conducted study in this area which may either in developing or developed countries. Their empirical evidences are relevance in this case and be acknowledge with outmost regard.

2.1 Conceptual issues

According to Balcerowicz., (2001), economic growth is a process of quantitative, qualitative and structural changes, with a positive impact on economy and on the population's standard of life, whose tendency follows a continuously ascendant trajectory. Moreover, Haller, (2012) refer economic growth as the process of increasing the sizes of national economies, the macro-economic indications, especially the GDP per capita, in an ascendant but not necessarily linear direction, with positive effects on the economic-social sector. Economic growth is also influenced by indirect factors such as the size of the aggregate demand, saving rates and investment rates, the efficiency of the financial system, budgetary and fiscal policies, migration of labour and capital and the efficiency of the government (Boldeanu & Constantinescu, 2015).

Foreign Direct Investment (FDI)

FDI is an investment in the form of a controlling ownership in a business, in real estate or in productive assets such as factories in one country by an entity based in another country. It is thus distinguished from a foreign portfolio investment or foreign indirect investment by a notion of direct control. Foreign direct investment (FDI) is a category of cross-border investment in which an investor resident in one economy establishes a lasting interest in and a significant degree of influence over an enterprise resident in another economy. Ownership of 10 percent or more of the voting power in an enterprise in one economy by an investor in another economy is evidence of such a relationship. FDI is an important channel for the transfer of technology between countries, promotes international trade through access to foreign markets, and can be an important vehicle for economic development. The indicators covered in this group are inward and outward values for stocks, flows and income, by partner country and by industry and FDI restrictiveness.

(OECD, 2023)

According to the IMF (2001) and OECD (1996) definitions, direct investment reflects the aim of obtaining a lasting interest by a resident entity of one economy (direct investor) in an enterprise that is resident in another economy (the direct investment enterprise). Beyond the initial macroeconomic stimulus from the actual investment, FDI influences growth by raising total factor productivity and, more generally, the efficiency of resource use in the recipient economy. This works through three channels: the linkages between FDI and foreign trade flows, the spillovers and other externalities vis-à-vis the host country business sector, and the direct impact on structural factors in the host economy. (OECD, 2002)

Foreign Aid (AID)

Foreign aid, the international transfer of capital, goods, or services from a country or international organization for the benefit of the recipient country or its population. Aid can be economic, military, or emergency humanitarian (e.g., aid given following natural disasters)

Foreign aid can involve a transfer of financial resources or commodities (e.g., food or military equipment) or technical advice and training. Foreign aid is defined as the voluntary transfer of resources from one country to another country. This transfer includes any flow of capital to developing countries. A developing country usually does not have a robust industrial base and is characterized by a low Human Development Index (Thapa. 2020).

Foreign aid is also used to address transnational problems such as the production and export of illegal drugs and the battle against HIV/AIDS. For example, the International Narcotics Control program allocates U.S. funds to countries to battle drug production, and the Anti-Drug Abuse

Population growth (POP)

A population is defined as a group of individuals of the same species living and interbreeding within a given area. Members of a population often rely on the same resources, are subject to similar environmental constraints, and depend on the availability of other members to persist over time (Tuff, Kika & Tuff, 2012). WHO (2023) refers population to all the inhabitants of a country, territory, or geographic area, total or for a given sex and/or age group, at a specific point of time. In demographic terms it is the total number of inhabitants of a given sex and/or age group that actually live within the border limits of the country, territory, or geographic area at a specific point of time, usually mid-year.

2 Theoretical Review

Foreign direct investment contributes directly and indirectly to economic growth, and the host country's growth may attract more Foreign direct investment through exogenous and endogenous growth theories. According to Mahembe & Odhiambo (2014) Foreign direct investment has been found to affect economic growth in two ways: via technological spillovers, by encouraging the adoption of new technologies in the manufacturing process and by stimulating the knowledge transfer, both through labour training and skill acquisition, as well as introducing alternative management practices. Considering long-run growth as a function of technological progress, Foreign direct investment can increase the rate of economic growth in a host economy via a package containing physical capital, technology transfer, human capital and other spill-over effects such as R&D expenditures (Mahembe & Odhiambo, 2014)

The debate on the relationship between population and economic growth could be traced back to1798 when Thomas Malthus published the book an Essay on the Principle of Population. According to the Malthusian model, the causation went in both directions. Higher economic growth increased population by stimulating

earlier marriages and higher birth rates, and by cutting down mortality from malnutrition and other factors. On the other hand, higher population also depressed economic growth through diminishing returns. This dynamic interaction between population and economic growth is the center of the Malthusian model, which implies a stationary population in the long-run equilibrium (Becker, et. al, 1999, Tsen, & Furuoka, 2005).

The neoclassical Solow-Swan (1956) economic growth theory advocates for the accumulation of physical capital as an important driver of economic growth in the short run, while technological advancement is the key determinant of economic growth in the long run. An important extension of the neoclassical growth model was the inclusion of human capital stock as one of the key factors driving economic growth to complement physical capital accumulation (Mankiw, Romer, and Weil 1992; Islam 1995).

Endogenous growth theorists' major contribution to theory of economic growth is the inclusion of productivity factors such as learning-by-doing and useful technological knowledge as important drivers of economic growth (Romer 1986, 1990; Lucas 1988; Grossman and Helpman 1991; Aghion and Howitt 1992; Stokey 1995). There is consensus that state factors such as investment and human capital stock, on the one hand, and productivity factors (technological growth) on the other, are important macroeconomic determinants of economic growth in almost any country (Solow 1956; Frankel 1962; Romer 1986, 1990; Lucas 1988; Mankiw, Romer, and Weil 1992; Aghion and Howitt 1991; Grossman and Helpman 1992), there are other proponents who postulate that factors affecting the efficiency of savings and investment are equally important determinants in influencing economic growth (Easterly and Wetzel 1989; World Bank 1990; Fischer 1992). These efficiency factors became prominent in the 1990s, with three key outcomes being targeted: stability of the macro-economic environment; effectiveness of the institutional framework of an economy related to political and economic governance, incentive

In another spectrum, efficiency factors such as inflation (Mundell 1963; Tobin 1965; Sidrauski 1967; Stockman 1981; Fischer 1983; Bruno and Easterly 1998), real exchange rate stability (Balassa 1964; Samuelson 1964; Dollar 1992; Rodrik 2008), foreign aid (Chenery and Strout 1966; Riddell 1987; Burnside and Dollar 2000), financial development or repression (McKinnon 1973; Shaw 1973), international trade (Dollar 1992; Knight, Loayza, and Villanueva 1993) and population growth (Solow 1956; Boserup 1996) have dominated much of the research, with little consensus being reached on their association with economic growth.

The new literature on empirical growth research stresses the importance of how country-specific development plans and economic reforms can cause different equilibria, or time paths, for per capita income growth (Azariadis and Drazen 1990; Durlauf and Johnson 1995). Today it is still not clear as to which factors are the principal drivers of economic growth within and among countries

Review of Empirical Literature

Mihaela, et.al, (2017) empirically analyzed factors determine economic growth in the five countries for the period of 2003-2016. Bayesian generalized ridge regression employed in. analyzing data. The main results indicated that FDI promotes economic growth in all the countries, except Slovak Republic. Only in the Czech Republic, the expenditure on education generated economic growth, while the expenditure on R&D had positive effects in Romania, Hungary and the Czech Republic. Chirwa, & Odhiambo (2016) conducts a qualitative narrative appraisal of the existing empirical literature on the key macroeconomic determinants of economic growth in developing and developed countries. The findings of their study indicates that determinants of economic growth are different in developed and developing countries. the key macroeconomic determinants of economic growth include foreign aid, foreign direct investment, fiscal policy, investment, trade, human capital development, demographics, monetary policy, natural resources, reforms and geographic, regional, political and financial factors. In developed countries, the study reveals that the key macroeconomic determinants that are associated with economic growth include physical capital,

fiscal policy, human capital, trade, demographics, monetary policy and financial and technological factors

Ighodaro, (2018) analyses the determinants of economic growth in Nigeria for the period spanning 1981 to 2010. The study employed ARDL econometric approach. Variables considered includes Foreign aid, economic growth, labour force. The findings show that Foreign aid influences economic growth in the short run which of course an increase in foreign increase in the long run would have a decreasing effects on growth.

Michael, Y (2018) examines the influence of foreign direct investment (FDI) on economic growth in sub-Saharan African countries using Generalized Method of Moments (GMM) for the period 2001–2015..The findings of the study show that there is no meaningful difference in the growth of per capita GDP and in the countries' abilities to attract FDI inflows. Findings indicate that FDI had a negative and statistically significant effect on the growth rate of per capita GDP in SSA for the period under consideration. Using annual time series observations for the period running from 1981 to 2016, Alemu et,al. (2019) examines factors responsible for Ethiopian economic growth. The study applied ADF and PP unit root tests; and that, the existence of mixed order of integration has been confirmed with both approaches. Test of cointegration and ARDL approach was employed and the existence of long run relationship among variables entered the growth model has been confirmed too. The current and lagged impact of foreign aids is found to be important in explaining the economic growth of Ethiopia. Its current period impact was estimated to be positive and significant too as expected. Negere (2021) carries out an empirical examination of macroeconomic determinants of economic growth of Ethiopia over 1991-2018-time frame in EPRDF regime. The study applied ARDL approach to co-integration. The result of the study indicates that there is a long-run relationship between GDP per capita, gross capital formation, life expectancy, openness and foreign aid. The estimated long-run result indicates that the health human capital has large positive impact on GDP per capita rise followed by gross capital formation. This finding is consistent with the Solow growth and endogenous growth theories. However, openness and foreign aid have negative effect on the long-run economic growth. The findings of this paper suggest that long-run economic performance of the country can be improved through increasing domestic savings, improving health status of citizens and education quality Tadesse (2011) employed co-integration analysis to assess the influence of foreign aid on economic growth in Ethiopia using a time series data covering the period 1970 to 2009. The findings of the study reveals that foreign aid alone has a positive effect on economic growth, while it has a significant negative influence on growth when it interacts with policy. The overall impact of foreign aid on growth during the periods under study turns out to be negative due to lack of good policies

Samsuddin, & Amar. (2020) asses the determinants of economic growth in member of G20 developing countries. Variables considered includes gdp, FDI, and Population The study uses panel data ranging from 2013-2018.The results linear regression and Random Effect Model (REM) shows that, foreign direct investment has a positive and insignificant effect on the economic growth in developing countries of G20 members, population has a positive and insignificant effect on the economic growth in developing countries of G20 members,

Review of Theoretical Frame Works

The neoclassical Solow growth model

Solow is an American economist particularly known for his work on the theory of economic growth that culminated in the exogenous growth model named after him. Solow (1956) built his model of economic growth as an alternative to the Harrod-Domar model of growth with its crucial assumption of fixed proportion in production. He brings a continuous production function linking output to inputs of labour and capital which are substitutable. Solow growth model focuses on long-run economic growth A key component of economic growth is saving and investment. An increase in saving and investment raises the

capital stock and thus raises the full-employment national income and Product. The national income and product rises, and the rate of growth of national income and product increases. In the short run, higher saving and investment raises the rate of growth of national income and product. According to the Solow growth model, in contrast, higher saving and investment has no effect on the rate of growth in the long run.

Solow sets up a mathematical model of long-run economic growth. He assumes full employment of capital and labor. Given assumptions about population growth, saving, technology, he works out what happens as time passes. The labor force *L* (the population) grows at a constant rate *n*: for instance, *n* = .03 would mean that the population grows 3% per year. For Investment, Net investment *I* is the change in capital *K*, : *I* , . for saving, *S* equals investment is an accounting identity. Saving is a constant fraction s of national income Y, *S* = sY. As an accounting identity, national income equals national product. Therefore, aggregate production function follows as Net national product Y is a function of capital K and labor L, functionally written as *Y=F(K, L)* This aggregate production function is fixed; how the product depends on capital and labor does not change as time passes. The study therefore relied on the neoclassic theoretical functional equation to develop model that can capture variable under investigation.

METHODOLOGY

This chapter has to do with methodological aspect of the study. It covers areas such as method of data collection, sample size and sampling techniques, variable measurement, methods of data analysis and model specification.

Sources of Data

The study relies on secondary sources of data. These type of data are basically collected from literature, the documentaries and statistical bulletins of financial organizations. Owing to the nature of the research problem under investigation, data is collected in form of annual time series. Therefore, different data sets are collected from various sources such as the Central Bank of Nigeria (CBN) Statistical Bulletins, National Bureau of Statistics and publication of other related national and international institutions such as World Bank,

Methods of Data Analysis

The search for a reliable economic growth function continues to be an intensive activity. To guard against spurious result, the study took caution by checking the properties of the variables via the Augmented Dickey-Fuller (ADF) and Philip Perron (PP) test. The study further uses autoregressive distributed lag model to test the long and short run relationship among the variable. Granger Causality analysis was conducted to determine the direction of causal relation among the variable

Model Specification

The functional equation is presented as

$$\text{Ingdp}_t = a_0 + \text{lnfdi}_t + \text{lnaid}_t + \text{lnpop}_t + \varepsilon_t \dots\dots(1)$$

Where

Ingdp_t= Natural log of gross domestic product

lnfdi_t= Natural log of foreign direct investment

$lnaid_t$= Natural log of foreign aid

$lnpop_t$= Natural log of Population

a_0= constant term

Table 3.1 Variable Description

Variable	Proxy	Descriptions	Source
GDP	GDP_t	Gross Domestic Product (Economic growth) based on 2010 constant USD for Nigeria	World Bank
FDI	FDI_t	Total value foreign direct investment shares of GDP	World Bank
AID	$AIDt$	Net official aid flows from official donors in current US doller	World Bank
POP	$POPt$	Total population based on the de facto. Unit of measurement used is percent	World Bank

Author's 2023

Unit Root Test

A test of stationarity (or non-stationarity) that has become widely popular over the the past several years is the unit root test (Gujarati & porter 2009). According to (Gujarati & Sanjeetha, 2007) it is important to ensure that all variable in the model are stationary. This is to ensure that any variable used has a constant mean and constant variance, this makes the predication of future values sensible, the Augmented Dickey Fuller (ADF) 1979 test is the general method to perform a formal test for stationarity (gujirati & sangeetha, 2007).

3.6.4 Augmented Dickey-Fuller (ADF) Test

This technique considers the following three different regression equations to test for the presence of unit root:

$$\Delta y_t = a_1 y_{t-1} + lags\ of\ \Delta y_t + \mu_t \ldots\ldots\ldots\ldots\ldots(2)$$

$$\Delta y_t = a_o + a_1 y_{t-1} + lags\ of\ \Delta y_t + \text{e}_t \ldots\ldots\ldots..(3)$$

$$\Delta y_t = a_o + a_1 y_{t-1} + aT_1 + lags\ of\ \Delta y_t + \text{e}_t \ldots\ldots(4)$$

Equation (2) is a random walk; equation (3) is a random walk with intercept only; equation (4) is a random walk with intercept and time trend.

From the above equations we look at the critical value of rejecting null hypotheses of α1. However, in the equations, the first difference of is regressed against a constant term, a time trend (t=1,2,T),the first lag of and the lags of . it is important to include sufficient lags of to ensure no autocorrelation in the error term. Sometimes, one lag or more lags are suitable (Gujarati and Sangeetha, 2007). To test for the suitable number of lags, we will use the Schwarz or Baye`s information criterion to confirm the number of optimum lags to be included in each of the three equations.

Phillips- Perron (1988)

Phillips and Perron (1988) developed a number of unit root tests that have become popular in the analysis of

financial time series. Their test differs from the ADF test mainly in how they deal with serial correlation and heteroschadesticity in the error in particular, where the ADF test use a parametric auto regression to approximate the ARMA structure of the errors in the test regression, the PP tests ignore any serial correlation in the test regression. The test regression for the PP test is

$$\Delta y_t = \alpha_0 + \alpha_i \gamma_{i-1} + \mu_1 \ \dots\dots\dots\dots\dots(5)$$

Where is I(0) and may be heteroskedastic. The Phillip-Peron's test statistic can be viewed as Dickey-Fuller statistics that have been made robust to serial correlation

by using the Newey-West (1987) heteroskedastic–autocorrelation –consistent covariance matrix estimator. It is used to test the null hypothesis that a time series is not stationary against the alternative hypothesis that a time series is stationary

Johansen Cointegration Test

Cointegration test is an important econometric test to ensure whether a long run equilibrium relationship exist among the variables. It is universality agreed that to establish a cointegration, the likelihood ratio must be greater than the Mackinnon critical values Ikezam, (2018). The model can be stated as

$$\Delta X_t = \mu + \psi_1 \Delta X_{t-1} + \psi_2 \Delta X_{t2} + \cdots + \psi_{p-1} \Delta X_t - p + 1 \dots\dots\dots\dots(6)$$

Where μ is a constant term

Autoregressive Distributed Lag Bound Testing Approach

Pesaran et.al (2001) developed a new approach in dealing with the problem of testing for the exiatence of a level relationship between a dependent variable and a set independent variable in a situation when it is not clear with certainty wheather the regressors are trend or difference stationary. This approach is known as Autoregressive Distributed Lag (ARDL)bound testing.

The new method developed by Pesaran et.al. (2001) is applicable irrespective of whether the series variables are purely stationary at their level values, purely difference stationary or mutually co integrated. According to Feridun et.al.(2009) the result of the ARDL estimation remains valid irrespective of the order of integration of the explanatory variables. The ARDL methodology thus has an advantage over co integration techniques which require the underlying series to be both 1(1) . the bound test does not impose restrictive assumption that all the variables under study must be integrated of the same order. It asymptotic distribution for the F statistic is nonstandard under the null hypotheses of no co integration relationship between the examined variables, irrespective weather the explanatory variable are purely 1(0) or 1(1) , or mutually co integrated.

The ARDL model is adopted from the work of Asekunowo (2016) and modified to form the following equation:

$$\Delta GDP = \alpha_0 + \sum_{i=1}^{n} \alpha_{1t} \Delta GDP_{t-1} + \sum_{i=0}^{n} \alpha_{2i} \Delta FDI_{t-1} + \sum_{i=0}^{n} \alpha_{3i} \Delta AID_{t-1} + \sum_{i=0}^{n} \alpha_4 \Delta POP_{t-1}$$

$$+ \beta_1 GDP_{t-1} + \beta_2 FDI_{t-1} + \beta_3 AID_{t-1} + \beta_4 POPp_{t-1} + \ell_t \dots\dots\dots\dots\dots(7)$$

Where: Δ= First Difference Operator, α_0 = Drift Component, ℓ_t = White Noise.

Granger Causality

It is also the responsibility of the researcher to specify based on the priori knowledge he has, which variables are endogenous and which are exogenous (Gujarati 1995: 672). Therefore, it is possible for one to develop a statistical test of exogeneity. However, before causality is carried out, if the data set is time series one, the properties of the variables must be checked. If the variable are not stationary, causality test cannot be done (Hee Ng, 2006; 11). Though non stationary, if series variables are integrated of the same order, Granger causality test can be applied through vector autoregressive model with the differenced values of the variables. Vector error correction model should be used when causality is established for non- stationary series variables (Beck, 2008: 18-19). To determine whether there is Granger causality between inflation and its determinants. The Granger causality model was adopted in line with Engle and Granger (1987), Adeolu (2007), Khan, (2007) and Danpome, et, al. (2015) with some remarkable modification in the interest of this study

$$GDP_t = \alpha_1 \sum yiGDP_{t-1} + \sum \beta_1 DEG_{t-1} + \sum_{1t} \ldots \ldots (8)$$

$$DEG_t = \alpha_2 \sum \beta_1 DEG_{t-1} + \sum yiGDP_{t-1} + \sum_{2t} \ldots \ldots (9)$$

Where

α_1 and α_2 are constants, and $\sum_{1t}$ and $\sum_{2t}$ are the stochastic term. GDP term as economic growth whereas DEG represents the various determinants of economic growth FDI, AID, and POP.

The statement of hypothesis is

H01: GDP does not Granger cause DEG H02: DEG does not Granger cause GDP

RESULTS AND DISCUSSION

The analysis of the results started with descriptive analysis of the variables followed by the diagnostic test and finally, a presentation and discussion of the main result of the study.

Descriptive Statistics

Table: 4.1 Descriptive Statistics

Variables				
	GDP	FDI	AID	POP
Observation	33	33	33	33
Mean	4.7718	1.7085	1.1209	3.4614
Min	-2.0400	0.1838	581200	2.0156
Max	15.330	5.7908	1.14	4.6016
Median	5.3100	1.5237	3.08	3.6492
Std dev	3.7981	1.2664	2.20	0.73
Skewness	0.2843	1.628	3.673	-0.355

Kurtosis	3.543	5.515	16.684	1.882
Jarq-bera	0.851	23.293	331.72	2.413
prob	0.6533	0.0009	0.0000	0.2992

Source: Authors computation using E-views 10v, 2023

The descriptive statistics for the variables used in this study are presented in Table 4.1. It describes the basic features of the data. The target variable been economic growth (gdpr) and other influential variables like foreign direct investment (fdi), foreign aid(aid) and population (pop). The data covers 33 years and the sample size comprises of 33 total observations The results showed the mean, standard deviation, maximum and the minimum value of each variable.

The mean median and maximum value of gdpr is 1.145. 3100 and 15.330. fdi has a calculated mean value of 1.7085 with median and maximum value of 1.5237. 5.7908 respectively. The estimated minimum, maximum and mean values for aid is equal to 581200, 145.044, and 1.1209. The mean value for pop is calculated as 3.4614 while it minimum and maximum value stood as2.0156 and 4.6016

The Jarque-Bera estimate indicates that gdpr, fdi, aid and pop are all positive and normally distributed across the period with a kurtosis values of 3.543, 5.515, 16.684 and 1.882 respectively. On the other hand, its tends to be positively skewed with a maximum of 3.673% and a minimum of -2.0400% for all the distribution. The kurtosis of 16.684 shows that it has a leptokurtic distribution as validated with the estimated value of the Jarque-Bera test of normality.

Unit Root Test

Table 4.2 Unit Root Test Result

	ADF		PP		ORDER
	LEVEL	DIFF	LEVEL	DIFF	
GDP	-3.711896	-8.973648***	-3.869838	-20.13962***	I(1)
FDI	-3.799195	-6.729397***	-3.875038	-11.69842***	I(1)
AID	-3.225442	-5.921176***	-3.127399	-12.01379***	I(1)
POP	-0.442436	-4.201636**	-0.435355	-4.032293**	I(1)

Source: Authors computation using E-views 10v, 2023

The result of the unit test for the stationarity of the variable is presented in table 4.2. the table consist of two different test for unit root, the Augmented Dickey-Fuller (ADF) and the Phillip- Peron test. Test result indicates that the variables are not stationarity at level in both the testes used. However, after first differenced all the variables becomes stationary. This shows that the they are integrated of orderone that is I(1).

Cointegration Test

4.3 Cointegration Test Result

Hypothesis	Trace-Stat	5% critical value	Prob**
None	54.34961	55.24578	0.0598
At least 1	33.69869	35.01090	0.0687

At least 2	16.13705	18.39771		0.1007
At least 3*	4.385646	3.841466		0.0362

Source: Authors computation using E-views 10v, 2023

Cointegration test result presented in table 4.3 shows that there is cointegration relation among the variable. This can be observed from higher trace statistic value against the 5% critical value. Therefore, the null hypothesis of no cointegration is rejected. It shows that There is at least three vectors.

4. 4 ARDL Estimation

Table 4.4 ARDL Result ARDL (1,2,2,0) selected based on Akaike Information Criterion

Dependent variable: GDP 1990 to 2022				
Regressor	Coefficient	Standard Error	T-Ratio	Prob
GDP(-1)	.59714	.14510	4.1154	.001
FDI	.027183	.010645	2.5535	.019
FDI (-1)	-.010661	.013528	-.78806	.440
FDI (-2)	.026872	.011608	2.3149	.031
AID	.044137	.031715	1.3917	.179
AID(-1)	.021110	.037596	.56149	.581
AID(-2)	-.06917	.029363	-2.3557	.029
POP	.51978	.19433	2.6748	.015

R-Squared		.99449	R-Bar-Squared	.99257
S.E. of Regression		030504	F-stat.	F (7, 20) 516.1021[.000
Mean of Dep.Variable		24.4851	S.D. of Dep.Variable	.35383
Residual Sum of Sqr		.018610	Equation Log-likelihood	62.6971
Akaike Info. Criterion		54.6971	Schwarz Bayesian Criteria	49.3683
DW-statistic		1.7518	Durbin's h-statistic	1.0251[.305]

Source Author's Computation using E-views 10v, 2023

Table 4.4 presents the ARDL estimation result. Where GDP is the dependent variable which is the target variable of the study while FDI, AID and POP are Foreign direct investment, Foreign aid and Population respectively and are the independent variable under investigation. The t-ratio of the individual variable indicates that the value of GDP at lag one is positive and significant at 1% critical value in the determination of economic growth in Nigeria. This implies that economic growth is determined by its lag (last year value). Estimated foreign direct investment (FDI) result shows a positive significant values in the determination of economic growth. The result explained that a 10% increase in foreign direct investment (FDI) will increase economic growth by less than 1%. While its first year lag value was negatively insignificant, its second

years lag value was positively significant. Moreover, foreign aid (AID) has a positive coefficient but not significant in the in influencing economic growth. The variable representing the first year lag value of foreign aid was positively insignificant and the second year lag value was negatively significant in determining economic growth for the period under review. Population was positively significant at 1% significance level in the determination of economic growth. A 10 percent increase in population would ginger economic growth by more than 5 percent.

The optimality of the model is determined using the Akaike Information Criterion. The diagnostic tests reveal that model is ok. Similarly, the model correctly specified based on the Ramsey Reset test results. It shows an evidence of autocorrelation free based on Lagrange multiplier test of residual serial correlation. The strength of the model is strong given the values of R-squared 99.4 percent and that of R-bar squared 99.3 percent.

ARDL Bounds Test

Table 4.5 ARDL Long Run Form and Bounds Test Result

Statistics	Value	Sig	1(0)	1(1)
			Finite Sample: n=35	
F-Stat	5.184169	10%	3.47	4.88
		5%	4.568	5.095
		1%	6.38	7.73
	Actual sample size=32			

Source: Authors computation using E-views 10v, 2023

Table 4.5 Presents the result of ARDL bound test for long run relationship among the dependent and independent variables. The result of the relationship shows that the F statistic value of 5.184 is greater than both 4.56. and 5.09 lower and upper bound test at 5% significant critical value. This indicate that there is long run significant relations among the variables in view.

Granger Causality Test

Table 4.6 Granger Causality Test Result

Null Hypothesis:	Obs	F-Statistic	Prob.
FDI does not Granger Cause GDP	31	0.30001	0.7433
GDP does not Granger Cause FDI		0.98754	0.3860
AID does not Granger Cause GDP	31	0.28666	0.7531
GDP does not Granger Cause AID		0.95881	0.3965
POP does not Granger Cause GDP	31	2.61913	0.0920
GDP does not Granger Cause POP		0.36430	0.6982
AID does not Granger Cause FDI	31	0.15192	0.8598
FDI does not Granger Cause AID		0.33725	0.7168

POP does not Granger Cause FDI	31	3.15354	0.0594
FDI does not Granger Cause POP		0.43754	0.6503
POP does not Granger Cause AID	31	0.29268	0.7487
AID does not Granger Cause POP		0.11698	0.8901

Source: Authors computation using E-views 10v, 2023

Table 4.6 presents the result of granger causality test. The result of the estimation reveals that there is no causality among the variables. This was attested by the probability values in the table. It shows that none of the variable causing one another in either direction. Therefore, the null hypothesis of no causality is accepted

Diagnostic Tests
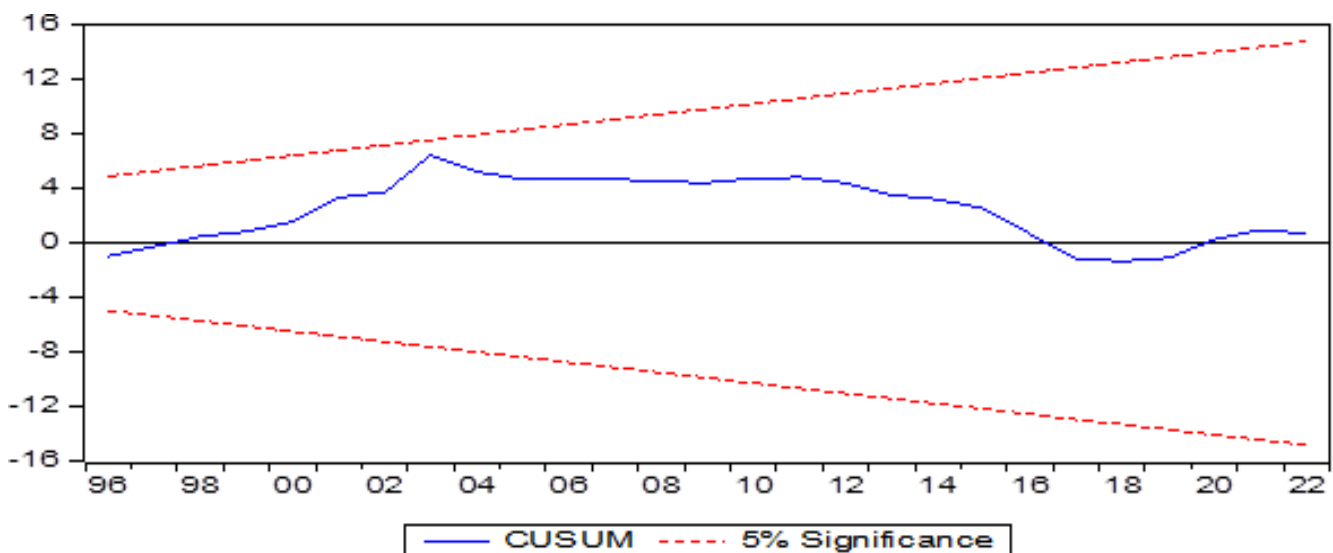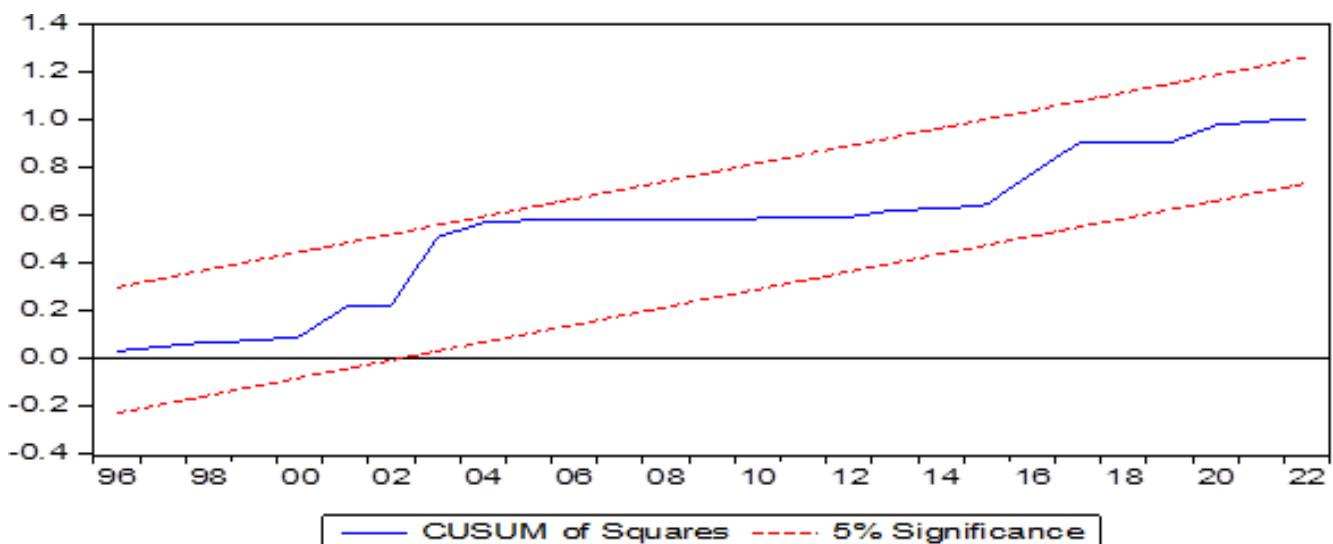
CUSUM test

Fig:1 CUSUM test

CUSUM Square

Fig:2 CUSUM Square

Figure 1and 2 presents CUSUM stability test for model analyzing the determinant of economic growth in Nigeria. The model consists of GDP, AID and POP. The figures plot the results for CUSUM and CUSUM square tests. The results indicate the absence of any instability of the coefficients because the plots of the CUSUM statistics fall inside the critical bands of 5 percent confidence intervals of parameter stability. Therefore, there exists stability in the coefficients over the sample period

Findings

Investigation into the determinants of economic growth is an important research area that economists and other discipline professionals normally explore. Researchers and governments are mostly interested in knowing the actual factors responsible for economic growth across the globe, region and nations in particular.

Findings based on the ARDL regression indicate that lag value of economic growth has a positive and significant influence on inflation, foreign direct investment induce inflation positively and significant both in the current and lag values. This inform that FDI is an important determinant of economic growth in Nigeria. Which equally interndem with theoretical and economic and a priori expectation of the study. Finding in respect of foreign aid and population also both negative and positive influence on economic growth in Nigeria This findings is in consonant with Alemu et, al., (2019) and Negere, (2021)

Findings show that there is long run significant relationship between economic growth, foreign direct investment aid and population growth. This finding is in consonant with Alemu et, al., (2019) and Negere, (2021). Other findings based on the direction of causality test indicates that there is no causal relation among the variable

CONCLUSION

The study examined the determinants of economic growth in the context of Nigeria economy. The period covered spanning from 1990-2022. Time series data analysis uses autoregressive distributed lag (ARDL) model

The empirical findings suggested that Foreign Direct Investment, foreign aid population tend to be correlated with economic growth, this is to concludes that variable foreign direct investment, foreign aid and population growth have strong positive and significant long and short run impact on economic growth in Nigeria.

The study is limited by the consideration of a relatively few set of economic variables for a limited period of analysis.

The implication of the finding is that investment particularly of foreign direct in Nigeria has been contributory factor to GDP, FDI determine economic growth through stock of capital technological diffusion, human capital development as well as creation of employment opportunities that would mitigate joblessness and poverty The implication of the findings also entails that potential changes in the flow of foreign direct investment, foreign aid and population in Nigeria would amounted to decrease in GDP and would have a detrimental consequences on the country's economy. Therefore, adjusting policy on trade liberalization and effective management and controlling the ever increasing population is an impetus

Recommendation

Base on the conclusion, the study advances the following recommendation

1. Nigerian Governments should provide an enabling environment to attract foreign direct investment. This would never be realizable with insecurity, low infrastructural development energy, regional conflict, hostility and corruption. As such there is need for the government to be proactive in ensuring safety net for foreign investment. This would in turn help the economy in term of capital inflow technological diffusion, job opportunities and specialization.

2. There is the need for government to checkmate the ever increasing rate of population by mitigating poverty, illiteracy, food insecurity diseases hunger and starvation among it populace. A healthier, highly educated and well feed population would provide desire productivity and enhance healthy economic growth

REFERENCES

1. Acemoglu, D. (2009) Introduction to modern economic growth. Princeton NJ: Princeton University Press.
2. Alemu, M., Sera, L. & Shenkoru, W. (2019). Determinants of Economic Growth in Ethiopia: Evidence from ARDL Approach Analysis 9(1) Developing Country Studies
3. Anyanwu, J.C. (1998). An Econometric Investigation of the Determinant of FDI, Nigerian Journal of Economic and Social Studies, Selected Paper for 1998 Annual Conference, pp. 218-240. CBN Statistical Bulletin 2001 and 2006.
4. Awe, A.A. (2013). The Impact of Foreign Direct Investment on Economic Growth in Nigeria Journal of Economics and Sustainable Development (4)2,
5. Balcerowicz. L. (2001). Libertate şi dezvoltare. Economia pieţei libere, Multiprint Publishing House, Iasi
6. Bayraktar, B. (2006). Investigation on Sources of Growth for Turkey. Canadian Journal of Development 27(1) Pp.25-38.
7. Becker, G. S., Glaeser, E. L. & Murphy, K. M. (1999). Population and Economic Growth. American Economic Review Papers and Proceedings 89, (2) Pp.145–49.
8. Bhaskara-Rao, R. & Hassan, G. (2011). Determinants of the Long-Run Growth Rate of Bangladesh. Applied Economics Letters 18: Pp.655-658.
9. Bjork, G. J. (1999). The Way It Worked and Why It Won't: Structural Change and the Slowdown of U.S. Economic Growth. Westport, CT; London: Praeger. ISBN 978-0-275-96532-7.
10. Boldeanu, F. T. & Constantinescu, L. (2015). The main determinants affecting economic growth Bulletin of the Transilvania University of Braşov Series V: Economic Sciences 8(57).
11. Chang, C. & Mendy, M. (2012). Economic Growth and Openness in Africa: What is the empirical relationship? Applied Economics Letters 19(18) Pp.1903-1907
12. Chirwa, T.G. &. Odhiambo, N M (2016). Macroeconomic Determinants of Economic Growth: A Review of International Literature South East European Journal of Economics and Business 11(2), Pp. 33-47
13. Danpome, M.G., Andow, A.H. & Alexander, A.A. (2015), Analysis of the Main Determinants of Inflation in Nigeria 1986 – 2011. Research Journal of Finance and Accounting 6(2)
14. Elboiashi, H. A. (2011). The Effect of Foreign Direct Investment and other Foreign Capital Inflows on Growth and Investment in Developing Economies. PhD thesis, Department of Economics, University of Glasgow.
15. Engle, R. F. & Granger, C.W.J (1987). Cointegration and Error Correction Representation, Estimation and Testing. Econometrica. 55(2), Pp. 251- 276
16. Freire-Seren, M. J. (2002). On the Relationship between Human Capital Accumulation and Economic Growth. Applied Economic Letters 9 (12) Pp.805-808.
17. Haller L.P. (2012). Concepts of Economic Growth and Development. Challenges of Crisis and of

Knowledge Economy Transdisciplinarity Cognition 15(1) Pp.66-71

18. Herzer, D., Klasen, S. & Nowak-Lehmann D, F. (2008). In Search of Foreign Direct Investment Led Growth in Developing Countries: The Way Forward. Economic Modelling 25(5) Pp.793-810

19. Ighodaro, (2018). Determinants of Economic Growth in Nigeria. University of Nigeria Journal of Political Economy 9(1) Pp.1142-157

20. Ikezam, G. (2018). Money Supply and Inflation Disaggregated Time Series Evidence from Nigeria. American finance and banking review 2(1)

21. IMF, (2001), International Finance Statistics Yearbook, Washington, DC.

22. Isreal, A. I. (2019). Impact of Health Capital on Total Factor Productivity in Singapore. Jurnal Ekonomi. Malaysia, Pp. 1-17.

23. Jajri , I. (2007). Determinants of Total Factor Productivity Growth in Malaysia. Journal of Economic Cooperation. Pp. 41-58.

24. Khan, A. (2007). Foreign Direct Investment and Economic Growth: The Role of Domestic Financial Sector. PIDE Working Paper.

25. Ledyaeva, S. & Linden, M. (2008)/ Determinants of Economic Growth: Empirical Evidence from Russian Regions The European Journal of Comparative Economics 5(1), Pp. 87-105

26. Lehmann. D. F. & Gross, E. (2015). What Effect of Development Aid Have on Productivity in Recipient Countries? An Analysis Using Quantiles and Threshholds. Discussion Papers, No.232, Pp.1-30.

27. Mahembe, E. & Odhiambo N.M. (2014). Foreign Direct Investment and Economic Growth: A Theoretical Framework. Journal of Governance and Regulation. 3(2) Pp.63–70.

28. Mahembe, E. & Odhiambo, N.M. (2014). Foreign Direct Investment and Economic Growth: A Theoretical Framework. Journal of Governance and Regulation. 3(2) Pp,64-71

29. Mankiw, N. G., Romer, D. & Weil, N. D. (1992). A Contribution to the Empirics of Economic Growth. The Quarterly Journal of Economics Pp. 407-437.

30. Michael, Y. (2018). The FDI and Economic Growth Controversy in Sub-Saharan Africa. SPRINGER https://doi.org/10.1007/978-3-319-76493-1_2

31. Mihaela, S., Kornélia, L. Gabriela, S. Kamil, ,D. & Adam, B. (2017). Determinants of Economic Growth in V4 Countries and Romania Journal of Competitiveness 9(1), Pp.103-116

32. Morrissey, O. (2001). Does Aid Increase Growth? Progress in Development Studies ,Pp.37-50.

33. Naz , A., Ahmad , N., & Naveed, A. (2015). Total Factor Productivity and Trade: A Panel Data Analysis. Forman Journal of Economic Studies, Pp 103-128.

34. Negere, M. (2021). Macroeconomic Determinants of Economic Growth in Ethiopia Innovations number 66

35. OECD, (1996). Benchmark Definition of Foreign Direct Investment, 3rd Edition, Paris.

36. OECD, (2002). Foreign Direct Investment for Development. Maximizing Benefits, Minimizing Costs Overview Head of Publications Service, OECD Publications Service, 2, rue André-Pascal, 75775 Paris Cedex 16, France.

37. OECD, (2023) https://www.oecd-ilibrary.org/finance-andinvestment/foreigndirectinvestment-fdi/indicator-group/english 9a523b18-en

38. Popa, A. M. (2012). The Impact of Social Factors on Economic Growth: Empirical Evidence for Romania and European Union Countries. Romanian Journal of Fiscal Policy (RJFP), 3(2),Pp.1-16.

39. Samsuddin, M. F. & Amar, S. (2020). Determinants of Economic Growth in Developing Countries of G20 Members Advances in Economics, Business and Management Research, (152) Proceedings of the 5th Padang International Conference on Economics Education, Economics, Business and Management, Accounting and Entrepreneurship (PICEEBA-5 2020)

40. Senbeta, S. R. (2008). The Nexus Between FDI and Total Factor Productivity Growth in Sub Saharan Africa. Munich Personal RePEc Archive, Pp 1-31.

41. Solow, R. M. (1957). A Contribution to the Theory of Economic Growth. The Quarterly Journal of Economics. 70(1) Pp.65-94.

42. Supińska, J. (2013). Does Human Factor Matter for Economic Growth? Determinants of Economic

Growth Process in CEE countries in light of spatial theory. Bank i Kredyt, 44(5). Pp. 505-532.

43. Tadesse , T. (2011). Foreign Aid and Economic Growth in Ethiopia: A Cointegration Analysis. Economic Research Guardian,Pp. 88-108

44. Thapa, I. (2020). Foreign Aid: Positive and Negative Impact in Developing Countries. 10.13140/RG.2.2.19155.81448.

45. Thirlwall, A. P. (1999). Growth and development. 6th edition. London: Macmillan Press Ltd.

46. Tsen, W. &, Furuoka, F. (2005). The Relationship between Population and Economic Growth in Asian Economies. ASEAN Economic Bulletin. (22). Pp 314-330.

47. Tuff, K. & Tuff, T. (2012). Introduction to Population Demographics. Nature Education Knowledge. 3(11) Pp.3.

48. WDI, (2023). Development Assistance Committee of the Organisation for Economic Co-operation and Development, Geographical Distribution of Financial Flows to Developing Countries, Development Co-operation Report, and International Development Statistics database. Data are available online at: https://stats.oecd.org/.

49. WHO, (2023), The Global Health Observatory

50. Xu, H., Lai, M., & Qi, P. (2010). Openness, Human Capital and Total Factor Productivity: Evidence from China. Journal of Chinese Economic and Business Studies, Pp279-289

51. Zhang, K. (2001). How does Foreign Direct Investment Affect Economic Growth in China? Economics of Transition, 9(3) Pp. 679 – 693.