An Econometrics Analysis of the Determinants of Economic Growth in the Gambia

[1]Tsenkwo, BM. Joseph, [2]Momodou Mustapha Fanneh, [3]Christopher Belford, [4]Ebrima K.Ceesay

[1]*Faculty of social sciences, Department of Economics, University of Jos, Nigeria*
[2,3&4] *School of Business and Public Administration, Department of Economics, University of the Gambia*

*Corresponding Author: Momodou Mustapha Fanneh, School of Business and Public Administration, Department of Economics, University of the Gambia. Email : mmfanneh@utg.edu.gm

ABSTRACT

Empirical investigation on the estimate of the drivers of economic growth in the Gambian economy have largely been descriptive in nature and seldom without precision, in the magnitude of sectoral contributions to this growth pattern over time. The main objective of this paper is to obtain the quantitative estimates of sectors accounting for the growth in the Gambia. The Autoregressive Distributed lag (ARDL) dynamic technique augmented with qualitative analysis was adopted. Both findings from the analyses reinforced one another. In the trend analysis, the movement in the growth rate of the agricultural sector perfectly predicted the growth rate the Gambian proxied by GDP, followed by the service sector, while the tourism sector trailed behind. While in the quantitative analysis, agriculture and the servicing sectors were the leaders of growth drivers in the Gambia. Both variables have significant positive impact of the target variable (GDP) in the long run. The seasonality nature of the tourism sector affected the growth of the economy only in the short run. In conclusion, it is assured that the agriculture and service sectors have long lasting impact on the growth rate of the Gambian economy.

Keywords: *Econometrics, Economic growth, Agriculture*

JEL CLASSIFICATION: *C38, F44*

INTRODUCTION

The Gambia is one of the smallest country in mainland Africa, located at the extreme west of West Africa with latitude -13º28¹ and longitude -15º31¹. The country is surrounded on three sides i.e. the north, east and south by the sister country, the Republic of Senegal and on the fourth side i.e. the west by the Atlantic Ocean. The two republics (Senegal & The Gambia) share a similar socio-cultural heritage and affiliation. While the Gambia attained peaceful independence from British colonial rule on the 18th February 1965, the republic of Senegal was colonized by the French and speak French as its official language. But the Gambian official language is English. The ethnicity of The Gambia is composed of mainly Mandinka, Wollof, Fula, Jola, Sarahule, Serer, Manjago, and Creole (known as Aku). The population of the Gambia as per the 2013 population and housing census was 1.8 million by the Gambia Bureau of Statistics. According to the 2013 Population census report, the country has a total population of 1.9 million inhabitants with the average annual growth rate of 3.2 percent and 65 per cent under the age of 25 years (GBoS, 2015). From the 2009 estimate The Gambia has an average of life expectancy of 53.8 years and 50.8 from the recent Gambia Public expenditure Review of the education sector, there is a youth literacy rate of (15 years and above). The country has a total area of $11,300km^2$ (4388sq.miles), of which the water bodies have 1,300sq km (MoFEA, 2017)

The Gambia is amongst the most densely populated countries in Africa and thus exerted tremendous pressure on the country's limited and scarce productive resources. This sometimes prevented social and economic services from being adequately provided to its citizenry and other inhabitants. Due to the rapid growth in population coupled with high urbanization rate and divergent growth in income and wealth, inequality of all sorts remains a critical issue for The Gambians. The government of The Gambia has devised policies, programmes and legal frame work to address the aforesaid inequalities and curb rural-

urban gap in income and wealth over the years. Another important concern to the government of recent years is the growing phenomenon of illegal youth migration to Europe locally referred to as the "Backway Syndrome". This situation has far-reaching economic and social consequences on the development of The Gambia.

According to Jallow (2015 the Gambia, like all developing countries, have significant number of people living on less than $1.25 a day. The last poverty survey, i.e. Integrated Household Survey 2010, estimated the poverty headcount at 48.4 percent for those living on less than $1.25 a day, with over 73 percent of them staying in the rural areas" (p. 20). Most of the poor in The Gambia are rural dwellers whose earnings are mainly from subsistence farming, which can barely maintain their annual needs hence resulting to various forms of deprivation. In almost all rural farming communities farmers are unable to satisfy their most essential basic needs.

On the Health front, The Gambia has achieved remarkable progress and results. Infant mortality and mortality of children under the age of 5 years have reduced in the last decade and more than 60 percent of births are currently attended by skilled health personnel. Both health expenditure as a percentage of GDP and life expectancy have increased modestly. Given the importance of health in economic growth and especially in development there is a need to consolidate these strides as efforts are made to attain the Sustained Development Golds (SDGs). Education being a fundamental pillar for growth and development has witnessed increased enrolment in secondary school education recent years. Gender parity in senior secondary education was reached in 2016. However the difference in school enrolment between urban and rural areas remains a challenge due to poverty and awareness issues in rural settlements (United Nations Commission for Africa, 2016).

Agriculture is a significant real sector of The Gambian economy contributing to real Goss Domestic Product (GDP) of 21% in 2015 as compared to 20% in 2014 (MOFEA, 2017). The sector over the years have been characterized by numerous problems, inhibiting The Gambia's drive towards food self-sufficiency and agriculture commercialization, despite various projects and policy interventions.

The Gambian Economy is limited to a small, undiversified market with tourism and agriculture as the main drivers of growth, the growth rate has experienced highly volatility over the years, growth in recent years have fluctuated from -4.3 percent in 2011 to 5.9 percent in 2012 and back to 0.9 percent in 2014 (Foroyaa, 2018). The economy of the Gambia is also dependent on service sector (tourism sector, financial sectors, telecommunications sector etc.). The services sector accounted for only 55 percent of growth, agriculture which employs about 70 per cent of the population, accounted for only 28 percent of GDP (MoFEA, 2011). Exogenous factors such as climate change manifested by draught and the outbreak of Ebola virus disease in West Africa have caused an endangering stability in the country's economy. Also Endogenous factor such as the recent political impasse created shock on the sluggish growth been experienced over the period. The economy of The Gambia is largely operated on fiscal deficits and heavy debt burden (estimated at 8.7% and 100% of GDP, respectively, in 2014) this situation poses a major challenges to development. In particular, interest payments consume about 22.5% of government revenues (including 81% devoted to domestic debt). The net domestic borrowing (NDB) rate is expected to reach 12% of GDP at the end of 2014 against the less than 2.5% projected at the beginning of the year. As of end-2014, the main targets stipulated in the International Monetary Fund (IMF) Extended Credit Facility (ECF) were off track. The IMF has confirmed its willingness to grant a Rapid Credit Facility (RCF) and provide emergency financial assistance to respond to the country's external shocks (Ebola and the drought) provided that the authorities implement a series of policy measures including in particular restructuring the energy sector (UNECA, 2016).

Rigorous empirical studies using the Gambia data to estimate the coefficient of determinants of economic growth is grossly inadequate or out rightly lacking. What probably are available are mainly some descriptive analyses based qualitative narratives that do not provide quantitative estimates and the point to the factors of the growth rate over the years. Therefore this study is intended to use secondary data to identify and estimate the determinants of growth employing econometrics analysis which has become strong analytical technique used by economists to come up with coefficients of economic phenomenon. Thus,

following from the introduction as section above, to follow next is section two which provide survey of existing literature of the subject matter. Section three discusses the methodology to be used for the study. Data presentation analysis will form the crux of section four where raw data will be displayed analysed and discussed, the paper will sum-up the entire work in section five with summary, conclusions and recommendations.

REVIEW OF RELETED LITERATURE

An analysis on the subject of growth is numerous in academic literatures over a period has revealed that growth determinates are: Human Capital, Innovation & Research & Development, Openness to Trade or Foreign Direct Investments, Institutions, just to name a few. The focus of this paper will be an academic assessment of the aforementioned as it relates to The Gambia.

According to Tridico (2007) an improvement in the skills of workers will increase returns to scale of knowledge, ceteris paribus, simply because skilled workers are more productive. Knowledge is strictly connected with school and education. Hence those workers with better skills are more productive ceteris paribus. In the same paper, Tridico cited, Lucas (1988) in which he directly associated the human capital with "learning by schooling" and "learning by doing", allowing human capital to become reproducible. Physical capital integrated by this definition of human capital is part of a cumulative and reproducible process which avoids decreasing return to scale; this illustrates the significance of skills acquisition and education in an economy.

In their study of determinates of economics growth Petrakos and Arvanitidis (2007), postulate that human capital is the main source of growth in several endogenous growth models as well as one of the key extensions of the neoclassical model. They referred to 'human capital' as, principally a workers' acquisition of skills and know-how through education and training, they suggested that majority of studies have measured the quality of human capital using proxies related to education such as school enrolment rates, tests of mathematics and scientific skills, etc. On those grounds, they pointed to several studies that have found evidence that an educated labour force is a key determinant of economic growth (Barro, 1991; Mankiw et al, 1992; Barro and Salai Marin, 1995; Brunetti et al, 1998, Hanushek and Kimko, 2000). Hence, education is relevance to economic growth over a period of time. However, they also expounded on other scholars who have questioned these findings and, consequently, the importance of human capital as substantial determinant of economic growth (Levine and Renelt, 1992; Benhabib and Spiegel, 1994; Topel, 1999; Krueger and Lindahl, 2001; Pritchett, 2001). Since there are schools of thought that argue to the contrary about the link between human capital and economic growth.

Boldeanu and Constantinescu (2015) buttressed that economic openness can have an important influence on economic growth through numerous channels like technological transfers, competitiveness advantage and increase in economies of scale. They cited (Chang et al. 2009). Edward (1992) which showed that trade openness has a favourable effect on real GDP and that trade liberalization will accelerate economic growth and countries will be capable to enter more easily foreign markets, there by facilitating and expanding economic opportunities for growth. They also cited, Ynikkaya (2003) also analyzed the influence of trade openness on growth for 120 countries between 1970 and 1997. He used several variables to measure openness like for example volume of exports, volume of imports, the sum exports and import and the volume of trade with developed countries. He also used trade policy variables for measuring restriction or openness of trade. The result concluded that for developed and developing states the indicators that measure the volume of trade have a positive effect on growth; this goes to illustrate the importance and significance of an opened economy to ensure a buoyant growing economic performance.

(Petrakos & Arvanitidis., 2007), stressed that, Foreign Direct Investment (FDI) has recently played a crucial role of internationalizing economic activity and it is a major source of technology transfer and economic growth. The role of FDI in the aforementioned is stressed in several models of endogenous growth theory. Various empirical literature have examined the impact of FDI on growth has provided a consistent findings affirming a significant positive link between FDI and growth as cited in, (e.g. Borensztein et al, 1998; Hermes and Lensink, 2000; Lensink & Morrissey, 2006). This argument goes to reinforce the prominence of an open economy in influencing growth positively over time.

Kogid Mulok Beatrice and Mansur (2010), cited Li and Liu (2005) studied on whether FDI affected economic growth based on panel data for 84 countries from the year 1970 to 1999. Single and simultaneous systems of equation techniques were used to test this relationship. Their research found a significant relationship between FDI and economic growth which was identified from the mid-1980s and after. Strengthening how FDI and growth are correlated over time in the sample data set, this evidence thus continues to show the link between the two variables.

In their growth study (Petrakos,. & Arvanitidis, 2007), discussed that Innovation and R&D activities how they can play a major role in economic advancement, increasing productivity and growth. This according to them is due to increasing use of technology that enables introduction on of new and superior processes and products thus improving the quality of economic output with value addition. This role has been stressed by various endogenous growth models, pointing out the strong relation between innovations on and/or R&D and economic growth has been empirically affirmed by numerous studies (Fagerberg, 1987; Lichtenberg, 1992; Ulku, 2004). Thus the link between the two is expedient to lead to growth in an economy

According to (Tridico, 2007), various economic researches showed that institutions and good governance, in some ways, matter in economic organization and rising productivity as mentioned by (Knack and Keefer, 1994; Olson et al 1998; Jones and Hall 1999; Acemouglu et. al., 2001; etc). Institutions are in general defined as "the rules of the game". A more sophisticate definition of institutions is "a set of social rules that structure social interactions" (Knight 1992, p. 2). If we consider this definition of institutions, then the explanation of development should be consistent with that of Kuznets (1965, p. 30): "the transformation of an underdeveloped in to a developed country is not merely the mechanical addition of a stock of physical capital: it is a thoroughgoing revolution in the patterns of life and a cardinal change in the relative powers and position of various groups in the population". Consequently, in order to change institutions, the prevalent social rules need to be changed, which should lead to advancement over a period of time thereby improving the life and livelihoods its members hence increasing output leading to growth.

As stressed by (Petrakos. & Arvanitidis, 2007), from the study of Rodrik (2000) who highlighted 5 key institutional structures such as property rights, regulatory institutions, institution for macroeconomic stabilization, institution for social insurance and institution of conflict management, which, he argued do not only exert direct influence on economic growth, but also affect other determinants of growth such as the physical and human capital, the investment decisions and technological developments. Hence the importance of institution to create the necessary rules, conditions and structures to facilitate interaction with and among economic players thereby supporting growth in the process

THE GAMBIAN ECONOMY: STYLIZED FACTS

Economic growth in The Gambia is mainly driven by the agricultural sector (22.5% of GDP in 2016) and the tertiary sector (66% of GDP), including tourism (30.3% of GDP). Both sectors are vulnerable to exogenous shocks as shown in recent growth performance. Agriculture, the most pro-poor sector of the economy, accounts for a large percentage of employment in the country and is one of the main drivers of economic growth. It continues to be prioritized in the allocation of Government resources. Tourism also continues to play a significant role in the services sector and contributed strongly to economic growth in 2016 and 2017. It remains the leading foreign exchange earner in the economy. The tourism sector is booming. To consolidate these gains, it needs to improve its competitiveness and address the supply side constraints that continue to stifle growth. Average GDP growth rate was about 3.6% over the past decade (2007-2016) but fluctuated from a high positive rate of 6.4% in 2008 to negative growth (minus 4.3%) in 2011. Following a series of exogenous shocks and a tumultuous political transition, GDP growth fell from 4.3% in 2015 to 2.2% in 2016. An unusually short rainy season in 2016 reduces agricultural production by at least 50%. Meanwhile, spillover effects from the regional Ebola crisis damaged the tourism sector. A three month border blockade by Senegalese transporters in 2016 also depressed economic activity. The political crisis in the final months of the year compounded these shocks, disrupting transit trade, manufacturing, and mining activity. An uncertain political climate caused tourist arrivals to fall 20% below expected levels by the end of

the year, though arrivals remained above their 2014-2015 levels.

In 2017, grew by 3.5%, following a better agriculture season and a strong rebound in tourism and trade. The agricultural sector recorded 5.5% growth in 2017, compared to 0.5% the preceding year. Crop production rose by 7.6% and livestock by 3.8% (compared to 3.2% in 2016). Forestry and fishing also grew, by 3.0% (3.0% in 2016) and 5.3% (3.5% in 2016) respectively. Industry too experienced positive growth (6.5%), after contraction by 3.1% in 2016. The mining and quarrying sub-sector grew by 5.7% after contracting 10.3% the previous year. The construction sector recorded 11.7% growth in 2017 compared to minus 5.9% in 2016. Service sector growth experienced a small setback, falling from 5.1% in 2016 to 4.5% growth in 2017. The hotel and restaurant sector grew by only 5% in 2017 compared to 19.7% in 2016. The lower performance of the service sector is due to the negative impact of the December 2016 political crisis that affected the tourism sector and led to low hotel occupancy between January and March 2017. As tourism is the largest sub-sector in the services sector, this caused an overall contraction in the sector. Communications grew by 13.5% in 2017, compared to 9.3% in 2016. While all services sub-sectors experienced positive growth, most have registered a smaller growth in 2017 than 2016.

Overall, consumption expenditure increased by up to 12% in 2017 compared to 2016. Household consumption represented 90% of total expenditure. Government expenditure increased by up to 22% relative to 2016. Total investment rose by up to 6% compared to the previous year. Investment in construction witnessed significant growth of 13%. Investment in durable capital goods increased by 1%.

METHODOLOGY

The paper adopted applied research design and used existing data from World Development Indicator for Gambia. The Autoregressive Distribute Lagged (ARDL) econometric technique use to explain the interaction between the variables identified as the determinants of economic growth in the Gambia. The autoregressive distributed lagged is a dynamic analytical technique that links the effect of endogenous variable not only to the exogenous variables, but also to its past lagged effect of itself. Most economies operate in a dynamic environment in the world nowadays, as such it is only a dynamic tools of analysis can yield a true picture of what is in the system as opposed to the traditional static one that has been in used for long time in the classical system.

The analysis will commenced with a descriptive analysis using trend graphs to illustrate the joined interaction of the variables used in the model. This will shed light on their associations over the period considered in the study. The trend graphs will also show the extent to how any, have drifted away arising from any structural shocks either internally or externally and to provide the basis to investigate the causes.

Model Specification and Estimation Technique

The theoretical underpinning of autoregressive distributed lagged is credited to Pesarant assumed popularity as a potent technique of analysis of time series data to take in the peculiar characteristics of time series data in terms of trending nature. Thus ARDL addresses the time series problems and distribute the past effect of individual variable effect in the model. This basic model for Autoregressive Distributed Lag (ARDL) is theoretically specified as

$$\Delta Y_t = \alpha_0 + \sum_{i=1}^{p} \delta \Delta y_{t-1} + \sum_{t-1}^{p} \gamma \Delta Z_{t-1} + \sum_{i-1}^{p} \Gamma \Delta CF_t + \sum_{i-1}^{p} \varphi \Delta P_{t-1} + \delta Y_{t-1} + \delta_2 Z_{t-1} + \delta_3 CF_{t-1} \ldots \ldots (1)$$

Where α_0 is the drift component, μ_0 is the white noise. The term with the summation signs represent the error correction, with δ_t to represent the short run effects and the second component of the equation with τ corresponds to the long run relationship.

It can as well be written in a compact matrix form shown in equation 1 below

$$Z_t = \mu_t + \phi_t + \lambda Z_{t-1} + \sum_{t-1}^{p} \gamma \Delta Y_{t-1} + \varepsilon_t \quad (2)$$

Where Δ is the first difference operator, the long run multiplier matrix λ is stated below as

$$\lambda_t = \begin{bmatrix} \lambda yy & \lambda yy \\ \lambda yy & \lambda yy \end{bmatrix} \quad (3)$$

The diagonal elements of the matrix are unrestricted so the selected series can either I (0) or I (1). In contrast, if λyy < 0, then y is I(0). To bring down this to our study specification, we follow the postulations made by Pesarant et al (2001) with unrestricted intercepts and no trends. After imposing restrictions to λyy =0, and α = 0. The growth nexus can be stated in the following unstricted error correction model

$$\Delta(lnGDP) = \beta 0 + \beta_1(lnGDP)_{t-1} + \beta_2(lnAGRIC)_{t-1} + \beta_3(lnTOUR)_{t-1} + \beta_4(lnSERV)_{t-1} + \sum\beta_6\Delta(lnGDP)_{t-1}$$
$$\sum\beta_6\Delta(lnAGRIC)_{t-1}) + \sum\beta_7\Delta(lnTOUR)_{t-1}) + \sum\beta_8\Delta(lnSERV)_{t-1}) + \mu_t \quad\text{(4)}$$

Where Δ is the first difference operator and μ_t is the white noise disturbance term. Equation 2 can as well be written in an ARDL of the order (p q r s).The equation indicates that economic growth in the Gambia can be influenced and explained by its past values, adaptive process which future forecast is based. The structural equation 1 is established by using Akaike criteria. (Khalid., Ahmed., & Shah, 2011).Equation 4 is composed of two components, the long run and the short components stated as

$$\ln(GDP) = \beta_0 + \beta_1(lnAGRIC)_{t-1} + \beta_2(lnTOUR)_{t-1} + \beta_3(lnSERV)_{t-1} + \sum\beta_4\Delta(lnAGRIC)_{t-1}) +$$
$$\sum\beta_6\Delta(lnTOUR)_{t-1}) + \sum\beta_7\Delta(lnSERV)_{t-1}) + \mu_t \quad\text{(5)}$$

Which can be interpreted as the long run and the lag length determined by the lag order var, the second component is the short run equation

$$\Delta(lnGDP) = \beta_0 + \gamma\sum_6\Delta(lnGDP)_{t-1}) \quad \Phi\sum\Delta(lnAGRIC)_{t-1}) + \delta\sum\Delta(lnTOUR)_{t-1}) + \kappa\sum\Delta(lnSERV)_{t-1}) + vecm$$
$$+ \mu_t \quad \dots\dots\dots\dots\dots\dots\dots\dots \quad\text{(6)}$$

Where γ, Φ, δ and κ are short run dynamic coefficients that converged at equilibrium and vt is expected to have a negative coefficient interpreted as the speed of adjustment to equilibrium.
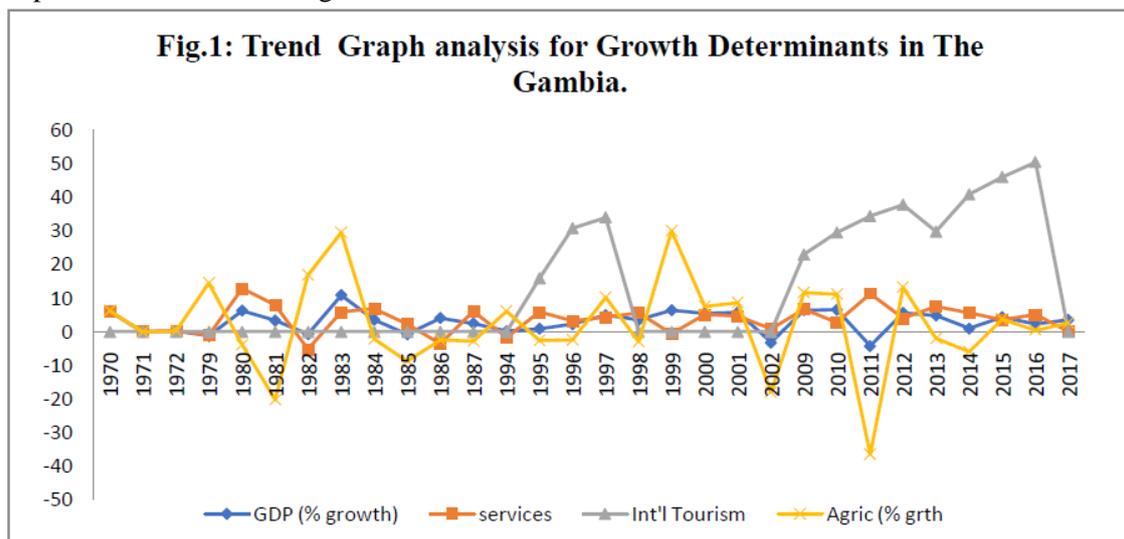

Figure1. *Trend Graph Growth Determinants in the Gambia.*

Sources: *Authors Computations*

DATA ANALYSIS

Descriptive Analysis

The trend graph presented in figure 1 below shows the individual performance of the variables considered as the growth determinants in the Gambian economy for the period of the study. It can be seen from the graph that some variables have performed above average such as international tourism, services sector, while GDP and Agriculture marginally performed. The key variable, which is the growth variable has intermittently responded positively and negatively with some variables for the period of the analysis. In particular, the contributions of international tourism and service sectors have not been impressive despite their respective performance. The Agriculture sector seems to account for the growth performance in the Gambian economy than all the other variables.

What is worrisome is the observed sharp dropped in the performance of international tourism within 2016 and 2017. The figures stood at 29% in 2013 to 50% in 2016, but suddenly nosedive in 2017. This can be attributed to aftermath of the political impasse that was still fresh in the country and scared tourists from coming or had to leave. GDP and the agriculture sector exhibited co-movement. Where there is an impressive performance in agriculture, GDP will follow suit in the same direction. For instance, in 2011, the agriculture sector witnessed a -36.58% and Gdp responded by -4.29% from 6.526% in 2010 and 2011 respectively.

QUANTITATIVE ANALYSIS

Preliminary Analysis

Unit Root Results

The paper adopted Autoregressive Distributed Lag model (ARDL) for the analysis of the data developed by Pesaran et al. (2001). The precondition for conducting autoregressive distributed lag (ARDL) commences from the investigation of the stochastic properties of time series used in the study, done by conducting unit root analysis. The main advantage of this method is that it yields valid results irrespective of whether the underlying variables are I(0), I(1), or a combination of both (Abdul Jalil et al., 2010). The method is also asymptotically efficient in small sample study and when the regressors are endogenous (Sakyi, 2011). This is appropriate for our paper with only 22 observations and the possibility that the explanatory variables may be plagued by the endogeneity problem. The method also allows the introduction of optimal lags of both the dependent and independent variables. It also allows the use of OLS to estimate the cointegration relationship whether the underlying variables are I(0), I(1) or both. The ARDL approach therefore involves estimating equation of cointegration relationship in the ARDL model is established using F-test. The null hypothesis is which implies non-existence of long run relationship and the alternative suggests the existence of a long run relationship. Pesaran and Shin (1999) provide two sets of asymptotic critical values bounds based on whether all the variables are I(0) for lower bound or I(1) for upper bound. The null hypothesis is rejected if the F-statistics is greater than the upper bound. If the long run relationship exists among the variables, the following error correction model is estimated.

Table 1. *Lag Length Selection Results*

VAR Lag Order Selection Criteria					
Endogenous variables: Agriculture____Grth Gdp____Growth_ Int'l_Tourism, Services					
Exogenous variables: Constant					
Date: 08/05/18 Time: 10:08					
Sample: 1970 2017					
Included observations: 22					
Lag	LogL	LR	FPE	AIC	SC	HQ
---	---	---	---	---	---	---
0	-285.4913	NA	3160170.	26.31739	26.51577*	26.36412
1	-264.6550	32.20167*	2102269.*	25.87772*	26.86958	26.11138*
2	-250.6847	16.51036	3000103.	26.06224	27.84758	26.48281
* 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						

Table 2. *ARDLPeasarant Bound Testresult*

HQ: Hannan-Quinn information criterion
ARDL Bound Test
Sample 1970 2017
Include   observations 47
Null hypothesis: No long run relationships exist

Test	Value	K
F-test	4.592226	2
Critical Value Bounds		
Significance	**I(0) Bounds**	**I(1) Bounds**

10%	3.17	4.14
5%	3.79	4.85
1%	5.15	6.36

Source: *Result Computation from Eview 9*

Judging from the Pesarant Bound test results above, it is evident that there is a long run relationship among the variables for the equation in the study at 10% level of significance. Therefore, the null hypothesis of no relationships existence is rejected based on 10% level. Consequently, we can present the both the short run and the long run results for this work. These are presented below:

Table 3. *Short Run (Error Correction) Results*

ARDL Cointegrating and Long Run Form				
Dependent Variable: Log(Gdp)				
Selected Model: ARDL(1, 1, 1)				
Date: 09/28/18 Time: 09:14				
Sample: 1970 2017				
Included observations: 47				
Cointegrating Form				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
Dlog(Agriculture)	0.247242	0.026205	9.434906	0.0000
Dlog(Services)	0.768918	0.023660	32.499237	0.0000
CointEq(-1)	-0.457621	0.124141	-3.686289	0.0007
Cointeq = LOG(GDP) - (0.3292*LOG(AGRIC) + 0.7228*LOG(SERVICES)				
-0.1981)				

Table 4. *Long Run Results*

Long Run Coefficients				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
Log(Agriculture)	0.329160	0.042615	7.724135	0.0000
Log(Services)	0.722803	0.033934	21.300167	0.0000
Constant	-0.198061	0.212243	-0.933183	0.3562

RESULTS DISCUSSIONS

The performance of the variables in this study as demonstrated in the above results is impressive and expected. Starting from the short run, all the variables have positive cyclical effect on growth in the Gambia. On the contrary however, is the high level of influence the servicing sector has on the growth than the Agriculture sector as widely thought.

Apart from it being positive, it accounts for 76% variation on the effect variable (growth) and is statistically significant as well. While the Agriculture sector performed in a similar manner with the service sector, it is significantly positive and account for barely 24% variation in the target variable.

The constant coefficient is negative signifying that the included variables in the model alone were not sufficient to explain the trend of growth for the period under review in the Gambia. In addition to the long run results, the short error correction have the correct coefficient sign and are statistically significance,

i.e. it is negative and statistically significant; which is in conformity with the requirement of error correction dynamics.

This means that any short run shock or distortions that may occur, the speed of adjustment to the long run stability condition is 45% which is pretty adequate in a cyclical requirement

Arising from the above discoveries, the following findings have emerged:

- Contrary to the believed that the Gambian economy was agrarian in nature, its contribution was not comparable to that of service sector as discovered by this study. This is not unexpected, because the agriculture base of the country is largely subsistence and rural in nature.

- Despite its low contribution to growth, the agriculture sector is still considered the mainstay of the Gambian economy. This is because of the large number of the population   that is engaged in it, in addition

to the long term effect on development rather than growth.

- The goes to show that the Gambia economy was growing more into a more tertiary sub-sector owing to the impressive turnout of the service sector.

- The findings from the descriptive trends graph analysis lend credit to the tourism sector as of the drivers of ground. Although, the data collected was large enough to allow for quantitative analysis; nonetheless evidences was very obvious from the trend analysis that tourism predicted the moving in the growth variable in the Gambian economy.

SUMMARY CONCLUSIONS AND RECOMMENDATIONS

The paper examined the determinants of economic growth in the Gambia between the periods of 1970-2017. The aim of the paper was to obtain the quantitative estimates of the identified variables believed to be accounting for growth process in the Gambia economy. To accomplish this task, relevant literatures were critically reviewed and empirical studies examined from where the key variables were identified.

Time series data were sourced from World Development Indicators (WDI) and Autoregressive Distributed Lag (ARDL) technique was applied to estimate the model.

The used of the technique followed the stochastic property investigation carried on the time series, and the series results reported different stationarity status, thus warranting the used of the technique as suggested by Pesaran and Shin (1999).

The main results produced were quiet revealing. In conclusion, it can be said that the Gambian economy is driven by the servicing, agriculture and the tourism sectors, with Agriculture and the servicing sector having the highest ratio on contribution based of the empirical results. Arising from this, the paper put forward these recommendations:

- Since the Gambian economy is agrarian in nature, holistic reforms is needed in the sector to transform it from its rural and subsistence nature to a modernize form by the introduction of modern methods like the used of modern tools, improve seeds, and incentives in the sector. Diversifying the

sector is also long overdue, value added be sort after to obtain an optimal returns from sector

- Institutional framework should be seen to be effective and efficient to allow the servicing sector strive further to continue to produce positive impact on growth and development.

- Key infrastructure like constant electricity, water, serene environment and security is in place to consolidate on the gains of the tourism sector and also to turn it away from its current seasonal nature to a more permanent one.

The study on growth is continues one, the current study is limited to growth of the economy, leaving development untouched. While the study will provide a springboard for future studies, prospective researchers should as well conduct the counterpart study on development to balance the equation, because there can't be growth without development.

REFERENCES

[1] Boldeanu F. & Constantinescu L. (2015). The Main Determinants Affecting Economic Growth. Bulletin of the Transilvania University of Braşov, 330-334.

[2] Jallow, Y. S. (2015). Study on Multidimensional Poverty and Inclusive Growth in The Gambia. United Nations Development Program, Gambia Country Office, 20.

[3] Kogid M., Mulok D., Beatrice L. F. Y., & Mansur K. (2010). Determinant Factors of Economic Growth in Malaysia: Multivariate Cointegration and Causality Analysis . European Journal of Economics, Finance and Administrative Sciences , 126.

[4] MOFEA. (2017). Budget Speech 2017. Banjul: Republic of The Gambia.

[5] Petrakos G. & Arvanitidis P. (2007). Determinants of Economic Growth: The Experts' View. Agglomeration & Growth in Knowledge-Based Societies, 4-7.

[6] Pesaran, M. H., Shin, Y., & Smith, R. J. (2010). Bounds Testing Approaches to the Analysis of level Relationship. Journal of Applied Econometrics, 16, 289-326.

[7] Sakyi, D. (2011). Trade Openness, Foreign Aids and Economic Growth in Post-Liberalization Ghana: An Application of ARDL Bounds Test. Journal of Economics and International Finance, 3(3), 146-156.

[8] Tridico, P. (2007). The Determinants of Economic Growth in Emerging Economies: a Comparative Analysis. University of "Roma Tre" – Department of Economics , 8-15.

[9] UNECA. (2016). Country Profile 2016, The Gambia . Addis Ababa: Economic Commission for Africa .

[10] Khalid, Z., Ahmed, I & Shah, I.A (2011). A empirical analysis of remittances of growth nexus in Pakistan using Bound testing approach, Journal of Economic and international finance 3(3), 176-186.