

Foreign Aid and Economic Growth: Evidence from Organization of Petroleum Exporting (OPEC) Countries

Haruna Usman Modibboⁱ, Nasiru Inuwa^{1,iii} & Muhammad Bello Sani^{iv}

Department of Economics,
Gombe State University, Gombe,
Gombe State, Nigeria.

Abdullahi Yahaya Zakariⁱⁱ

Department of Economics,
Federal University Gusau, Gusau,
Zamfara State, Nigeria.

Abstract

This study examine the impact of foreign aid on economic growth from 11 OPEC member countries during the period 2010-2017 via the application of both difference and system generalized method of moment (GMM) estimators in addition to Sargan and Arrelano and Bond serial correlation as diagnostic tests. The result showed that the one period lagged dependent variable is positive and statistically significant. However, the results showed a negative but statistically significant impact of the foreign aid on economic growth. This implies that the hypothesis that foreign aid led growth is rejected. Therefore, foreign aid retards growth by substituting for savings and investments rather than supplementing them. It is therefore, recommended that aid should be tied to capital projects rather than being disbursed in forms of food aid, balance of payments support and debt relief which do not necessarily have any development component at all.

Keywords: Foreign aid, Economic growth, GMM estimator, OPEC.

JEL Code: F43, O43

Contribution/Originality

This study is one of very few studies which have employed dynamic micro panel modelling in the form of both difference and system GMM in OPEC member countries. It contributes to the existing literature by providing unique cross-country evidence from the oil producing countries by rejecting the aid-led growth hypothesis.

1.0 Introduction

Foreign aid as one of the determinants of economic growth in developing countries is an important instrument in accelerating the economic development of a country up to a time where a satisfactory rate of growth can be achieved on a self-sustaining basis. However, it is argued that the aid does not serve its purpose of increasing economic growth rate but rather has an adverse effect on growth, employment and the balance of payments of the recipients' economy (Okon, 2012; Bakare, 2011; Aboubacar & Ousseini 2015).

Although foreign aid to developing countries has been a subject of heated discussions among development economists, some scholars such as (Feeny, 2005; Farheem, 2014) argue that foreign aid has no effect on growth and may sometimes even undermine growth in aid recipient countries. Others suggest that foreign aid positively influences economic growth (Moreira, 2005; Karras, 2006; Fasanya & Onakoya, 2012; Kargbo, 2012). Still others suggest that foreign aid has a negative impact on economic growth (Okon, 2012; Bakare, 2011; Aboubacar & Ousseini 2015).

¹ Corresponding Author's Email and Phone Number: ninuwagsu@gmail.com ; +234 (0)703 925 3613

ⁱ first author; ⁱⁱ Second author; ⁱⁱⁱ third author; ^{iv} fourth author.

Note: This article is an improved version of the original paper that was presented in Nigeria's Economic Development Conference (NEDCO, 2016) held at Federal University Dutsinma, Katsina State

While the issue of foreign aid effectiveness has been more often questioned in the case of developing countries, the evidence for OPEC member countries is scarce. The purpose of this study is therefore to fill the gap. It also provides new results on the effect of the foreign aid on the economic growth for eleven (11) OPEC member countries over the period 2010-2017. The data collected are essentially based on availability. Finally, the study makes use of robust econometric techniques in the form of Arrelano and Bover (1995)/Blundell and Bond (1998). Apart from capturing the dynamic relationship between the variables of interest, the system GMM estimator would also overcome the endogeneity problem. The choice of system GMM is also justified because the estimator is designed for situations with “small T, and large N” panels, meaning few time periods and many individuals as well as independent variables that are not strictly exogenous.

The rest of the paper is organised as follows. Section 2 briefly presents the literature review and theoretical framework. Section 3 describes the data and methodology, followed by the analysis of the estimated results in Section 4, while Section 5 concludes the study.

2.0 Literature Review and Theoretical Framework

There seems to be extensive literature examining the relationship between foreign aid and economic growth. As earlier mentioned, the results from these various studies are mixed. While some studies suggest a positive relationship such as Moreira (2005); Karras (2006); Fasanya and Onakoya (2012) and Kargbo (2012), others such as Javid and Qayyum (2011), Bakare (2011), Ozekhome (2017) and Yiew and Lau (2018) suggest a negative association as well as absent of any relationship between the variables as documented by Feeny (2005) and Farheem (2014). For instance, Giles (1994) applied Engle-Granger two-step residual based test of cointegration and Granger causality test to examine the relationship between foreign aid and economic growth for Cameroon during the period 1971-1990. The results showed that there is no evidence of long run equilibrium relationship between foreign aid and economic growth. Granger causality test revealed a unidirectional causality running from foreign aid loans to economic growth. Applying newer methodology, Feeny (2005) applied autoregressive distributed lag (ARDL) bound test approach to cointegration to examine the relationship between foreign aid and economic growth in Papua New Guinea (PNG) during the period 1965-1999. The results revealed that total foreign aid has no impact on economic growth. The results also showed that neither aid grants nor aid loans have impact on economic growth in PNG.

Furthermore, study by Kargbo (2012) applied autoregressive distributed lag (ARDL) bound test and Johansen maximum likelihood test of cointegration techniques to examine the relationship between foreign aid and economic growth for Sierra Leone over the period 1970-2007. The results revealed that a long run equilibrium relationship exist among the variables. The results also showed that foreign aid has positive and significant impact on economic growth in both the short and long run. In the same vein, Javid and Qayyum (2011) applied autoregressive distributed lag (ARDL) bound test approach to cointegration to examine the relationship between foreign aid and economic growth in Pakistan for a time period 1960-2008. Their study results revealed that there exists a long run equilibrium relationship among the variables. The results also revealed that foreign aid has a negative effect on economic growth. However, both the effect of inflation and trade openness has significant effect on economic growth in Pakistan. Similarly, Fatima (2014) applied descriptive statistic and ordinary least square (OLS) to examine the effect of foreign aid and economic growth for Pakistan during the period 1980-2012. The results neither revealed that foreign aid neither at aggregate nor disaggregate level influenced economic growth in Pakistan. The results revealed that investment has a positive and significant effect on economic growth.

In their study, Fasanya and Onakoya (2012) applied the Johansen maximum likelihood cointegration test and parsimonious error correction model to examine the effect of foreign aid on economic growth in Nigeria during the period 1970-2010. The results showed that foreign aid has a positive and significant impact on economic growth. The results of ECM showed that economic growth in Nigeria has an automatic mechanism and responds to deviations from equilibrium in a balancing manner. Therefore, the study recommends that donor governments should be aware of the political situations in recipient countries, and work with international bodies to ensure as much stability as possible. However, Okon (2012) applied two-stage least squares (2SLS) to examine the effect of foreign aid on economic growth in Nigeria during the period 1960-2010. The author found that foreign aid has negative and significant impact on human development. The results also revealed a negative effect of foreign aid on economic growth. The study, therefore recommends that government should put policy measures that would monitor the maximum effective utilization of foreign aid.

In addition, Bakare (2011) applied vector autoregressive model (VAR) and variance decomposition analysis to examine the relationship between foreign aid and economic growth in Nigeria during the period 1988-2010. The results showed a negative relationship between foreign aid and economic growth, which imply that foreign aid tend to worsen economic growth in Nigeria rather than improving it. The results also evidenced a negative relationship between foreign aid and capital formation. Thus, the study recommends an appropriate policy measures that would monitor the maximum and effective utilization of aid.

Beside, Kolawale (2013) applied augmented Dickey-Fuller (ADF) test, Johansen maximum likelihood test, error correction model (ECM) and Granger causality test to examine the relationship between foreign aid and foreign assistance on economic growth for Nigeria during the period 1980-2011. The results revealed that there is long run equilibrium relationship among the variables. The results also showed that neither economic growth nor foreign aid granger caused each other.

In a recent study conducted by Olanrele and Ibrahim (2015) applied two-stage least square (2SLS) to examine the different developmental aids (structured into multilateral aid, bilateral aid, bilateral aid from Nordic countries, and bilateral aid from the top-five CDI ranked countries) on economic growth in Nigeria during the period 1970-2012. The results revealed that all the four different developmental aid (multilateral aid, bilateral aid, bilateral aid from Nordic countries, and bilateral aid from the top-five CDI ranked countries) has positive and statistically significant effect on economic growth. Similarly, the study revealed that exports and political stability have positive and significant impact on economic growth.

In a more recent study by Fashina, Asaleye, Ogunjobi and Lawal (2018) who applied residual based test approach to cointegration in the form of Engle and Granger as well as the Vector Error Correction Model (VECM) to examine the effect of foreign aid and human capital on economic growth in Nigeria. The study revealed that foreign aid has positive and statistically significant impact on economic growth. However, the aid square has negative and significant effect on economic growth.

Another recent study by Terefe, (2018) has also applied the Johansen maximum likelihood test and Vector Error Correction Model (VECM) to examine the effect of foreign aid on economic growth for Ethiopia during the period 1970-2016. The study revealed that foreign aid has a positive and significant effect on economic growth. Similarly, when aid is interacted with policy variable, the results revealed a positive and significant effect on economic growth. However, the square of aid has a negative and significant effect on economic growth.

On the basis of cross-country studies, Durberry, Gemmel, and Greenaway (1998) utilized the two-way fixed effect model to examine the aid-growth nexus for the panel of 68 developing countries during the period 1970-1993. The results revealed that foreign aid has a positive and significant impact on economic growth. The study also suggests that these results vary according to income level, level of aid allocation and geographical location. Still on cross-country studies, Hatemi-J and Irandoust (2005) applied panel unit root test and panel cointegration test based on Pedroni to examine the relationship between foreign aid and economic growth for the panel of 6 developing countries during period 1974-1996. The findings revealed that foreign aid has a positive and significant impact on economic growth for each country in the sample.

In addition, Moreira (2005) applied Difference Generalized Method of Moments (GMM) to examine the effect of foreign aid on economic growth for 48 developing countries during the period of 1970-1998. The author found that foreign aid has a positive impact on impact economic growth. Therefore, the study suggests that future studies should focus on in-depth country-specific cases. Similarly, Karras (2006) applied pooled ordinary least square (POLS) and fixed-effects model to investigate the effect of foreign aid on economic growth for 71 developing countries during the period 1960-1997. The author found that foreign aid has positive and statistically significant impact on economic growth.

While, Mallik (2008) applied Johansen maximum likelihood test and Vector Error Correction Model (VECM) to examine the effect of foreign aid on economic growth for the panel of 6 poorest countries during 1965-2005. The results showed the existence of long run equilibrium relationship among the variables for all the countries. The results also revealed that in 5 out of 6 countries, foreign aid has a significant but negative impact economic growth in the long run. While, the mixed results between foreign aid and economic growth in the short run was reported. Furthermore, Chowdhury and Das (2011) used both the time series and panel data to examine the effect of foreign aid on economic growth for 5 South Asian countries during the period 1976-2008. The authors applied Johansen cointegration techniques and Pedroni panel cointegration technique and found that foreign aid has positive and significant effect on economic growth for 4 out of 5 countries. More so, Liew, Mohamed, and Mzee, (2012) applied pooled ordinary least square, random effects and fixed effects to examine the effects of foreign aid on economic growth for the panel of 5 East African countries during the period 1985-2010. The results revealed that foreign aid has a negative and significant effect on economic growth for these countries. This implies that foreign aid led hypothesis is rejected.

The study by Jones (2013) applied Pedroni cointegration tests, error correction model and Johansen Fisher panel cointegration test to examine the relationship between foreign aid and economic growth for the panel of 16 West African countries during the period 1960-1990. The results revealed a long run equilibrium relationship between foreign aid and economic growth for the whole panel. The results of Granger causality test showed a unidirectional causality running from foreign aid to economic growth justifying aid-growth hypothesis. Also, Ogundipe, Ojeaga, and Ogundipe (2014) applied System Generalized Method of Moments (SGMM) to examine the effect of foreign aid on economic growth for 40 Sub-Sahara African countries during the period of 1996-2010. The results showed that foreign aid does not has significant effects on economic growth for the period under study, but the relation reverses after controlling for the role of economic policy.

Also, Aboubacar, Xu, and Ousseini (2015) applied Pedroni panel cointegration technique, Fully Modified OLS (FMOLS), and Dynamic OLS (DOLS) to examine the effect of foreign aid on economic growth for 8 WAEMU member countries over the period 2002-2013. The results revealed that aggregate foreign aid has a negative and insignificant effect on economic growth. However, there is positive of aids on agricultural, trade policies and regulation and education on economic growth in the WAEMU countries.

In a study, Ozekhome (2017) applied System Generalized Method of Moment to examine the effect of foreign aid on economic growth in Economic Community of West African States (ECOWAS) during the period 2000-2015. The results revealed that coefficients of aid and aid square have negative and statistically significant effect on economic growth. However, the coefficients of foreign direct investment, human capital and trade openness have positive and statistically significant impact on economic growth. However, Siddique, Kiani and Batool (2017) applied Pooled Ordinary Least Square (POLS) to examine the effect of foreign aid on economic growth for 31 East and South Asian countries during the period 1995-2013. The results revealed that foreign aid has positive and statistically significant impact on economic growth. Yiew and Lau (2018) applied pooled OLS, Fixed-Effects, and Random-Effect model to examine the effect of foreign aid on economic growth in 95 developing countries during the period of 2005-2013. The study employed foreign direct investment and population as control variables. The study revealed that foreign aid exerts a negative impact at the initial stage and thereafter positive effect on economic growth. Similarly, the results evidenced that foreign direct investment and population have significant impact on economic growth.

Theoretical Framework

A simplified variant of the Two-Gap model is used to estimate the impact of aid and economic growth. This Model was popularized by Chenery and Strout (1966), ages ago is still in use in projecting the macroeconomic impact of foreign aid. This model has two components hence it is also commonly referred to as the Two-Gap Model. The first component is the relationship between investment and growth, wherein the level of growth is assumed to be dependent on the level of investment. The second component is the relationship between savings, which is assumed as a critical factor for investment expansion, and growth. With this model, analysts are able to determine the necessary level of investment to achieve a desired level of economic growth. Gaps occur if the investment is below the desired level and these gaps can be ascribed as either a savings gap or as a foreign exchange (or trade) gap. If a country is unable to fill this gap through imports, exports or production, foreign aid inflows of foreign capital inflows are needed so that it can grow more rapidly than its internal resources would otherwise allow. Hence an inflow of foreign aid should move a country's economy upwards (McMillan, 2011).

3.0 Methodology

The data for this study covers 11 OPEC member countries and a period of 8 years from 2010-2017. The premise for the selection of countries is justified because the remaining four countries which include Saudi Arabia, United Arab Emirate (UAE), Qatar and Kuwait did not have data on foreign aid from the period selected for the study. The data on GDP (Constant 2010 US\$) proxied for economic growth, net official development assistance and official aid received proxied for foreign aid, and population are taken from World Development Indicators. The proposed model to be analyzed for this study is stated as follows:

$$LGDP = f(LGDP, LFAD, LPOP) \text{-----} (3.1)$$

The equation (3.1) is further expressed as follows;

$$LGDP_{it} = \alpha + \beta_1 LGDP_{it-1} + \beta_2 LFAD_{it} + \beta_3 LPOP_{it} + \mu_{it} \text{-----} (3.1)$$

where LGDP stands for the log of economic growth of country is at time t; β 's are the parameters to be estimated; $LGDP_{it-1}$ is the log of lagged of dependent variable; LFAD is the log of foreign aid, and LPOP is the log of population; α_i is country-specific effects assumed to be independently and constant over the countries; and μ_{it} is the error term which also assumed to be distributed independently in all time periods of the country i. The dynamic panel estimation techniques used consists of the two-step Difference and System Generalized Method of Moments (SGMM) estimator proposed by Arrelano

and Bond (1991) and Arellano and Bover (1995)/Blundell and Bond (1998). Apart from capturing the dynamic relationship among the variables of interest, the system GMM estimator would also overcome the endogeneity problem. The choice of system GMM is also justified because the estimator is designed for situations with “small T, and large N” panels, meaning few time periods and many individuals as well as independent variables that are not strictly exogenous. Furthermore, the study also applied fixed and random effects in order to perform robustness check.

4.0 Results and Discussion

The results of the model specified above is estimated and presented in Table 1 below. Specifically, two-step Difference and System generalized method of moment have been applied.

Table 1. Results of Generalized Method of Moments (GMM)

Variable	Difference GMM	System GMM
LGDP _{it-1}	0.239*** (0.008)	0.356*** (0.016)
LFAD	-0.096*** (0.010)	-0.024** (0.011)
LPOP	0.255*** (0.076)	0.275*** (0.049)
Constant	16.634 (1.282)	12.036 (0.978)
Number of Countries	11	11
Sargan Test	9.1314[0.823]	5.1969[0.999]
Arrelano-Bond Test (AR2)	-1.4391[0.150]	-1.4623[0.144]

Source: Authors' computation, 2018.

Based on the Table 1 above, the results of both Difference and System GMM passed the test of valid over-identifying restrictions and Arrelano-Bond serial correlation test up to order two (AR2). Though, both the results are somehow similar with a varying magnitude, the interpretation will be based on system GMM because it is more superior to difference GMM in the sense that it builds a system of two equations the original equation as well as the transformed one (Roodman, 2006). The result showed that the one period lagged dependent variable is positive and statistically significant. This indicates that a 1 % previous economic growth will stimulates the current economic growth by 0.36%. Similarly, the coefficient of population revealed a positive and statistically significant impact on economic growth meaning that an increase in population will stimulate growth by 0.26%.

However, the coefficient of foreign aid showed a negative and statistically significant impact on economic growth for the countries under study. Thus, a 1% increase in foreign aid leads 0.024% decrease in economic growth. This finding concur with the findings of Bakare (2011), Javid and Qayyum (2011), Liew, Mahamed, and Mzee (2012) Ogundipe, Ogundipe, and Ojeaga (2014); Ozekhome (2017).This is justified in the literature that condemned foreign aid to be associated poor economic performance of recipient countries. It is further argued that foreign aid inflows reduce the long-term capital accumulation and labor supply of recipient country which in turn affects the country' s potential to generate higher rates of economic growth. However, the study contradict the studies of Moreira (2005); Karras (2006); Fasanya and Onakoya (2012); Kargbo (2012) who documented that foreign aid has a positive and significant effect on economic growth.

5.0 Conclusion

This study examined the relationship between foreign aid flows and economic growth in eleven (11) OPEC member countries for the period of 2010 to 2017. The panel data approach based on difference and system GMM methods were applied to evaluate the impact of foreign aid on economic growth of these countries. The results revealed that foreign aid has a negative and statistically significant impact on economic growth. This implies that the theory that postulates foreign aid led growth is rejected. Therefore, foreign aid retards growth by substituting for savings and investments rather than supplementing them. Although, there are claims by some scholars that private foreign investment is beneficial to growth in developing countries, the same things cannot be said about foreign aid, even if the presences of this aid inflow remedies market distortions in some cases, but it creates other problems by reducing the supply of government effort and obstructing investment from the private sector. It is therefore, recommended that aid should be tied to capital projects rather than being disbursed in forms such as food aid, balance of payments support and debt relief which do not necessarily have any development component at all.

References

- Aboubacar, B., Xu, D., & Ousseini, A.M. (2015). "Foreign aid's effects on economic growth: New results from WAEMU' S Countries." *Theoretical Economic Letters*, 5, 425-430.
- Arrelano, M., & Bover, O. (1995). " Another look at the instrumental variable estimation of error components model." *Journal of Econometrics*, 68, 29-51.
- Blundell, R.W., & Bond, S. (1998). " Initial conditions and moment restrictions in dynamic panel models." *Journal of Econometrics*, 87, 115-143.
- Bakare, A.S. (2011). " The macroeconomic impact of aid in Sub-Sahara Africa: The case of Nigeria." *Business and Management Review*, 1(5), 24-32.
- Chenery, H., & Strout. A. (1966). " Foreign assistance and economic development" . *American Economic Review*, 56, 679-733.
- Chowdhury, M., & Das, A. (2011). " Aid-growth nexus in South Asia: Evidence from time series and panel cointegration." *Research in Applied Economics*, 3(1), 1-19
- Durbarry, R., Gemmel, N., & Greenaway, D. (1998). " New evidence on the impact of foreign aid on economic growth." *Credit Research Paper*, 8, 1-32.
- Fasanya, I.O., & Onakoya, A.B.O. (2012). " Does foreign aid accelerate economic growth? An empirical analysis for Nigeria." *International Journal of Economics and Financial Issues*, 2(4), 423-431.
- Fashina, O.A., Asaleye, A.J., Ogunjobi, J.O., & Lawal, A.I. (2018). " Foreign aid, human capital and economic growth nexus; Evidence from Nigeria." *Journal of international Studies*, 11(2), 104-117.
- Feeny, S. (2005). " The impact of foreign aid on economic growth in Papua New Guinea." *The Journal of Development Studies*, 41(6), 1092-1117.
- Farheem, F. (2014). " Foreign aid and economic growth." *Open Access Library Journal*, 1, 1-7.
- Giles, J.A. (1994). " Another look at the evidence on foreign aid led economic growth." *Applied Economics Letter*, 1, 194-199.
- Hatemi, J., & Irandoust, M. (2005). " Foreign aid and economic growth: New evidence from panel cointegration." *Journal of Economic Development*, 30(1), 71-80.
- Javid, M., & Qayyum, A. (2011). " Foreign aid and growth nexus in Pakistan: The role of macroeconomic policies." *PIDE Working Paper*, 72, 1-23.
- Jones, Y.M. (2013). " Testing the foreign aid-led growth hypothesis in West Africa." *Working Papers Management BWPMA*, 1303, 1-34.
- Kolawale, B.O. (2013). " Foreign assistance and economic growth in Nigeria: The two-gap model framework." *American International Journal of Contemporary Research*, 3(10), 153-160.
- Karras, G. (2006). " Foreign aid and long run economic growth: Evidence for a panel of developing countries." *Journal of International Development*, 18, 15-28.
- Kargbo, P.M. (2012). " Impact of foreign aid on economic growth in Sierra Leone." *Working Paper No 07*, 1-42.
- Liew, C.Y., Mohamed, M.R., & Mzee, S.S. (2012). " The impact of foreign aid on economic growth of East African countries." *Journal of Economics and Sustainable Development*, 3(2), 129-138.
- McMillan, L. (2011). " Foreign aid and economic development." *School of Doctoral Studies European Union Journal*, 3, 158-165.
- Mallik, G. (2008). " Foreign aid and economic growth: A cointegration analysis of the six Poorest African countries." *Economic Analysis and Policy*, 38(2), 251-260.
- Moreira, S.B. (2005). " Evaluating the impact of foreign aid on economic growth: A cross-country study." *Journal of Economic Development*, 30(2), 25-48.
- Okon, E.O. (2012). " Five decades of development aid to Nigeria: The impact on human development." *Journal of Economics and Sustainable Development*, 3(1), 32-42.
- Ogundipe, A.A., Ojeaga, P., & Ogundipe, O.M.(2014). " Is aid really dead? Evidence from Sub-Saharan Africa." *International Journal of Humanities and Social Science*, 4(10), 14-23.
- Oranrele, I.A., & Ibrahim, T.M. (2015). " Does developmental aid impact or impede on growth: Evidence from Nigeria." *Journal of Economics and Financial Studies*, 5(1), 288-296.

- Ozekhome, H.O. (2017). “ Foreign aid, foreign direct investment and economic growth in ECOWAS countries: Are there diminishing returns in the aid-growth nexus?.” *West African Journal of Monetary and Economic Integration*, 17(1), 61-84.
- Roodman, D. (2006). “ An introduction to “ difference” and “ system” GMM in Stata.” Centre for Global Development, *Working Paper Number*, 103, 1-44.
- Siddique, H.M.A., Kiani, A.K., & Batool, S. (2017). “ The impact of foreign aid on economic growth: Evidence from a panel of selected countries.” *International Journal of Economics and Empirical Research*, 5(1), 34-37.
- Terefe, K.D. (2018). Drivers of economic growth in Ethiopia: Does foreign aid and policy complementarity matter.” *Journal of Economics and International Finance*, 10(8), 96-110.
- Yiew, T.H., & Lau, E. (2018). “ Does foreign aid contributes to or impeded economic growth.” *Journal of international Studies*, 11(3), 21-30.