

An Empirical Analysis of the Impacts of External Capital Inflows and World Oil Price on Africa's 'Largest' Market

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Abstract: - There is a continued debate that external financial resources complement the limited domestic funds for growth, especially in developing countries, while others are of the view that external finances mostly impede economic growth and development. This article is an attempt to analyze the inflows of some external financial capital such as FDI, external debt, migrants' remittances and ODA, along with world oil price on economic growth (captured by real GDP) in Nigeria. In order to capture both the short run and the long run effects of the variables on the economy, an econometric technique, Nerlove's Partial Adjustment Model (PAM) was employed using yearly data from 1981 to 2012. Our results suggest that in both the short run and long run, FDI and world oil price will boost economic growth in Nigeria. Not too surprisingly, our findings equally suggest that the relationship between world oil price and economic growth may not be linear after all and we have evidence to show that this relationship is likely concave in nature. In the same vein, further findings show that migrant remittance is likely to have an adverse effect on the nation's real GDP, while external debt and ODA do not make any significant contribution to the nation's real GDP.

We argue that for Nigeria to fully benefit from the flows of global finances, policy makers should on an ongoing basis weigh the costs and benefits associated with foreign capital inflows to the country. As is often the case, no country can compete favorably on the world market without prudent resource management and sound investment climate. Undoubtedly, with effective and efficient utilization of external financial resources, sound monetary and fiscal policies, institutional reforms in all sectors of the economy, Nigeria can witness not only accelerated but also more inclusive growth in the present era of financial globalization.

Key-Words: - economic growth, external resources, FDI, ODA, oil price, real GDP, remittances

1 Introduction

There is a long-standing debate over the relationship between the inflows of external financial resources and economic growth, which has continued to remain an unresolved issue [1, 2]. The inflows of foreign capital such as foreign direct investment (FDI), migrant remittance, official development assistance (ODA) also known as foreign aid are regarded as vital tools for accelerating rapid economic performance in countries that are poised to grow. Many economists believe that external financial resource, especially for developing countries is a catalyst for growth as it complements the limited domestic capital in countries [3, 4, 5, 6, 7]. While others assert that the inflows of some external capital rather impedes economic growth in countries [8, 9].

Globally, external financial flows have its attendant benefits and costs to countries. The increasing inflow of foreign capital has not only created wealth to countries but has also led to (higher) global financial systemic risks, and costs, especially in poor countries that are yet to fully develop their financial markets [10]. Understanding the mechanism through which external financial flow affects economic growth is paramount for evaluating the costs and benefits of such transactions [7].

Since 1999 when Nigeria returned to democratic rule after long military regimes, the country has been pursuing some economic, political and institutional reforms. In the past one decade, the Nigeria has formulated and launched some economic reforms, such as the National Economic Empowerment Development Strategy (NEEDS) which centered on improving macroeconomic stability, deregulation, liberalization, privatization, and improving the efficiency and transparency of businesses and public regulations. The economy has grown rapidly, achieving an average annual growth rate of 7% in recent years.

Consequently, Nigeria is presently the largest economy in Africa in terms of nominal GDP. The long-term economic growth in the country could be partly attributed to financial globalization. For instance, statistical data available from the United Nations Conference on Trade and Development [11] show Nigeria as the second highest receiver of FDI (inflows) in Africa with \$5.61 billion in 2013. Nigeria is the largest receiver of international migrant remittance in Africa with \$21.00 billion and followed by Egypt with \$17.47 billion in 2013. Nigeria is also the largest producer and exporter of crude oil in Africa. Oil serves as the main source of export trade earnings and federal government

revenue in the country. Owing to the recent increase in oil production in the United States (one of Nigeria's highest oil export destinations), and the recent discovery and production of petroleum in other African countries like Ghana and Tanzania together with a slump in crude oil prices in the world market; the demand for Nigeria's 'black gold' has dropped significantly in the recent months. Moreover, the financial stability of the Africa's largest economy has been threatened. Put simply, Nigeria's economy is presently vulnerable to the global oil price shocks. Thus, as part of efforts to uncover the relative impact of oil price meltdown on Nigeria's economy, the present study shall attempt to quantify the effect of world oil price on the nation's economic growth.

In a related vein, it will also be worth the efforts to re-examine whether the inflows of foreign capital as was previously highlighted could be seen as a special vehicle for economic growth or even a deterrent to the nation's economic progress. Empirical results so far from some findings have remained inconclusive or rather contradictory. Thus, the rationale and relevant of the current study.

Accordingly, the primary objective of this article is to quantify the relative impacts of FDI, external debt, migrants' remittances and ODA, alongside world oil price on the economic growth of Nigeria in today's financial globalization era.

The rest of the paper is organized as follows. Part 2 presents some empirical evidence, part 3 presents a theoretical framework underpinning economic globalization, while part 4 shows the methodology and materials, part 5 presents the results and a brief discussion. Finally, section 6 concludes the study.

2 Empirical Evidence

Wide empirical literature explains the impact of financial globalization on economic growth in countries. Studies by [4, 6] indicate that the financial globalization promotes growth while [5] prove that financial globalization stimulates productivity.

Bonfiglioli [7] provides evidence that the stage of development of the country is essential to the ability of the state to translate capital inflows into real growth and development. Similarly, [2] investigate the effect of foreign capital on economic performance using a panel data in 60 developing countries. They find a robust complementary connection between externally financial inflows and economic growth.

In this present study, relevant empirical evidence on the effects of some inflows of external financial

resources to economic growth was individually analyzed as follows:

FDI and economic growth: Raza, Sabir, and Mehboob [12] investigate the effect of FDI on economic growth in Pakistan. Their findings indicate that FDI and remittance have a robust positive connection with economic growth in the country. However, foreign aid shows an inverse relationship with the economic growth. Similarly, [13, 14, 15] find a positive correlation between FDI and economic growth in the host countries. In the same direction, [16, 17, 18, 19] find a positive relationship between FDI and economic growth in Nigeria. FDI provided by the foreign corporations (MNCs) serves as an important vehicle for local enterprise and national development. Parts of the profits made from those investments are paid back to the recipient countries in the form of taxes, royalties, and social responsibilities.

External debt and economic growth: Many studies have confirmed the negative relationship between external debt and economic growth. Cunningham [20] finds an inverse relationship between debt burden and economic growth in sixteen countries.

In the same direction, [21] finds an inverse connection between external debt and economic growth in Sub-Saharan African countries. The author called for debt forgiveness to stimulate economic growth in those countries. In the same direction, [22] finds out that there exists an adverse relationship between foreign resources and economic growth in the long run in Turkey. In addition, their Granger causality results show a unidirectional causality running from debt service to economic growth.

Similarly, [20, 23, 24, 25, 26] find an inverse relationship between external debt and economic growth in Nigeria. They opine that the high level of foreign debt without sound investment in Nigeria has led to the devaluation of the country's currency and economic shocks.

International migrant remittance and economic growth: The massive inflow of remittance has also contributed to the GDP growth in the recipient countries. Some studies [27,28,29, 30,31,32] provide evidence of a relationship between international migrant remittance and economic growth in the receiving countries. Migrants' remittance contributes to the development both at the micro and macro levels in the recipient countries. Olubiyi [33] also finds a Granger causal relationship between foreign migrant remittance and economic growth in Nigeria, albeit only in the short run.

The rise of inflows of international migrants' remittance is becoming a crucial source of external financial resources to Sub-Saharan African countries like Nigeria, surpassing the inflows of most forms of foreign capital like FDI and ODA. Migrants' remittances help in reducing poverty in the recipient countries [34, 35, and 36].

ODA and economic growth: Stojanov and Strielkowski [34] find an ample positive relationship between ODA and economic growth in the recipient economies. In the same direction, [37] find a positive long-run relationship between ODA and key macroeconomic variables in 36 sub-Saharan African (SSA) countries.

Similarly, [17] find a positive relationship between foreign aid and economic growth in Nigeria. On the contrary, [9] finds an inverse relationship between ODA and human development in the country.

World oil price and economic growth: Oil is a major source of revenue to many of the producing countries. As a result, its price at the global marketplace is being watched by these countries as a price shock is likely to hurt their economies. Using partial adjustment model (PAM), [38] finds out that the demand for oil was income (real GDP per capita) and price inelastic in the short run. Whereas, in the long term, the results suggest that the demand for oil was price inelastic and income elastic.

Studies by [39], and [40] show that there exist a positive relationship between oil revenue and the Nigerian economy. Alley et al. [41] examine the impact of oil price on the economy of Nigeria; their results suggest that oil price has a positive effect on economic growth in the country. They caution that oil price shocks in the world market, however, create uncertainty and undermine proactive fiscal management of crude oil revenue; thus leading to the adverse effect of oil price shocks. Whereas, [42] do not find oil price shocks to account for a significant proportion of movements in macroeconomic aggregates. They stress that the enclave nature of the oil sector in Nigeria has weak linkages.

3 Theoretical Framework

The interest of scholars in the factor(s) that stimulate economic growth is not new. Rather than new preoccupation of economists, the progress of nations has traditionally been at the center of economic writing and inquiries [43].

Since the 1950s to date, many scholars' in economics have postulated theories of economic growth and development. For the purpose of this

study; a few of these theories are briefly highlighted. One of the most referenced historical models of economic growth was coined by Walt Whitman Rostow [44]. In his theory known as Rostow’s stages-of-growth model, he stressed that industrialization could stimulate economic growth. Rostow further argued that among the fundamental strategies of growth and development in the country was the mobilization of foreign financial savings to generate sufficient investment to stimulate economic growth.

Rostow’s growth theory was later supported by the Harrod-Domar model [45,46]. They opined that the total output that might lead to economic growth depended on the level of capital accumulation (which include external financial flows) and produced in a given economy. The model maintained that the steady equilibrium of economic growth heavily depends on individual country policies to increase investment flows, and efficiently use those finances for higher productivity and economic growth.

Some notable economists [47, 3] later adapted the model. They argued that labor supply was sufficient to stimulate growth. However, they maintained that capital was the only constraint to higher productivity and growth, which has been the case for developing countries. They further identified two gaps: savings and trade balance (foreign exchange) as constraints to production and growth. They argued that foreign capital bridge the gaps of limited domestic capital in poor countries.

In conclusion, some researchers are in support of the modernization theory. They opined that external financial resources complemented limited resources, especially in developing countries like Nigeria. Whereas, other economists are in support of dependency theory; they opined that the inflows of external resources have had an adverse effect and impeded economic growth. They argued that financial globalization has an adverse impact, especially in countries that did not have prudent monetary and sound fiscal policies in place.

4 Materials and Methods

2.1 Sources of data

This study employs annual time series data, spanning from 1980 to 2012. The data were extracted from three main sources: United Nations Conference on Trade and Development (UNCTAD) statistical reports [11]; International Monetary Fund (IMF) world economic outlook [48]; and the World Bank (WB) world development indicators [49].

2.2 Analytical strategy

In this work, we have used an econometric technique, Nerlove’s Partial Adjustment Model (PAM). For the sake of stabilizing the variance that exists in the time-series data, all variables were transformed using natural logarithm.

$$\ln \text{RGDP}_t = \lambda_0 + \lambda_1 \ln \text{FDI}_t + \lambda_2 \ln \text{REMIT}_t + \lambda_3 \ln \text{ODA}_t + \lambda_4 \ln \text{EDEBT}_t + \lambda_5 \ln \text{WOP}_t + \text{dummy}_t + \lambda_6 \ln \text{WOP}_t^2 + (1 - \theta) \ln \text{RGDP}_{t-1} + \mu_t \quad (1)$$

Where;

RGDP is the real gross domestic product (US\$), which is captured for economic growth; FDI is the net foreign direct investment in Nigeria; REMIT is the inflows of international migrant remittance (US\$); ODA is the inflows net official development assistance (US\$) to Nigeria; EDEBT is the inflows of long-term external debts (US\$) to Nigeria; WOP is the world oil price (US\$); WOP² indicates the quadratic term of the world oil price; Dummy represents Post-Structural Adjustment Programme (SAP) period- 1988 to 2012. Dummy serves as our control variable in the model. λ₁ to λ₅ indicates the short-run parameters, (1- θ) represents the speed of adjustment in the long-run (0 < θ < 1), u_t is the error term.

Hypothesis: External financial resource-led economic growth in Nigeria

5. Results and Discussion

To avoid the possibility of having a spurious regression result, we conducted a unit root test on the residuals of our derived model (Nerlove’s PAM). This approach is somewhat grounded in the Engle-Granger’s two-step process of cointegration technique [50]. As it is common practice when testing for a unit root, we have used the Augmented Dickey-Fuller’s (ADF) test. The result of the ADF test for the residuals derived from the Nerlove’s Partial Adjustment Model is as shown in Table 1.

Table 1: Stationarity Test for the Residual derived from the Nerlove’s Partial Adjustment Model

| Model Using ADF (Augmented Dickey-Fuller Test) test with constant | |
|---|----------------------------------|
| Test with Constant | Test with Constant and Trend |
| Test Statistic (t-value): -5.61* | Test Statistic (t-value): -5.53* |
| Asymptotic p-value: 0.01 | Asymptotic p-value: 0.01 |

Note: * indicates the significance alpha level at 1%

In order to make sure that our results are accurate and valid, several model robustness checklists were conducted as presented in Table 2. All the test results show that the model is linear and correctly specified. There is no presence of heteroskedasticity,

variables used in the model are not autocorrelated, and the error term is normally distributed. The model also fulfills the RESET test for the correct specification. Both CUMSUM and CUMSUMSQ plots indicate the stability of the model (see Appendices 1 and 2).

Table 2: Model diagnostics

| Test Type | Test Statistic [p-value] |
|---|--------------------------|
| Normality (Jarque-Bera) | 2.52307 [0.283] |
| Normality (Shapiro-Wilk W) | 0.958063 [0.243] |
| RESET test for specification | 0.95911 [0.399] |
| First-order Autocorrelation (Breusch-Godfrey) | 0.252 [0.621] |
| First-order Autocorrelation (Ljung-Box Q) | 0.189[0.664] |
| ARCH of order 1 (LM) | 0.506 [0.477] |
| Heteroskedasticity (White's) | 12.9372 [0.532] |
| Robust-variant Heteroskedasticity | 11.2431 [0.188] |
| Parameter Stability (CUSUM) | -1.057 [0.302] |

The regression results are shown in Table 3. All variables in the model are in elasticity forms. Holding other variables constant, in the short run, a 1% increase in FDI will boost real GDP in Nigeria by 0.12%, statistically significant at the 0.05 level.

Similarly, a 1% increase in the world oil price soars real GDP by 0.54% (statistically significant at the 0.01 level), *ceteris paribus*. Contrary to our prior expectation, a 1% increase in migrant remittance reduces economic growth by 0.02%, *ceteris paribus*. We also find that external debt does not have a considerable effect on economic growth.

Table 3: OLS, using observations (1981-2012)

| Dependent variable: L_RGDP | | | | |
|--|-------------|------------|-------------------------|------------------------|
| HAC standard errors, bandwidth 2 (Bartlett kernel) | | | | |
| Variable | Coefficient | Std. Error | t-ratio | p-value |
| Constant | 0.0606185 | 0.866365 | 0.0700 | 0.94482 |
| L_FDI | 0.123028 | 0.0540387 | 2.2767 | 0.03243** |
| L_REMIT | -0.0166711 | 0.00560997 | -2.9717 | 0.00683*** |
| L_ODA | 2.15105e-05 | 0.0108085 | 0.0020 | 0.99843 |
| L_EDEBT | -0.00101745 | 0.0100775 | -0.1010 | 0.92046 |
| L_WOP | 0.543655 | 0.148132 | 3.6701 | 0.00127*** |
| Dummy | 0.070904 | 0.0657915 | 1.0777 | 0.29234 |
| sq_L_WOP | -0.064903 | 0.0203719 | -3.1859 | 0.00411*** |
| L_RGDP_1 | 0.801206 | 0.115827 | 6.9173 | <0.00001* ** |
| R-squared | 0.992206 | | Adjusted R ² | |
| F(8, 23) | 5980.819 | | 0.989495 | P-value(F) 2.81e-36 |

Note: ** indicates significant at the 5% level; *** indicates significant at the 1% level

Note: Dummy coding was 0 (1980-1987), 1 (1988-2012)

Based on the findings in the model, the speed of adjustment of real GDP in the long run is estimated to be 0.20 or 20% (i.e., 1- 0.80). In the long-run, a 1% expand in FDI may impact real GDP (i.e.,

economic growth) by 0.30% (long-run FDI computation = 0.06062/0.2), *ceteris paribus*. Both short run and long run results confirm the hypothesis of FDI-led economic growth in Nigeria. The findings are in line with the works of [16], [17 and [18] whose results hint at FDI led economic growth in Nigeria.

Similarly, a 1% increase in the world oil price (WOP) might spur Real GDP to expand by 2.72% in the long run. The findings are in line with some recent studies [39, 40, and 41].

However, the quadratic term of the world oil price (squared WOP) results show that over-reliance on global oil prices to spur economic growth (real GDP) in Nigeria has a rather adverse effect in the long run. In sum, rising oil income from abroad (i.e., world oil price) has a diminishing marginal effect on Nigeria's economic growth. This goes to show that beyond a certain global oil price-level, Nigeria's economic growth will start experiencing a decreasing return.

Furthermore, long run results suggest that 1% rise in international migrant remittance will lead to a decline in economic growth by 0.08 %. This adverse effect seems to indicate that the beneficiaries directly consume a large portion of the remittances from abroad without necessarily investing it in (longer-term) income-generating economic activities.

6 Conclusion and Policy Implications

The inflows of external financial resources are widely regarded as catalysts for economic growth in countries that are poised to develop. The paper investigates the influence of some external financial flows including world oil price on economic growth in Nigeria for the past three decades. Using Nerlove's partial adjustment model (PAM), our findings support the hypothesis about FDI led economic growth in Nigeria in the short run and long run. In contrast, international migrant remittance seems to be a deterrent to growth.

World oil price also appears to spur economic growth in Nigeria. However, the quadratic term of global oil price appears to indicate that beyond a certain oil price-level, the resultant effect on the nation's real GDP is rather that of a decreasing return.

These interesting findings in our work point to the fact that Nigeria's economy is not only largely fuelled by rising world oil price, but also a sign that over-reliance on oil proceeds from abroad has the possibility of slowing down economic growth in Africa's 'largest' market. Thus, it is expedient for

the country's policy makers to provide the enabling policies that could lead to the diversification of the nation's economy from oil export (lessen its reliance on petroleum trade) to non-oil export products.

Also, in order to benefit from the flows of global finances, Nigeria should weigh the associated costs and benefits in such transactions. External debt should be optimally utilized for national development. The government of Nigeria should continuously service her foreign debts to avoid the pitfall of debt overhang.

Undoubtedly, with effective and efficient utilization of external financial resources, sound monetary and fiscal policies, and investment atmosphere, most of the foreign financial flows may well stimulate a sustainable economic growth in Nigeria. In concluding, it is critically important to stress that no country can compete favorably in the global market without prudent resource management and sound investment climate. And as such, developing countries like Nigeria must take bold initiatives in creating the prerequisite environment that can continually encourage the inflow of external capital like FDI while at the same time concrete steps rather than political rhetoric must be taken in order to diversify the Nigerian economy away from crude oil exports. Despite the findings of the study, it is not impervious to research limitations. Therefore, future lines of inquiry should improve on any noticeable limitation(s) of the study. Altogether, the research has provided empirical insights on the incidence of external capital flows including crude oil price on the real GDP of Africa's largest marketplace.

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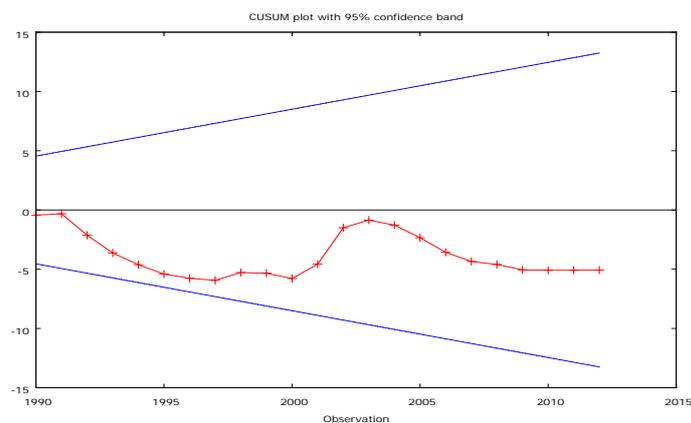
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Appendix 1: CUSUM plot of parameter stability test



Appendix 2: CUSUMSQ plot of parameter stability test

