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# Understanding the Impact of China and U.S. Aid on the Economic Growth of Africa: Empirical Evidence from Nigeria

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**Abstract**
On the question of whether foreign aid stimulates GDP growth, the profession offers inconclusive as well as frequent contradictory results. While waiting for a robust consensus, this paper analyzes the impact of China and the United States aid on Nigeria Economic growth. A descriptive fact of how big is China and the United States aid and how much of it goes to Africa is also address. Using the Ordinary Least Squares Method (OLS) and the Granger causality test method for foreign aid, we find out that China and the United States aid have mixed effects on the economic growth of Nigeria.
**Keywords:** Africa, Aid, China, Economic Growth, Nigeria, United States
JEL Classifications: F35, F43

## 1 Introduction

One of the most important policy instruments for transferring resources from rich nations to poor nations is foreign aid. For the period of 1960 to 2013, about 3.5 trillion dollars (2009 USD) were provided as external finance from rich to poor nations.[3] Given the huge amount of resources put into development assistance, the empirical evidence on its impact have been very mixed, resulting in a heated academic and policy debate. Development assistance is a vital topic given its implications for poverty reduction in developing nations. Past empirical surveys on development assistance and economic growth generated mixed results. For instance, Karras (2006), Dalgaard et al. (2004), Gomanee et al. (2003), Burnside and Dollar (2000), Hansen and Tarp (2000), Gupta and Islam (1983), Dowling and Hiemenz (1982), and Papanek (1973), discovered evidence for the positive impact of development assistance on economic growth. On the other hand, Burnside and Dollar (2000) and Brautigam and Knack (2004) found evidence for negative impact of development assistance on economic growth, while Jensen and Paldam (2003), Boone (1996), Mosley et al (1987), and Mosley (1980) discovered evidence to propose that foreign aid has no impact on economic growth.

Notably, though Burnside and Dollar (2000) concluded that development assistance has positive impacts, this result applies only to countries in which it is combined with good trade, fiscal and monetary policies. In a study carried out by Doucouliagos and Paldam (2009), these authors employed the meta-analysis covering 68 papers containing a total of 543 direct estimates; they discovered that the effect of foreign aid on economic growth estimates scatter considerably and add up to a small positive, but insignificant effect on economic growth. Experts continue to build the case for, or against development assistance mainly on Africa, with two general divisions having emerged: experts who argue that development assistance is helpful and experts who argue that development assistance engenders inefficiencies in the recipient nation and therefore fails in accomplishing its objectives of "institution-strengthening" (Van Deer Veen, 2011).

The key role of development assistance in stimulating economic growth is to supplement domestic sources of finance like savings, therefore increasing the amount of capital stock and investment. According to Morrissey (2001) study, the author indicates that the ability to upsurge investment in human and physical capital and its ability to upsurge capacity to import capital goods or technology are some of the mechanisms via which foreign aid can contribute to economic growth. On the other hand, McGillivray, et al. (2006) provided four key alternative views on the effectiveness of development assistance namely, (i) foreign aid effectiveness hinge on institutional quality; (ii) foreign aid has decreasing returns, (iii) foreign aid effectiveness is influenced by climatic and external conditions; (iv) foreign aid effectiveness is influenced by political conditions.

Given the significance of development assistance to the economies of African countries, it is vital to understand its contribution to the economic growth of Nigeria. So, this paper analyzes the impact of China and the United States aid on the economic growth of Nigeria. One of the contributions of this paper is its input to the existing empirical literature on the effects of development assistance on the economic growth of developing nations (particularly Nigeria) via its thorough analysis. Developing nations such as Nigeria is indeed characterized by high poverty level, very low industrial capacity utilization, low level of income, and high level of unemployment just to mention a few of the numerous economic problems the nation is encountering. In addressing these problems, external finance has been proposed as a veritable alternative for increasing the

[3] This figure includes all ODA given by OECD Development Assistance Committee (DAC) members.
Source: OECD DAC1 flows. Aid given by non-OECD DAC members (e.g., Russia, the United Arab Emirates, China) are excluded.

meager domestic resources. To some extent, Nigeria as a nation in Africa has greatly benefited from donor assistance. Donor finances affect developing nations in numerous ways; via fostering economic growth, development, and the welfare of recipients' nations, in that way assisting to reduce poverty levels (Burnside and Dollar 2000; Hansen and Tarp 2001). However, the capability of donor finances to meet these goals hinges on numerous factors.

So, it is vital to understand the nature of development assistance within Nigeria given the diverse developmental needs and structural challenges. Generally, one can differentiate between the United States and China's sources of financing. China's significance as a major donor outside the United States has been growing and this has assisted to bridge the financing gaps in developing nations. A mere comparison of the amount of China and the United States external finance to developing nations can allow us gain better understanding and possibly a clarification as to why donors are attracted to a specific recipient nation. While the amount of donor finances received from the United States are well documented; we seek to understand the quantity of donor finances China has provided to Africa and compare this to what has been received from the United States. In other words, it is essential to determine the significance of China as a donor in Nigeria and ascertain whether China dominates as a donor in the region. For countries with the right policy implementation, aid projects have the capacity to generate revenue and contribute to economic growth.

As a result of the significance of this topic, the impact of foreign aid has been the subject of extensive examination. The main question donor and recipient nations are asking is whether development assistance has any effect on developing nations' economic growth and their level of poverty. This matter has been approached from different viewpoints; yet, a single and definite answer still does not exist. Thus, it is vital to note that not only factors like the amount and kind of financial assistance impact the effectiveness of available finances but as well the suitable use of these finances by recipient nations play a significant role in the development process. The remaining part of this paper is organized as follows: section two deals with the literature review on the study of foreign aid and economic growth whereas section three looks at the descriptive fact of how big China and the United States aid is. Section four discussed the empirical analysis of China and the United States aid in Nigeria's economic growth. Section five concludes the paper.

## 2 Literature Review

The empirical study of the effectiveness of foreign aid, previously explored in the 1970s, received renewed attention in the early 1990s. As foreign aid encountered a crisis of legitimacy, the survey by Burnside and Dollar (1997) offered an answer to the detractors of foreign aid. The authors displayed that the effectiveness of development assistance is contingent on better governance in the recipient nations. In spite of the reservations promoted by numerous surveys (Easterly, 2003, Boone, 1994; Temple, 2010), Burnside and Dollar (1997) conclusions would be adopted and defended by the World Bank (1998), Dalgaard and Hansen (2001), Lensink and White (2000), with vital implications for economic policy.

From this viewpoint, the central subject for the association between foreign aid and economic growth is whether the distribution of external finance to nations structurally characterized by weak governance can be considered wasteful. Gomanee et al. (2005) provide a tentative answer to this question by emphasizing on the direct and indirect effects of ODA on Sub-Saharan Africa economic growth. They utilize panel data for twenty-five Sub-Saharan Africa nations from the period of 1970-1997. The findings of their regressions display that development assistance has a positive direct and indirect effects on economic growth. Indirectly, aggregate foreign aid affects economic growth in Sub-Saharan Africa through public investments. The finding corroborates the results of Hansen and Tarp (2001). This optimistic vision is similarly shared by Tarp et al. (2003), who discovered that development assistance is effective even when macroeconomic conditions are poor. This assertion is as well in line with the survey by Guillaumont and Chauvet (2001), which discovered that returns on assistance are higher in nations vulnerable to macroeconomic shocks.

However, Rajan and Subramanian (2008, 2001) did not share the same optimistic view as the other authors; they estimated a neoclassical production function to assess the effect of Official Development Assistance (ODA) on growth over a period of thirty years. Both authors identify no significant effect of aid in a sample of developing nations including African nations. According to their 2010 article, they identified that augmented development assistance may lead to appreciation in the exchange rate, thereby producing a negative effect on growth.

Recently, Tarp et al. (2011), in the same vein as Radelet et al. (2004), observed that numerous surveys employ panel data or cross-section data with a short time dimension, indicating only the cyclical effect of foreign aid. Furthermore, in order to offset this limitation, these authors conducted an investigation of a sample of thirty-eight Sub-Saharan African nations over the period of 1960-2007. Their study was distinguished by the methodological choice of the error correction model employed to capture the long-term dynamic of the correlation between foreign aid and economic growth. They concluded that external finance indirectly and directly foster economic growth even in an unfavorable macroeconomic context. Specifically, the observed

effect is transmitted via investment in public capital. On a similar note, the study conducted by Hadjimichael et al. (1995), McGillivray and Ouattara (2003), Kene et al. (2008), Brempong and Asiedu (2008), Arndt et al. (2010) and Dietrich and Wright (2012) identified multiple channels via which development assistance is transmitted, notably education, taxes, investment, imports, government expenditure, a policy variable (that is a linear mixture of inflation, openness to trade, budget surplus) and institutions.

In fact, most surveys addressing the indirect relationship between foreign aid and economic growth in Africa arrived at conflicting results. Furthermore, while the microeconomic contexts of several surveys were recognized as a controlling factor for effectiveness, some surveys consider political environment, much less the heterogeneity of channels via which the effect of that environment is transmitted. In light of the foregoing, the contributions of numerous surveys were based on recognizing the macroeconomic effects of foreign aid on economic growth and determining the channels via which those effects happened. These studies continue the line of examination pursued Morrissey (2001), Gomanee et al. (2005) and de Tarp et al. (2011). Unlike those surveys, however, it carries out a comparative analysis between those in a stable setting and Sub-Saharan Africa nations in a post-conflict setting. In this regard, it employs the Oaxaca-Blinder decomposition method to clarify dissimilarities in economic growth. The aim of this survey is to display that Official Development Assistance (ODA), when controlled by governance, contributes directly or indirectly to clarifying economic growth in Sub-Saharan Africa. It endeavors to display that Official Development Assistance (ODA) indirectly impacts economic growth in Sub-Saharan Africa through investment in public capital (infrastructure) and in human capital (education). The channels of transmission differ according to the political setting in the recipient nations.

Recently, Minoiu and Reddy (2010) empirical proof on the effectiveness of development assistance in sustaining economic growth and development' however, remains mixed. Most surveys offered empirical evidence in favor of foreign aid effectiveness, at least in certain macroeconomic settings and under certain circumstances. In another study by Javid and Qayyum (2011), both authors surveyed the effectiveness of foreign aid, centering on the ongoing debate on interactive effect of development assistance and policy on sustainable economic growth. Their result shows that real GDP and foreign aid have negative correlation, while the aid-policy interactive term and real GDP growth have a positive and significant correlation. In a recent study conducted by Fasanya and Onakoya (2012), both authors result displayed that foreign aid flows have significant influence on economic growth, as upsurge in domestic investments has positive effect on economic growth on the recipient country. On the other hand, Clemens et al. (2012) conclude in their current assessment: "the aid-growth literature does not presently possess a robust and patently valid instrumental variable with which to reliably test the hypothesis that external finance strictly causes growth."

Currently, Galiani et al (2014) developed on the identification of previous studies with a strategy in the vein of a regression discontinuity. The authors concentrated on thirty-five poor nations, some of which crossed an arbitrary per capita income threshold that made these nations ineligible for development assistance from the World Bank's International Development Association (IDA). Under the interpretation that nations above the threshold are similar to those below the threshold except that those above receive less aid. They used whether a nation is above or below the threshold as instrument for development assistance; their result shows that aid upsurges economic growth.

In fact, we can conclude on the review of the above literature on foreign aid effectiveness in developing nations that development assistance has stimulated economic growth on one hand and substituted for domestic savings on the other hand. These actions in a way have caused severe debt serving problems in developing nations. Accordingly, development assistance has a positive influence on economic growth in developing nations with good policies. On the other hand, in the presence of poor polices, foreign aid has no positive effect on economic growth.

**3. Brief Descriptive Facts on China and the United States Aid estimates**

There is no unified framework for understanding the influence of external finance on the recipient economic growth. The effect of foreign aid on the recipient nation and the mechanisms driving it hinge on the kind of assistance as well as the results of interest. This section will lay out some basic facts about China and the United States aid; it will also compare the estimates of China's development assistance with that of the United States. Presently, while the United States still remain the largest economy in the world, Beijing has turn out to be the second largest economy in the world and both countries are increasingly engaged in African affairs. As a result, both donors external finance to the region has turn out to be a heated theme globally. How big is China's and the United States overseas assistance? How much of it is channel to Africa continent? However, no final answers have been given thus far. AidData recognized this fact as well as notices that the data for Beijing are not complete; as the OECD does not report development assistance from Mainland. As a result it is hard to provide a clear picture of China's development assistance to African nations. According to Huang (2007), the author points out that China's "overseas assistance management system" has gradually taken shape with the development of China's foreign assistance activities. Furthermore, Hu and Huang (2012) declare that China's recent development

 

assistance management system is insufficient and cannot satisfy the needs of Beijing's foreign aid demands as a rising provider of development assistance worldwide. They propose that an independent aid agency could be created directly under the State Council responsible for all of China's overseas assistance work. Shortcomings in Beijing's overseas assistance architecture are as well one potential clarification why there exist no comprehensive Chinese aid statistics.

This part of the paper aims to address the Chinese and the United States aid estimates from the perspective of Chinese scholars. Over the last ten years, development assistance from non-Western regimes such as Beijing has augmented sharply—both in absolute terms and as a share of global development finance (Klein and Harford 2005; Manning 2006; IDA 2008; Woods 2008; Fengler and Kharas 2010; Severino and Ray 2010; Dreher et al. 2011; Walz and Ramachandran 2011; 2013; Dreher et al. forthcoming). Simultaneously, development assistance from Western regimes has declined for both of the past two years (OECD 2013). In 2008, the New York University (NYU) Wagner School published a report which indicated that Mainland overseas assistance and government- supported economic projects in Africa, Latin America, and Southeast Asia increased from less than $1 billion in 2002 to $27.5 billion in 2006.[4] On the other hand, in 2012 and 2013, AidData, based at the College of William and Mary, compiled a database of thousands of media reports on Chinese-backed projects in Africa from 2000 to 2011. According to the database, Beijing funded 1,673 projects in 50 African nations, amounting to a total of $75 billion of Chinese regime's official monetary assistance commitments, approximately comparable in volume with the United States development assistance to Africa (which reached $90 billion in the same period). [5]

In 2011, Mainland Information Office of the State Council issued the first White Paper on China's overseas assistance. According to the 2011 white paper, Beijing overall development assistance given from 1950s to the end of 2009 amounted to 256.29 billion yuan (The Chinese regime did not put it in United States dollars in the White Paper), 45.7% of which went to African nations.[6] On 10 July 2014, a second White Paper on Mainland overseas assistance was released. According to the reported statistics in this paper, overseas assistance provided by Beijing amounted to 89.34 billion yuan (about 14.41 billion United States dollars), 51.8% of which went to African nations. Just as what the overseas observers have noticed, Beijing overseas assistance has been growing tremendously ever since 2000. Based on the data and references available in table 2, the authors estimate the amount of China's foreign aid and the percentages of overseas assistance in GNI since 2000 as follows: Beijing development assistance augmented from $0.64 billion, accounting for 0.05 percent of GNI in 2000, to $5.04 billion, accounting for 0.095 percent of GNI in 2009. From 2010 to 2012, Mainland allocated a total of $14.41 billion worth of overseas assistance, accounting for 0.06% of the GNI in this period.

In fact, it can be demonstrated that China's development assistance has fast augmented over the past decade. However, the overall volume of development assistance from Beijing is still small in comparison with the United States. But, as an emerging economy, Mainland has tried its best in this regard. Although most of this development assistance is provided to nations in Africa and Southeast Asia for the reason that China sees itself as a peer to the developing countries rather than a donor – a position that turn out to be increasingly difficult to endorse as the nation continues to develop exponentially. Factually, there still lies a great gap between China and the United States in this regard. Let's look at 2012 for instance as shown in table 3; this table shows the net overseas assistance of key donors and its percentage in GNI. Throughout 2012, the United States provided an overall estimate of $30.687 billion worth of overseas assistance to Africa, accounting for 0.19% of its GNI; the United Kingdom provided a total of $13.891 billion, accounting for 0.56 % of its GNI; Germany, France and Japan offered a total of $12.939 or 0.37% of GNI, $12.028 billion or 0.45%, and $10.605 billion, or 0.17%, respectively. Although none of the nations mentioned above were able to meet the target of foreign aid accounting for 0.7% of its GNI, an objective set by the United Nations early in the 1970s, they did offer tremendous amount of overseas assistance to developing nations

Table 4 displays the ten largest recipients of official finance from Beijing, Washington, and the OECD-DAC as a whole, aggregating flows from 2000-2011. Three of the top ten recipient nations are consistent across all three donors: Ethiopia, Nigeria and Sudan.[7] This table displays that Beijing and Washington dominate as

[4] NYU Wagner School, "Understanding Chinese Foreign Aid: A Look at China's Development Assistance to Africa, Southeast Asia and Latin America", April 25, 2008.

[5] Austin Strange, Bradley Parks, Michael J. Tierney, Andreas Fuchs, Axel Dreher & Vijaya Ramachandran, "China's Development Finance to Africa: A Media-Based Approach to Data Collection", Center for Global Development, Working Paper 323, April 2013.

[6] Jonathan Weston, Caitlin Campbell & Katherine Koleski, China's Foreign Aid Assistance in Review: Implications for the United States, U.S.-China Economic and Security Review Commission, Updated September 1, 2011, pp.1-14; Michael Klare & Daniel Volman, "America, China & the scramble for Africa's Oil", Review of African Political Economy, No.108, 2006, pp.297-309; Thomas J. Christensen, "Shaping China's Global Choices Through Diplomacy", testimony before the U.S. – China Economic and Security Review Commission, March 18, 2008.

[7] South Sudan is counted as a separate country in the dataset after its independence in 2011. Thus, Sudan here includes

donors for Africa with substantial assistance as well going into Nigeria. However, numerous nations may not make the top ten lists for all three donors, but still receive a significant amount of assistance from Mainland and the DAC. Nigeria is second on the list for China, and though it is not in the top 5 for the United States but Nigeria takes the first spot on the DAC recipient list meaning Nigeria is a very large recipient of Western funding as well. An aggregate comparison across all three donors propose that a large percentage of both Chinese and Western official monetary flows go to similar regimes and regions in Africa. However, it does mask dissimilarities in the modalities and sectors of funding. Though Nigeria occupy the second position on the list for China, not in the top 5 for the United States but takes the first position on the DAC recipient list, the kinds of financing are vastly dissimilar; Beijing has had a large focus on the oil pipeline and infrastructure in the Western corridor whereas DAC donors have largely concentrated financing in social sectors and conflict regions like Darfur and other conflicts countries.

Still on the figures, during Chinese President Xi Jinping's first overseas trip to Africa in March 2013, he doubled this commitment to USD 20 billion from 2013 to 2015.[8] In addition, the head sovereign risk analyst of Export-Import Bank of China announced in November 2013 that by 2025, China would have offered Africa with USD 1 trillion in funding, comprising of soft loans, commercial loans and direct investment. [9] All these estimates are indication that Beijing development assistance to Africa is increasing rapidly, but still remains small compared to development assistance from OECD/DAC members. However, the United States was the largest donor in 2011 with a total estimate of $30.7 billion;[10] and stayed the largest donor by volume with net ODA flows of USD 31.5 billion, an upsurge of 1.3% in real terms from 2012 whereas its ODA share of GNI was 0.19%. The United States retained its first position as the largest aid donor in 2013, with a relatively stable upsurge of 0.9%.[11] In order to understand the significance of the tracking a project's status before drawing conclusion about how much development finance Beijing is channeling into Africa continent, consider Figure 1, which illustrates the project status composition of Mainland official funding to Africa continent from 2000 to 2011; the figures are striking. Given the close relationships between Beijing overseas aid and funding, an indirect estimate of the size of Beijing's aid flows can be based on contracted projects under the turnover of economic cooperation data published in the China statistical yearbook.[12]

Consider Figure 2 below, which illustrates how Beijing and the Washington foreign aid are spent in Africa by comparing both donors infrastructure and health assistance respectively. Interestingly enough, China and the United States are not even competing for their least important priorities for Africa. Women, education and food aid rank as some of the lowest priorities for Chinese donors. For the United States, the lowest priorities are fishing, forestry, mineral resources and mining, and construction. This seems to be a complete inversion of priorities which can be referred to as a complete complementarity; not competition.

finance to North and South from 2000-2010 and only the North in 2011.

[8] "China to Provide 20 billion USD Loan Credits to Africa in Three Years," [中国三年内将向非洲提供200亿美元贷款额度], Cai Xin, March 25, 2013, http://international.caixin.com/2013-03-25/100506116.html.

[9] Toh Han Shih, "China to Provide Africa with US$1 trillion financing," November 18, 2013, South China Morning Post, http://www.scmp.com/business/banking-finance/article/1358902/china-provide-africa-us1tr-financing.

[10] OECD INSIGHT (April 4th, 2012) "Development aid drops for the first time in 15 years" http://oecdinsights.org/2012/04/04/development-aid-drops-for-the-first-time-in-15-years/

[11] OECD (2013) "Aid to developing countries rebounds in 2013 to reach an all-time high" http://www.oecd.org/newsroom/aid-to-developing-countries-rebounds-in-2013-to-reach-an-all-time-high.htm

[12] We include the estimates of projects under Turnover of Economic Cooperation with Foreign Countries or Regions", which reflects: (1) overseas civil engineering construction projects financed by foreign investors; (2) overseas projects financed by the Chinese government through its foreign aid programs; (3) construction projects of Chinese diplomatic missions, trade offices and other institutions stationed abroad; (4) construction projects in China financed by foreign investment; (5) sub-contracted projects to be taken by Chinese contractors through a joint umbrella project with foreign contractor(s); and (6) housing development projects. We add also to these labour services (activities of providing technology and labour services to employers or contractors in the forms of receiving salaries and wages) and design consultation (projects with income for technical services provided to overseas operators.

 

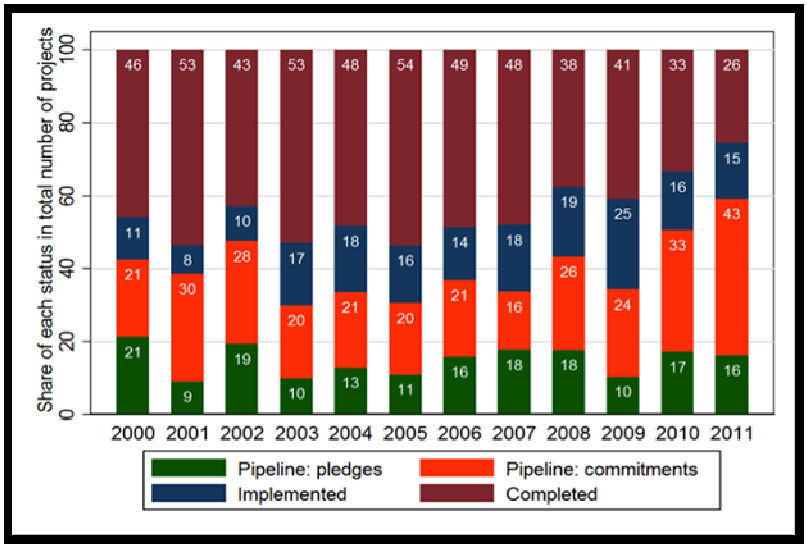


Figure 1: Project status composition of Chinese official finance to Africa from 2000 to 2011 (Share of each reported status of all projects over time, 2000-2011) Sources: AidData 2011

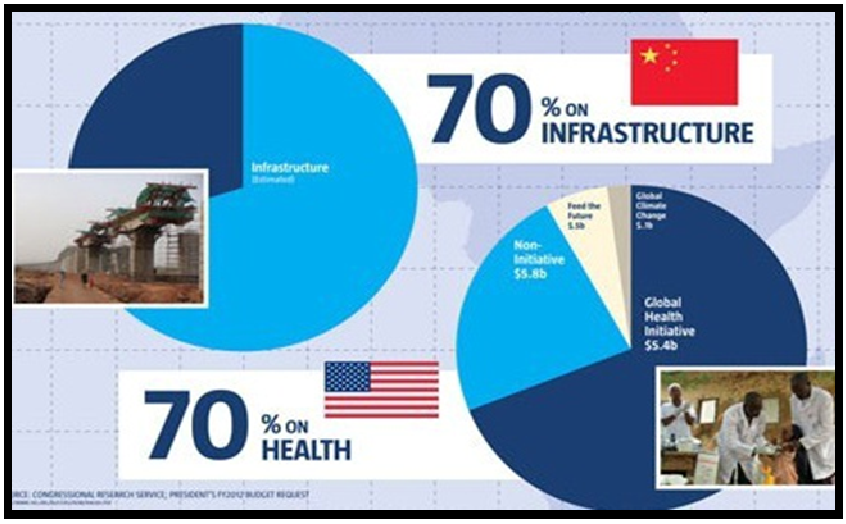


Figure 2: How China and U.S. Aid Funds are spent in Africa
*While the U.S. is investing in Africa's health, China is investing in Africa infrastructure*
Sources: Concessional Research Service; President Request. www.coons.senate.gov

**4 Empirical Analysis**

African nations lag behind the rest of the world in terms of development regardless of the continent's average annual gross domestic product (GDP) rates (7.93% in 2004, 5.45% in 2005, 6.08% in 2006, 6% in 2007, 4.77% in 2008, 0.89% in 2009 and 3.99% in 2010, it later rise to 4.7% in 2013 and 5.2% in 2014). This is more or less attributed to dearth of monetary resources required to fund long-term development projects on the continent. In the face of all this, Nigeria has gained the crown as Africa's largest economy, a status that could at last force its regime to answer more for the nation's socioeconomic shortfalls than its fresh commercial success. The West African nation surpassed longstanding business beacon South Africa after a statistical revision that almost doubled its GDP output as displayed in figure 3 below.

 

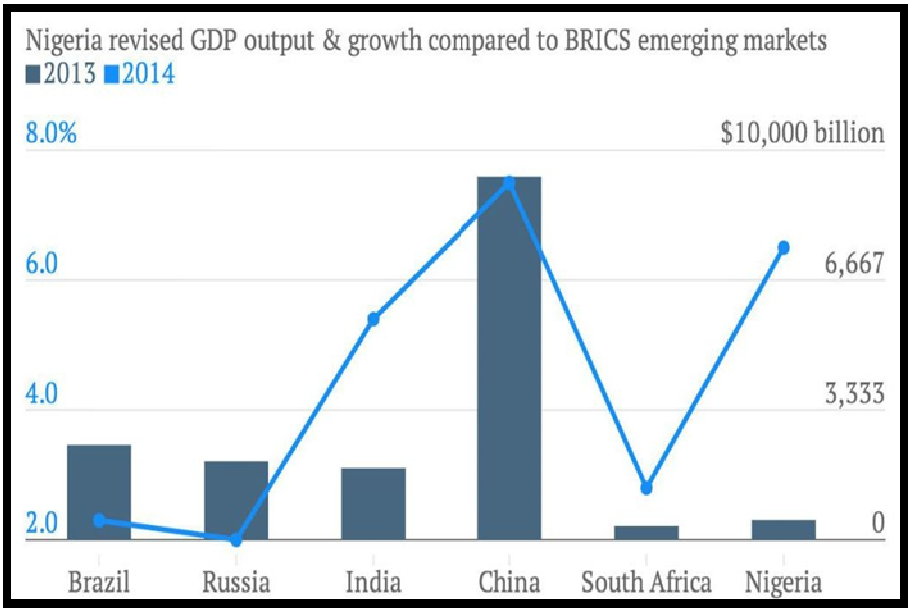


Figure 3: Nigeria revised GDP output and growth compared to BRICS emerging market 2013 and 2014
Sources: IMF/World Bank/National Statistics Bureau Data

The IMF-endorsed statistics which comprised of all the past unaccounted for commercial activities and sectors positioned Nigeria GDP at $510 billion compared to South Africa's $353 billion, signifying greater diversification to the nation's oil rich economy. The outcome of this development brings prestige and with that responsibility, Nigeria is presently the de facto economic representative for the whole Africa continent. The question is if the Nigeria regime will employ that prestige to acquire its act together towards improved opportunities for its citizens. If not, this number may not do anything except elucidate further on the nation's challenges. Nigeria has witness unequal manner growth in recent years; the nation needs more regime assistance to the nation's poor and better quality growth. The fresh economic title will be an advantage to the average citizens; Nigeria needs to upsurge overseas investment as well as employment growth via the country's new economic accomplishments. Unfortunately, the country challenges are more prominently identified and regularly overshadow the nation's current achievements. In all of the country potential, modern Nigeria undulates between points of development and retrograde.

In spite of the new economic success, the nation is still recorded as one of the world's extreme poor with over 60 percent still living on less than a dollar a day, up from 52 percent in 2004.[13]As a small but rising Nigerian middle and entrepreneurial class shows greater prosperity via augmented consumer power, pockets of the nation are in a state of low intensity conflict as a result of attacks by Northern militant group Boko Haram. Based on these numerous challenges, foreign aid had been advocated as a means to bridge the resource gap as well as the security problems the nations is encountering. However, apart from overseas assistance, the above performance is as well enhanced by the growing investment in infrastructure, natural resources as well as robust household expenditure. Diverse structural reform programmes and measures had been undertaken by the Nigeria regimes and their development partners with the goal of improving investment climate by this means increasing overseas assistance inflows which would in turn spur economic growth and further alleviate poverty. However, these measures could not produce the anticipated outcome for which the OECD report (2000) cited by UNCTAD (2005) attributed the failure to a combination of unsustainable national economic strategies.

The advent of China as an emerging nation and the United States as a developed nation investing in other region with much interest in Africa has to some extent wiped Africa's dark story but specifically Nigeria on foreign aid attraction as well as shaping the nation economic prospects. Nigeria since gaining its independence in 1960, the country has received over 400 billion dollars in aid – six times what the United States pumped into reconstructing the whole of Western Europe after World War II.[14] In addition, the country receives over $83 billion per year in foreign aid from donors including the United States, Europe, the World Bank, Europe, Japan, China, the UN, and certain Gulf countries.[15] The United States aims to contribute over $720

[13] Emerging frontier (June 2014) "Nigeria: Africa's New Number One"
[14] Daily Mail (August, 2013) "A country so corrupt it would be better to burn our aid money" http://www.dailymail.co.uk/debate/article-2387359/Nigeria-country-corrupt-better-burn-aid-
[15] AidData

 

million in aid in 2015[16], making Nigeria one of the top 10 recipients of Washington aid (see figure 4 below). Chinese assistance takes on several dissimilar forms: emergency humanitarian assistance, goods and materials, technical co-operation, human resource training, medical and other volunteers and completed construction and infrastructure products funded by grants and low or no-interest loans. China was as well ahead of the curve on debt relief, and Nigeria was a beneficiary in one of the three rounds of debt cancellation Beijing has held since 2000.

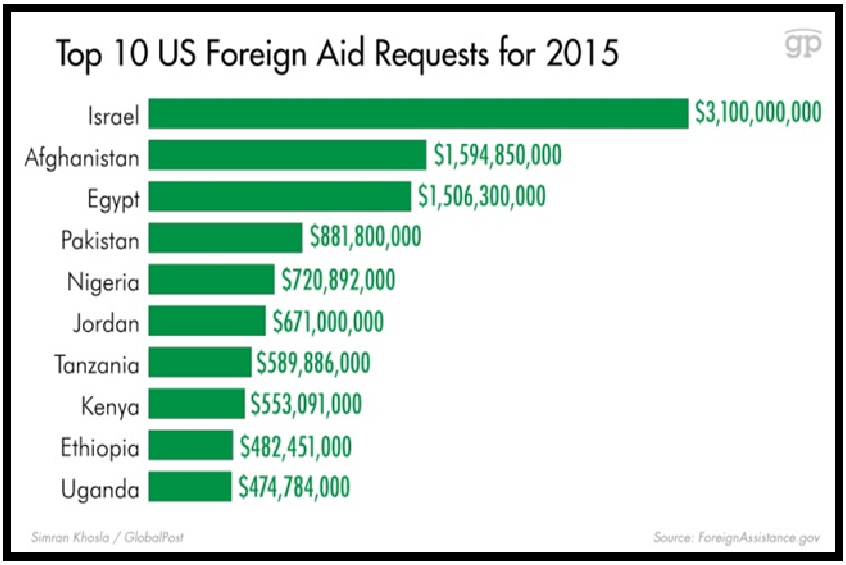


Figure: 4 Top 10 United States Foreign Aid Request for 2015
Sources: Foreign Assistance.gov/ USAID: Nigeria

Although it is not easy to gauge the value of expert training and in-kind gifts, Sino-African relations specialist Deborah Brautigam estimates that the overall value of Beijing's official assistance to Nigeria has been relatively modest, less than USD 220 million between 2000 and 2008. While from 2000 to 2011, there are roughly forty Chinese official development finance projects recognized in Nigeria via numerous media reports.[17] The projects embark upon by Beijing range from a $2.5 billion loan for Nigerian rail, power, or telecommunications projects in 2008, [18]to a $1 billion construction of houses and water supply in Abuja in 2009, [19] and numerous rail networks. On the other hand, Washington contributed a relatively small amount of development assistance to Nigeria starting from the time Nigeria got independence in 1960s. Flows throughout this period were much lower than they have been since democratization. One key US-sponsored aid project in the nation throughout this period was the expansion of numerous agricultural schools at Nigeria institutes of higher education.[20]

Washington assistance to Nigeria therefore augmented dramatically throughout the same period that the country became a democracy. There are numerous likely clarifications for the significant upsurge in assistance from Washington to Nigeria over the past twenty-five years, or since independence. A great deal of assistance, roughly 60 percent of the United States contribution, is designated to address the problem of building capacity in local health care systems, improve maternal and child health, fight AIDS/HIV, internal security with aid dollars and advisory backing channeled particularly towards the Niger Delta.[21] Despite the fact both donors continue to offer assistance to emerging nations, its surfaced to assist emerging nations has created an alternative to lessen Nigeria's monetary burden. In as much as Nigeria needs China and the United States to assist in bridging the funding gap of the nation as well as revitalize its ailing infrastructure, security problems and health issues, China and the United States also need Nigeria for its abundant natural resources.

[16] Business Day (August, 2014) "America wants to send $720m foreign aid to Nigeria in 2015" http://businessdayonline.com/2014/08/60156/#.VD8xCYt4qto
[17] Austin Strange, Bradley C. Parks, Michael J. Tierney, Andreas Fuchs, Axel Dreher, and Vijaya Ramachandran. 2013. China's Development Finance to Africa: A Media-Based Approach to Data Collection. CGD Working Paper 323. Washington DC:
[18] Strange, Parks, Tierney, Fuchs, Dreher, and Ramachandran, China's Development Finance to Africa: A Media-Based Approach to Data Collection.http://aiddatachina.org/projects/1999
[19] Strange, Parks, Tierney, Fuchs, Dreher, and Ramachandran, China's Development Finance to Africa: A Media-Based Approach to Data Collection.http://aiddatachina.org/projects/2138
[20] USAID: Nigeria
[21] EU External Action: Nigeria

### 4.1 Methodology and Data

*Model Specification*

Numerous attempts have been made in the literature to measure the correlation that exists between economic growth and the effectiveness of overseas assistance. Consequently, the paper introduces a limited set of variables in the China and the United States aid which comprise of numerous factors that may be connected with economic development. This section discusses the model specifications to examine the associations between foreign aid and per capita GDP growth. The models specified are estimated employing ordinary least squares estimation technique.

The model is derived, in conventional manner, from a production function in which foreign aid is introduced as an input in addition to labor and domestic capital. In the usual notation the production function can be written as follows:

$$Y = f(L, K, A) \quad (1)$$

where $Y$ is gross domestic product (GDP) in real terms, $L$ is labor input, $K$ is domestic capital stock, and A is stock of foreign aid.

Assuming equation (1) to be linear in logs, taking logs and differencing, the following expression describing the determinants of the growth rate of real GDP is obtained:

$$y = \alpha + \beta l + \delta k + \phi a \quad (2)$$

where lower case letters denote the rate of growth of individual variables. Following the precedent set in several prior studies, the rate of growth of the capital stock is estimated by the share of investment in GDP. This is essential because of the formidable difficulties related with attempts to measure the capital stock, particularly in the context of developing nations. Additionally, the rate of alteration in labor input is as well replaced by the growth rate of population. Following Karras (2006) and others, numerous other variables that are regularly believed to have a favorable effect on growth are also involved. As pointed out by Feeny and McGillivray (2008), a reasonably robust finding of recent studies is that there is an inverted U-shaped correlation between foreign aid and growth. This finding indicates that there are diminishing returns to foreign aid as a result of recipient nations having absorptive capacity constraints. Absorptive capacity relates to an aid recipient's capability to utilize overseas assistance inflows effectively. In order to take into account this association, a square term is included to the following model. These alterations produce the following growth equation:

$$GDP_{it} = \beta_0 + \beta_1\left(\frac{USAID}{GDP}\right)_{it} + \beta_2\left(\frac{CHAID}{GDP}\right)_{it} + \beta_3 INF_{it} + \beta_4 UMP_{it} + \beta_5\left(\frac{GOVTEXP}{GDP}\right)_{it} + \beta_6 PRI_{it} + \beta_7 SEC_{it}$$
$$+ \beta_8 TER_{it} + \beta_9\left(\frac{INVT}{GDP}\right)_{it} + e_{it} \quad (3)$$

where $GDP_{it}$ is the growth rate of real GDP per capita of country $i$ in year $t$ , $USAID/GDP_{it}$ is the United States aid flow to country $i$ in year $t$ , $CHAID/GDP_{it}$ represent the China aid flow to country $i$ in year $t$ $INF_{it}$ is the inflation rate of country $i$ in year $t$, $UMP_{it}$ is the unemployment of country $i$ in year t, $GOVTEXP_{it}/GDP$ represent government total expenditure defined as (GEXP/GDP*100) in country $i$ in year $t$, $PRI_{it}$ represent the primary education (% change) in country $i$ in year $t$, $SEC_{it}$ represent secondary education (ratio of total enrolment to GDP) in country $i$ in year $t$, $TER_{it}$ represent tertiary education in country $i$ in year $t$, $INVT/GDP_{it}$ is the investment of country $i$ in year $t$, and the investment/GDP ratio represents the growth rate of capital stock, $e_{it}$ represent the error term. The key concern is to test whether the marginal impact of China and United States aid on growth in Nigeria, $\beta 1$ is positive and statistically significant. The expected signs of the coefficients $\beta 2$, $\beta 3$, $\beta 4$ are positive and that of $\beta 5$ either positive or negative, $\beta 5$ is negative, and that of $\beta 6$, $\beta 7$ and $\beta 8$ are positive and $\beta 9$ is negative.

### 4.2 Variable Description and Data Sources

In order to test the implications of these models, the study developed an ordinary least squares (OLS) regression model. The complete data set comprises of China and the United States for which development assistance from these countries and all other relevant variables are reported over the 2000-2011 period. The purpose of the empirical study is to determine whether the presence of China's and United States aid exerts positive effect on Nigeria's economic growth. The economic growth rate (The per capita growth of output) is measured in this study as the growth of real GDP per capita in constant dollars using data from World Bank's World Development Indicators (WDI) and Global Development Finance (GDF) (2011). Inflation rate is defined as the annual percentage change in Consumer Price Index (CPI) and used as proxy for macroeconomic stability. The data on inflation rate are from the International Monetary Fund, *World Economic Outlook* database; 2011. The data on government expenditure are from the World Bank, *World Development Indicators* database. The investment/GDP ratio is used as a proxy for the growth rate of the capital stock. Since the investment/GDP ratio is not reported for the majority of the developing countries, gross fixed capital formation as a share of GDP is used to represent investment/GDP ratio. Human capital was measured by the average sum of net enrollment rate (NER) in both primary secondary and tertiary schools in the population; the data was from the United Nation Educational, Scientific and Cultural Organization (UNESCO) (2011). Government spending data was measured

as the ratio of central government expenditures to output (GDP). China aid flow was collected from AidData (2011). The United States aid data are from the Organization for Economic Corporation and Development (OECD) (2011).

Table 1: Summary Statistics Variables

| | NG_GDP | US_AID | CH_AID | INF | UMP | GOVT_EXP | PRI | SEC | TER | INVT |
|---|---|---|---|---|---|---|---|---|---|---|
| **Mean** | 6.4 | 0.258 | 2.410 | 1.505 | 0.045 | 0.325 | 0.870 | 0.838 | 0.731 | 0.234 |
| **Median** | 6.3 | 0.224 | 2.176 | 1.495 | 0.045 | 0.303 | 0.855 | 0.840 | 0.720 | 0234 |
| **Maximum** | 10.6 | 0.455 | 7.315 | 2.523 | 0.047 | 0.511 | 0.980 | 0.960 | 0.830 | 0.305 |
| **Minimum** | 1.5 | 0.151 | 0.232 | 0.693 | 0.038 | 0.269 | 0.820 | 0.770 | 0.650 | 0.202 |
| **Std.Dev** | 2.591054 | 0.092348 | 2.033084 | 0.590292 | 0.002151 | 0.065662 | 0.046122 | 0.052194 | 0.058904 | 0.029680 |
| **Skewness** | -0.142854 | 0.753510 | 1.054884 | 0.279002 | -2.578966 | 2.054969 | 1.085825 | 0.860026 | 0.255108 | 0.839354 |
| **Kurtosis** | 2.752382 | 2.570402 | 3.778437 | 1.944792 | 8.853777 | 6.596637 | 3.577909 | 3.538077 | 1.865399 | 2.825107 |
| **Jarque-Bera** | 0.071472 | 1.227832 | 2.528540 | 0.712416 | 30.43549 | 14.91369 | 2.525020 | 1.624051 | 0.773820 | 1.424324 |
| **Probability** | 0.964895 | 0.541227 | 0.282445 | 0.700327 | 0.000000 | 0.000577 | 0.282943 | 0.443958 | 0.679152 | 0.490582 |
| **Sum** | 77.30000 | 3.092341 | 29.03685 | 18.05453 | 0.535000 | 3.895580 | 10.44000 | 10.06000 | 8.780000 | 2.912290 |
| **Sum Sq.Dev** | 73.84917 | 0.093810 | 45.46775 | 3.832894 | 5.090000 | 0.047426 | 0.023400 | 0.029967 | 0.038167 | 0.009690 |
| **Observations** | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |

Source: Authors analysis based on data from the World Bank (WDI 2011) and AidDataStat 2011. See below for data description.

Table 1 displays descriptive statistics for growth as well as China and the United States aid data and control variables. The average real annual GDP per capita growth rates range from 1.5 to 10.6 whereas United States (USAID) aid and China aid (CHAID) inflows range from 0.151 to 0.455 and 0.232 to 7.315 respectively. Nigeria GDP (NGGDP) records the highest extreme values ranging from 1.5 to 10.6. Among the number of variables under study, Nigeria GDP (NGGDP) and Unemployment (UMP) have a negative skewed distribution whereas Unemployment (UMP) had the least probability value of 0.000000.

*Definition of Variables*

NIGGDP = Represent Nigeria Real Annual GDP per capita growth rate (dependent variable)
USAID = United States Aid flows to Nigeria defined as (USAID/GDP*100)
CHAID = China's Aid flows to Nigeria defined as (CHAID/GDP*100)
INF = Rate of inflation defined as annual average consumer prices (% change)
UMP = Unemployment Rate
GOVTEXP = Government total expenditure defined as (GEXP/GDP*100)
PRI = Primary Education (average sum of net enrollment rate in primary schools)
SEC = Secondary Education (average sum of net enrollment rate in secondary schools)
TER = Tertiary Education (average sum of net enrollment rate in tertiary schools)
INVT = Investment of a country (INVT/GDP*100)

### 4.3 Empirical Evidence

To estimate the relationship between Nigeria real annual per capita growth rate with the United States and Chinese aid, the study developed an ordinary least squares (OLS) regression model. In order not to over concentrate on other economic variables which equally have certain degree of impact on the economy, the study analyzed the impact of China and the United States aid inflows on economic growth as initial benchmark using time series data for the period 2000-2011 based on the following equation:

$$Growth_{it} = \beta_0 + \beta_1 \, CHAID/GDP_{it} + \gamma \, Controls_{it} + \beta_2 \, USAID/GDP_{it} + \varepsilon_{it} \quad (4)$$

where $Growth_{it}$ is the GDP per capita growth rate of country $i$ in period $t$; $CHAID/GDP_{it}$ is China's aid as a share of Nigeria GDP (percent), $USAID/GDP_{it}$ is the United States aid as a share of Nigeria GDP (percent); $Controls_{it}$ are the control variables and $\varepsilon_{it}$ is the error term. As is standard in aid-growth regressions, we treat the aid variable as endogenous. We as well employ all the control variables as additional instruments and do not put any restrictions on the number of lags to be used as instruments. The list of control variables comprises of human capital as measured by the average sum of net enrollment rate (NER) in primary, secondary and tertiary schools, government expenditure, inflation as proxy for macroeconomic stability, investment of a country, unemployment rate and gross domestic savings as proxy for domestic capital. Real GDP per capita growth measures the real income growth of the population in a country as well as their quality of life, hence a good indicator for economic growth (Lipsey, 1999; Lee, 2000; Kinoshita and Campos, 2004). The variable $\beta_o$ is the constant whereas $\beta n$ represent the coefficient estimates of independent variables. The basic linear regression model assumes that the contributions of the different independent variables are additive, implying as the constant $(\beta_o)$ equals to zero, a unit increase in any of the independent variables, ceteris paribus, will cause the dependent variable to change by $\beta_n$ units.

Table 5 in the appendix displays the main results. The regression analysis indicates that when regress China and the United States aid against Nigeria GDP, the United States aid has a positive effect on growth. This result shows that the United States aid to Nigerian economy has positive and significant impact on growth by

financing public investment as well as alleviating poverty. The results authenticate the findings of Papanek (1973) and Karras (2006) that foreign aid has a substantially greater effect on growth than the other variables. However, China aid has a negative effect on growth when regress against Nigeria GDP. This finding is not surprising given the fact that Chinese manufacturing operations have not directly contributed to Nigeria's GDP but offer tough competition for local producers. If the Chinese construction companies can upgrade the countries roads, railways and power plants, Nigerian manufacturers could possibly turn out to be more competitive in the future; by solving the estimated unemployment rate of 19.7 percent stated by the National Bureau of Statistics.[22] Better still, this result illustrates how foreign development assistance has been wasted or simply misappropriated in Nigeria. For example, in a study of the United States aid to eight nations (Egypt, India, Israel, Jordan, Pakistan, Philippines, Thailand and Turkey) during 1972-1987, Khilji & Zampelli (1994) found that foreign aid is highly fungible and recipients can easily circumvent donor-imposed restrictions and spend this fund on non-targeted programs. Meaning, the negative coefficient on China's aid should not be interpreted in the sense that development aid harms economic development in general as there are evidence from other nations where it has promoted development (Chenery and Strout, 1966). These results came after controlling for total China's aid flow (CHAID) and total United States aid flow (USAID) and the effect is significant with coefficient 1.8401 and -0.2015 respectively in table 5.

Column (2) includes inflation as proxy for macroeconomic stability in the list of control variables whereas Columns (3), (4), (5), (6) and (7) add other growth control variables such as unemployment, government expenditure, primary education, secondary education and tertiary education. Although Column (4) adds government expenditure to the control variable list but it has a negative influence on growth when regress against China and the United States aid. The reason for this result may probably due to wasteful nature of the Nigerian government over the years. Most of the expenditures are not used based on pareto-optimality and maximum return on investment. Though, the effect of China and the United States aid remained negative and highly significant for the United States aid except in column (1) where it was positive and significant; but it was different for the Chinese aid because it was negative and highly insignificant. As further robustness check, Column (8) adds investment to the list of the control independent variables; the outcome displays a negative correlation with growth when regress against China and the United States aid. This is at least partly because of the crowding out via public investment; the implication can or should of course not be that aid is bad for investment per se. It suggests rather that China and the United States aid to Nigeria is clearly not use in a way that will generate optimal complementarities between public and private investment. This implies that if the aid that is been channeled to recipient nations were more systematically used for investment in infrastructure, research and development, improvement in the quality of institutions, and for better skilled work force, private investment would likely respond positively to aid. This result is similar to the previous results and it is significant to at least the 5 percent level in most cases. This is in line with the broader view that aid is effective if economic policies are good (Burnside and Dollar, 2000, 2004; Collier and Dollar, 2004).

Finally, Column (9) in table 5 comprises of all the variables in the conditioning set and the results do not give backing to the empirical evidence offered in the literature in favor of the argument that external finance spurs economic growth unconditionally by these authors (Burnside and Dollar, 2000; Guillaumont and Chauvet, 2001; Hansen and Tarp, 2001; Collier and Dollar, 2002). This outcome is not surprising as China and United States major investment projects in Nigeria are geared toward high-stream exploration of oil and gas, small-medium scale mining (in the Niger-Delta Regions) and general trade which have little impact on job creation and income generation for households. However, total United States and China aid flow have negative effect on Nigerian economic growth throughout the analysis but was only positive and significant in column (1) and (8) for the United States in table 5 as compared to the positive and insignificant effect of inflation, unemployment, primary education, secondary education and tertiary education.

Table 6, column (1) shows the results of pairwise combination of inflation and unemployment in addition to total China and the United States aid. The result for China's aid is negative as well as that of the United States aid. Column (2) displays the results of pairwise combination of government expenditure and investment in addition to total China and the United States aid. The result for China's aid is negative while that of the United States is positive. Column (3) displays the results of primary, secondary and tertiary education combination in addition to total China and the United States aid. The result for China's aid is negative while that of the United States is positive Table 7; column (2) displays the results of primary, secondary, tertiary and investment combination in addition to total China and United States aid. The result for China's aid is negative while that of the United States is positive. Table 8 displays the results of inflation, unemployment, government expenditure, primary, secondary, tertiary and investment combination in addition to total China and the United States aid. The results for both China and the United States aid are negative.

[22] 234Next, "Nigeria's unemployment figures remain same for years". http://234next.com/csp/cms/sites/Next/Home/5732037-146/story.csp

In order to double check the findings of the regression analysis, the study employ the Granger Causality test to find out the causal relationship between China and the United States aid and growth in the Nigerian economy. The aim is to test whether a change in China and the United States aid in Nigeria plays significant role in the determination of the country's real GDP per capita growth or vice-versa. The study found out that China's aid flows into Nigeria does not granger cause growth in the Nigerian economy. However, a positive shock in Nigerian economic growth can statistically lead to a change in the flow of China and the United States aid into the country to at least the 5 percent level of significance (see Table 9). This result implies that a good policy implementation, reforms, stable and sustainable economic growth in Nigeria's economic sectors, such as the agriculture, manufacturing and services which support job creation and income generation, can play important role in attracting China's and the United States aid as well as FDI into the country. In the long run, this phenomenon can result in potential benefit for the African region as a whole.

## 5. Conclusion

External Finance effectiveness is a very critical and unsettled matter at the empirical and theoretical level. Trillions of dollars have been provided in the past three decades, but empirical evidence on its benefits has been mixed, resulting in a heated policy and academic debate. Most overseas assistance components diverted from development to non-development expenditures, have created barely any significant influence on economic growth. One significant contribution of this paper is its input to the existing empirical literature on the effects of overseas assistance on the economic growth of developing economies via its thorough analysis covering a large number of variables. The model is estimated using OLS estimation approach over the period 2000-2011 for Nigeria. The paper finds that the United States aid flows into the Nigerian economy tend to have positive and significant effect on growth; the results authenticate the findings of Papanek (1973) and Karras (2006) that external finance has a substantially greater effect on growth than the other variables. However, China's aid tends to have negative and significant effect on growth.

The major point emerging from this study is that the United States aid, unemployment, inflation, primary education, secondary education and tertiary education exert positive and significant impact on economic growth; the results imply that these variables have made an important contribution to economic growth in Nigeria. On the other hand, China aid, government expenditure and domestics investment exert negative impact on economic growth in Nigeria. Although China's aid apparently has a negative impact on the economic growth of Nigeria according to the regression results, the negative sign could be due to statistical biases and tough competition for Chinese producers against Nigeria local producers. If the Chinese construction companies can upgrade Nigeria roads, railways and power plants, then Nigerian manufactures could possibly become more competitive in the future; there are certain econometric issues that could be addressed in the future. However, the United States aid has mixed impact on the economic growth of Nigeria. In column (1) and (8) of table 5, the United States aid has a positive impact on Nigerian economic growth, while the rest of the columns display negative impact on the economic growth of Nigeria. Based on the empirical results we find that China and the United States aid and real GDP have mixed relationship.

Our finding suggests that sound economic management policy in terms of low inflation, trade openness and low budget deficit is crucial for aid effectiveness. In addition, donor governments should be aware of the political situations in Nigeria, and work with international bodies to ensure as much stability as possible. Development partners should give Nigerian regime incentives to increase their savings by encouraging them to cut unproductive private and regime expenditures. They should also encourage the Nigerian government to divert much attention to fighting corruption and implement effective policies. Donors could then reward these regimes with an increasing amount of aid, if they meet all these targets of increasing savings, eliminating corruption, lowering inflation rates and implementing good monetary, fiscal or trade policies. Aid inflow is a highly unstable and unpredictable source of external financing and it always depend on donor‘s strategic interest. Policy makers should take into account the stable and sustainable sources of external financing like exports, FDI and portfolio investment for stimulating growth of economy. It is only at this point, that external finance can influence economic growth in Nigeria significantly; otherwise, the problem of aid ineffectiveness and slow growth rate will remain unabated.

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Appendix

Table 2: China's foreign aid since 2000 and the percentage of GNI

| Year | Foreign Aid (billion US$) | GNI (billion US $) | Percentage of Aid accounting for GNI (%) |
|---|---|---|---|
| 2000 | 0.643 | 1180.72 | 0.05 |
| 2001 | 0.695 | 1302.02 | 0.05 |
| 2002 | 0.775 | 1434.88 | 0.05 |
| 2003 | 0.862 | 1628.60 | 0.05 |
| 2004 | 1.046 | 1922.73 | 0.05 |
| 2005 | 1.335 | 2265.95 | 0.05 |
| 2006 | 1.722 | 2719.03 | 0.06 |
| 2007 | 2.597 | 3523.20 | 0.07 |
| 2008 | 3.714 | 4719.83 | 0.07 |
| 2009 | 5.048 | 5284.07 | 0.09 |
| 2010-2012 | 14.41 | 22332.32 | 0.06 |

Source: AidData's Chinese Official Finance to Africa Dataset, Version 1.0 and OECD DAC Creditor Reporting System.

Table 3: Net foreign aid of main donors and its percentage of GNI in 2012

| Country | Net ODA (billion US dollars) | Percentage of ODA accounting for GNI (%) |
|---|---|---|
| The United States | 30.687 | 0.19% |
| The United Kingdom | 13.891 | 0.56% |
| Germany | 12.939 | 0.37% |
| France | 12.028 | 0.45% |
| Japan | 10.605 | 0.17% |

Source: OECD, "DAC Members' Net Official Development Assistance in 2012", http://www.oecd.org/statistics/(2014-07-22)

Table 4: Ten largest recipients of Official Finance to Africa (ODA and OOF), 2000-2011

| China | United States | DAC |
|---|---|---|
| Ghana ($11.4 billion) | Egypt ($7.6 billion) | Nigeria ($28.8 billion) |
| Nigeria ($8.4 billion) | Ethiopia ($6.9 billion) | DRC ($21.9 billion) |
| Sudan ($5.4 billion) | Sudan ($6.8 billion) | Tanzania ($19.6 billion) |
| Ethiopia ($5.4 billion) | DRC ($5.8 billion) | Mozambique ($17.9 billion) |
| Mauritania ($4.6 billion) | Kenya ($5.5 billion) | Egypt ($16.5 billion) |
| Angola ($4.2 billion) | Nigeria ($4.2 billion) | Ethiopia ($16.1 billion) |
| Zimbabwe ($3.8 billion) | South Africa ($3.6 billion) | Kenya ($14.6 billion) |
| Equatorial Guinea ($3.8 billion) | Uganda ($3.5 billion) | Sudan ($14.0 billion) |
| Cameroon ($3.0 billion) | Tanzania ($3.4 billion) | Morocco ($12.6 billion) |
| South Africa ($2.3 billion) | Mozambique ($3 billion) | Uganda ($12 billion) |

Source: AidData's Chinese Official Finance to Africa Dataset, Version 1.0 and OECD DAC Creditor Reporting System

 

Table 5: The Effects of China and United States Aid on Growth in Nigeria
Dependent variables – Average GDP per capita growth rate (2000-2011)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| **USAID** | 1.8401 (0.8463) | -15.9841 (0.26110) | -13.8897 (0.3759) | -16.4815 (0.3458) | -18.7704 (0.3539) | -19.2288 (0.3986) | -42.0910 (0.1633) | 0.3450 (0.9717) | -41.7980 (0.3579) |
| **CHINA AID** | -0.2015 (0.6418) | -04439 (0.3031) | -0.3980 (0.3931) | -0.5389 (0.3420) | -0.7259 (0.3736) | -0.8648 (0.4096) | -1.0374 (0.2933) | -01119 (0.8028) | -1.0336 (0.4236) |
| Inflation | | 3.7038 (0.1205) | | | | | | | -29.4280 (0.3736) |
| Unemployment | | | 185.2504 (0.6671) | | | | | | -35.7483 (0.9739) |
| Government Expenditure | | | | -12.5475 (0.3829) | | | | | 4.460052 (0.9166) |
| Primary Education | | | | | 33.4942 (0.7144) | | | | 5.3590 (0.9638) |
| Secondary Education | | | | | | 12.1692 (0.7761) | | | 44.5086 (0.5354) |
| Tertiary Education | | | | | | | 342.2291 (0.2186) | | 341.4112 (0.3426) |
| Investment | | | | | | | | -12.5475 (0.3829 | -0.7974 (0.9903) |
| Observation | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| $R^2$ | 0.0288 | 0.2948 | 0.3146 | 0.3497 | 0.3685 | 0.3685 | 0.3828 | 0.38 | 0.6576 |
| Adjusted $R^2$ | -0.1871 | 0.0304 | -0.0777 | -0.1922 | -0.3892 | -0.6972 | -0.2557 | -0.2089 | -0.8833 |

Note: All regressions include a constant term and are estimated by OLS with NLS and ARMA. t-values are in parentheses.
Source: Analysis results are based on data from World Bank (2011) World Development Indicators (WDI), Global Development Finance (GDF) and AidData (2011)

Table 6: Growth, China and United States Aid
Dependent variables –Average GDP per capita growth rate (2000-2011)

| | 1 | 2 | 3 |
|---|---|---|---|
| USAID | -13.8807 (0.9095) | 4.1766 (0.6823) | 21.9572 (0.2110) |
| CHINA AID | -0.3980 (0.3931) | -0.3169 (0.5114) | -0.6823 (0.3881) |
| Inflation | 3.2644 (0.2246) | | |
| Unemployment | 185.2504 (0.6671) | | |
| Government Expenditure | | -11.4273 (0.4193) | |
| Primary Education | | | 1.4908 (0.9858) |
| Secondary Education | | | 15.5870 (0.6037) |
| Tertiary Education | | | 37.7475 (0.5408) |
| Investment | | -37.5570 (0.2793) | |
| Observation | 12 | 12 | 12 |
| $R^2$ | 0.3146 | 0.26640 | 0.3880 |
| Adjusted $R^2$ | -0.0771 | -0.1528 | -0.1219 |

Note: All regressions include a constant term and are estimated by OLS with NLS and ARMA. t-values are in parentheses.
Source: Analysis results are based on data from World Bank (2011) World Development Indicators (WDI), Global Development Finance (GDF) and AidData (2011)

 

Table 7: Growth, China and United States Aid
Dependent variables –Average GDP per capita growth rate (2000-2011)

| | 1 | 2 | 3 |
|---|---|---|---|
| USAID | -16.4815<br>(0.3458) | 17.1853<br>(0.4734) | 21.9572<br>(0.2110) |
| CHINA AID | -0.5380<br>(0.3420) | -0.3169<br>(0.5114) | -0.6823<br>(0.3881) |
| Inflation | 4.1759<br>(0.2179) | | |
| Unemployment | 488.4974<br>(0.5037) | | |
| Government Expenditure | 15.3319<br>(0.5896) | | |
| Primary Education | | | 1.4908<br>(0.9858) |
| Secondary Education | | | 15.5870<br>(0.6037) |
| Tertiary Education | | | 37.7475<br>(0.5408) |
| Investment | | -37.5570<br>(0.2793) | |
| Observation | 12 | 12 | 12 |
| $R^2$ | 0.3497 | 0.26640 | 0.3880 |
| Adjusted $R^2$ | -0.1921 | -0.1528 | -0.1219 |

Note: All regressions include a constant term and are estimated by OLS with NLS and ARMA. t-values are in parentheses.
Source: Analysis results are based on data from World Bank (2011) World Development Indicators (WDI), Global Development Finance (GDF) and AidData (2011)

Table 8: Growth, China and United States Aid
Dependent variables –Average GDP per capita growth rate (2000-2011)

| | 1 | 2 |
|---|---|---|
| USAID | -16.4815<br>(0.3458) | 17.1853<br>(0.4734) |
| China AID | -0.5389<br>(0.3420) | -0.6266<br>(0.4750) |
| Inflation | 4.1759<br>(0.2179) | |
| Employment | 488.4974<br>(0.5037) | |
| Government Expenditure | 15.3319<br>(0.5896) | |
| Primary Education | | 2.6217<br>(0.9772) |
| Secondary Education | | 7.2096<br>(0.8631) |
| Tertiary Education | | 35.1210<br>(0.6044) |
| Investment | | -15.8830<br>(0.7513) |
| Observations | 12 | 12 |
| $R^2$ | 0.3497 | 0.4015 |
| Adjusted $R^2$ | -0.1921 | -0.3168 |

Note: All regressions include a constant term and are estimated by OLS with NLS and ARMA. t-values are in parentheses.
Source: Analysis results are based on data from World Bank (2011) World Development Indicators (WDI), Global Development Finance (GDF) and AidData (2011)

Table 9: Causality Tests for the Relationships between China's aid, U.S. aid, and Growth Determinant Variables in Nigeria

| Null Hypothesis: | Obs | F-Statistics | Probability | Results |
|---|---|---|---|---|
| CH_AID does not Granger Cause NG_GDP | 10 | 6.46292 | 0.0411 | Rejection |
| NG_GDP does not Granger Cause CH_AID | | 0.27810 | 0.7682 | Acceptance |
| US_AID does not Granger Cause NG_GDP | 10 | 0.58899 | 0.5893 | Acceptance |
| NG_GDP does not Granger Cause NG_GDP | | 0.01339 | 0.9867 | Acceptance |
| INF does not Granger Cause NG_GDP | 10 | 0.30250 | 0.7516 | Acceptance |
| NG_GDP does not Granger Cause INF | | 0.55494 | 0.6058 | Acceptance |
| UMP does not Granger Cause NG_GDP | 10 | 16.4888 | 0.0063 | Rejection |
| NG_GDP does not Granger Cause UMP | | -1.79050 | 1.0000 | Rejection |
| GOVT_EXP does not Granger Cause NG_GDP | 10 | 4.88985 | 0.0666 | Rejection |
| NG_GDP does not Granger Cause GOVT_EXP | | 0.73468 | 0.5251 | Acceptance |
| PRI does not Granger Cause NG_GDP | 10 | 0.45662 | 0.6574 | Acceptance |
| NG_GDP does not Granger Cause PRI | | 0.01041 | 0.9897 | Acceptance |
| SEC does not Granger Cause NG_GDP | 10 | 0.07102 | 0.9324 | Acceptance |
| NG_GDP does not Granger Cause SEC | | 0.67757 | 0.5490 | Acceptance |
| TER does not Granger Cause NG_GDP | 10 | 0.23252 | 0.8007 | Acceptance |
| NG_GDP does not Granger Cause TER | | 4.83947 | 0.0677 | Rejection |
| INVT does not Granger Cause NG_GDP | 10 | 4.43468 | 0.0780 | Rejection |
| NG_GDP does not Granger Cause INVT | | 6.36556 | 0.0422 | Rejection |
| US_AID does not Granger Cause CH_AID | 10 | 2.97917 | 0.1406 | Acceptance |
| CH_AID does not Granger Cause US_AID | | 1.04784 | 0.4168 | Acceptance |
| INF does not Granger Cause CH_AID | 10 | 2.89352 | 0.1463 | Acceptance |
| CH_AID does not Granger Cause INF | | 1.77587 | 0.2614 | Acceptance |
| UMP does not Granger Cause CH_AID | 10 | 0.07495 | 0.9288 | Acceptance |
| CH_AID does not Granger Cause UMP | | -1.26879 | 1.0000 | Rejection |
| GOVT_EXP does not Granger Cause CH_AID | 10 | 0.33102 | 0.7328 | Acceptance |
| CH_AID does not Granger Cause GOVT_EXP | | 0.42454 | 0.6756 | Acceptance |
| PRI does not Granger Cause CH_AID | 10 | 0.72110 | 0.5307 | Acceptance |
| CH_AID does not Granger Cause PRI | | 0.79202 | 0.5026 | Acceptance |
| SEC does not Granger Cause CH_AID | 10 | 5.64599 | 0.0522 | Rejection |
| CH_AID does not Granger Cause SEC | | 0.76716 | 0.5122 | Acceptance |
| TER does not Granger Cause CH_AID | 10 | 2.70438 | 0.1599 | Acceptance |
| CH_AID does not Granger Cause TER | | 5.02350 | 0.0637 | Rejection |
| INVT does not Granger Cause CH_AID | 10 | 0.02270 | 0.9777 | Acceptance |
| CH_AID does not Granger Cause INVT | | 2.79481 | 0.1532 | Acceptance |
| INF does not Granger Cause US_AID | 10 | 2.00984 | 0.2288 | Acceptance |
| US_AID does not Granger Cause INF | | 1.14052 | 0.3908 | Acceptance |
| UMP does not Granger Cause US_AID | 10 | 0.47443 | 0.6476 | Acceptance |
| US_AID does not Granger Cause UMP | | -0.91877 | 1.0000 | Rejection |
| GOVT_EXP does not Granger Cause US_AID | 10 | 0.72373 | 0.5296 | Acceptance |
| US_AID does not Granger Cause GOVT_EXP | | 8.77114 | 0.0232 | Rejection |
| PRI does not Granger Cause US_AID | 10 | 4.06965 | 0.0893 | Rejection |
| US_AID does not Granger Cause PRI | | 5.68445 | 0.0516 | Rejection |
| SEC does not Granger Cause US_AID | 10 | 0.08940 | 0.9159 | Acceptance |
| US_AID does not Granger Cause SEC | | 6.74141 | 0.0381 | Rejection |
| TER does not Granger Cause US_AID | 10 | 1.48844 | 0.3111 | Acceptance |
| US_AID does not Granger Cause TER | | 0.14433 | 0.8691 | Acceptance |
| INVT does not Granger Cause US_AID | 10 | 1.61600 | 0.2875 | Acceptance |
| US_AID does not Granger Cause INVT | | 0.02778 | 0.9728 | Acceptance |
| UMP does not Granger Cause INF | 10 | 0.06188 | 0.9407 | Acceptance |
| INF does not Granger Cause UMP | | -1.22252 | 10000 | Rejection |
| GOVT_EXP does not Granger Cause INF | 10 | 0.13837 | 0.8740 | Acceptance |
| INF does not Granger Cause GOVT_EXP | | 3.29538 | 0.1222 | Acceptance |

| | | | | |
|---|---|---|---|---|
| PRI does not Granger Cause INF | 10 | 1.78157 | 0.2605 | Acceptance |
| INF does not Granger Cause PRI | | 1.37008 | 0.3354 | Acceptance |
| SEC does not Granger Cause INF | 10 | 0.63742 | 0.5668 | Acceptance |
| INF does not Granger Cause SEC | | 6.50744 | 0.0406 | Rejection |
| TER does not Granger Cause INF | 10 | 30.5758 | 0.0016 | Rejection |
| INF does not Granger Cause TER | | 1.26363 | 0.3596 | Acceptance |
| INVT does not Granger Cause INF | 10 | 0.74540 | 0.5208 | Acceptance |
| INF does not Granger Cause INVT | | 0.47962 | 0.6448 | Acceptance |
| GOVT_EXP does not Granger Cause UMP | 10 | -2.32860 | 1.0000 | Rejection |
| UMP does not Granger Cause GOVT_EXP | | 0.32244 | 0.7384 | Acceptance |
| PRI does not Granger Cause UMP | 10 | -1.91966 | 1.0000 | Rejection |
| UMP does not Granger Cause PRI | | 0.01326 | 0.9869 | Acceptance |
| SEC does not Granger Cause UMP | 10 | -1.41075 | 1.0000 | Rejection |
| UMP does not Granger Cause SEC | | 1.71432 | 0.2710 | Acceptance |
| TER does not Granger Cause UMP | 10 | -2.19980 | 1.0000 | Rejection |
| UMP does not Granger Cause TER | | 0.45966 | 0.6558 | Acceptance |
| INVT does not Granger Cause UMP | 10 | 1.23147 | 0.3674 | Acceptance |
| UMP does not Granger Cause INVT | | 2.39446 | 0.1865 | Acceptance |
| PRI does not Granger Cause GOVT_EXP | 10 | 3.43892 | 0.1150 | Acceptance |
| GOVT_EXP does not Granger Cause PRI | | 0.04111 | 0.9600 | Acceptance |
| SEC does not Granger Cause GOVT_EXP | 10 | 1.66275 | 0.2795 | Acceptance |
| GOVT_EXP does not Granger Cause SEC | | 0.61083 | 0.5790 | Acceptance |
| TER does not Granger Cause GOVT_EXP | 10 | 2.92284 | 0.1443 | Acceptance |
| GOVT_EXP does not Granger Cause TER | | 1.02760 | 0.4228 | Acceptance |
| INVT does not Granger Cause GOVT_EXP | 10 | 2.06138 | 0.2224 | Acceptance |
| GOVT_EXP does not Granger Cause INVT | | 1.89005 | 0.2447 | Acceptance |
| SEC does not Granger Cause PRI | 10 | 1.86632 | 0.2481 | Acceptance |
| PRI does not Granger Cause SEC | | 5.06498 | 0.0628 | Acceptance |
| TER does not Granger Cause PRI | 10 | 0.69505 | 0.5416 | Acceptance |
| PRI does not Granger Cause TER | | 2.80251 | 0.1526 | Acceptance |
| INVT does not Granger Cause PRI | 10 | 0.24078 | 0.7946 | Acceptance |
| PRI does not Granger Cause INVT | | 0.70826 | 0.5360 | Acceptance |
| TER does not Granger Cause SEC | 10 | 5.17462 | 0.0606 | Rejection |
| SEC does not Granger Cause TER | | 0.21964 | 0.8102 | Acceptance |
| INVT does not Granger Cause SEC | 10 | 2.73091 | 0.1579 | Acceptance |
| SEC does not Granger Cause INVT | | 0.03555 | 0.9653 | Acceptance |
| INVT does not Granger Cause TER | 10 | 0.14572 | 0.8679 | Acceptance |
| TER does not Granger Cause INVT | | 0.65667 | 0.5582 | Acceptance |