

THE TWO-GAP MODEL OF ECONOMIC GROWTH IN NIGERIA: VECTOR AUTOREGRESSION (VAR) APPROACH

Abstract

This paper explores the relevance and application of the theoretical prescriptions of the Two-Gap model to the Nigerian economic growth situation from 1970-2007. A co-integration test confirmed that long run relationship exists among the variables, giving an indication that they have the tendency to reach equilibrium in the long run. It was apparent from the results of the autoregression analysis that foreign aid does not give clear evidence of an imperative growth factor in Nigeria, FDI does but is volatile. This further confirmed the transfer paradox – which posits that foreign aid tends to immiserate the recipient country. The endogeneity of aid on real GDP re-emphasizes the imperative of economic reforms as a condition for aid. The study found no theoretical or empirical justification for the assumption that filling a “trade gap” determined by “aid requirements” will boost trade and growth in the Nigerian economy.

JEL Classification: F13; O11; C01

Key Words: Two-Gap Model, Economic Growth, Foreign Aid and FDI, Vector Autoregression, Co integration.

1. Introduction

Nigeria with a population of over 150 million people, endowed with human and natural resources, has agriculture as its mainstay and was the largest exporter of cocoa, coffee, and rubber to mention but a few. Paradoxically, the oil boom of 1970s was a period when the revenue realized from oil should have improved the lives of many Nigerians, but alas reverse was the case. The huge revenue from oil resulted in the neglect of the agricultural sector such that Nigeria’s economy was reduced to a mono-cultural economy. Our pattern of production also become faulty to the extent that the ripple effect of the economic* problem resulting from oil as a main source of export led to the collapse of the textile and some industries; most especially the manufacturing industry. Consequently, Nigerian economy productive capacity runs below expectation. From the foregoing, two major economic problems emerge and these are inadequate savings and a deteriorating terms of trade. At the time when other countries in the world were expanding, Nigerian economy remained anaemic, with the growth rate of the economy remaining sluggish and stunted, thus raising the number of poor people astronomically. The misappropriation of the oil proceeds pushed many into the dark and eventually led to the Dutch Disease; evidenced by poor economic performance and increased poverty rate. Since the return to democratic rule in 1999, the economy has been trying to pick up from the doldrums which was caused by the military mismanagement. In year 2000 and 2001 alone, GDP rose by 3.83% and 4.21% respectively; a record above the average growth rate of 2.6% recorded

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from 1992 to 1998. Despite this increase, Nigeria still records a considerably high proportion of poor people in the world, having over 60% of the population living below the poverty line.

The bane of Nigeria's underdevelopment has been attributed to the lack of infrastructural facilities, wrong policy frameworks, hostile environment, backwardness in technology, problem of unemployment and over-dependence on imported products amongst other factors. The National Economic Empowerment Development Strategy (NEEDS) document a blueprint for improving the economy. For instance, The NEEDS program targeted minimum annual GDP growth rates of 5% in 2004 but achieved 4.2%, while 6% growth rate was targeted in 2005 and 2006 but realized 4.5% and 6.1% growth rates respectively. Also, 7% growth rate was targeted in 2007 but realized 7.4% which is above the targeted growth, in year 2008, GDP growth rate of 11% was targeted. On the whole, the average growth rate of the economy between 2003 and 2006 hover around 6%. These statistics actually show an improvement in the economic output, but to what extent does this statistics affect the living standard of the people considering the different and relative economic variables used as a tool for driving growth in Nigeria. Though much attention had focused on domestic savings and export earnings (especially oil export), the duo have not justified Nigeria's economic growth pattern as there exists some inherent developmental rigidities which encumber their usefulness. Foreign aid should be channeled to those countries that have a balance of payments constraint while foreign direct investment should be directed to augment the domestic savings. Foreign aid and foreign direct investment will therefore be reviewed to palliate the short comings of export earnings and domestic savings respectively.

Two-Gap Models of development are contained in the Post-Keynesian growth models for closed economies as designed by Harrod (1939) and Domar (1946). They tried to identify the pre-conditions for the economic growth of market economies. These two pre-conditions are essentially rooted in the Nigerian economy and these are (1) Internally: inadequate savings would definitely translate to investment. The GAP between these two is called saving constraints (SAVING GAP). Closing this gap requires foreign direct investment (FDI). (2) Externally: inadequate foreign exchange arising from inability to export vis-à-vis high importation will lead to short fall in foreign exchange. The GAP between this duo is called foreign exchange constraints (TRADE GAP) which can be corrected by foreign aid.

Nigerian leaders resorted to foreign aid assistance from developed countries, multilateral and bilateral international organizations to salvage the economy from total collapse. Therefore, to emphasize the need for economic growth and development, there is need to diversify the economy from oil exploration and exploitation to productive effort of agricultural and other real sectors. However, inability to revive these sectors spells doom to the trade and investment platform of Nigeria.

The two-gap model of growth has been adopted as a tool to bring the economy to bear on the path of growth and if possible, salvage the economy. This paper aims at establishing whether or not the theoretical prescription that the two-gap model of economic growth purports holds in Nigeria. The rest of the paper is structured as follows. Section 2 explicates the theoretical background of the two-gap model, while Section 3 discusses the

methodology. Empirical results are presented in Section 4, while the conclusion and policy recommendations are contained in the last section.

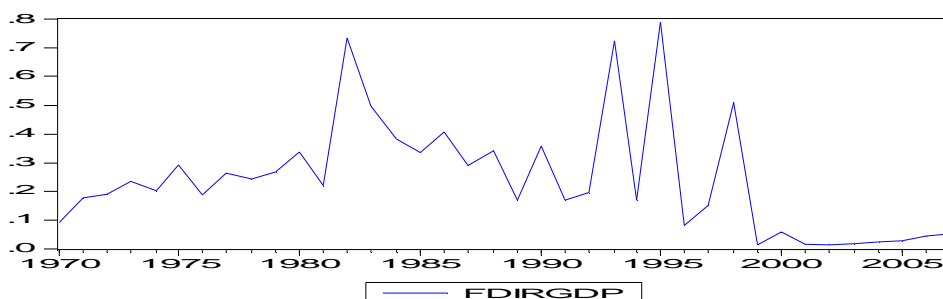
2. Theoretical Underpinnings and Literature Review

2.1. Review of Foreign Direct Investment and Economic Growth

It has been observed that domestic savings, if properly mobilized, can encourage an improvement in the economic activities through investment. One of the major economic problems of any developing and underdeveloped countries is inadequate savings. Inadequate domestic savings or inappropriate mobilization of savings for investment purposes is what is termed in the literature as savings constraint (SAVING GAP). This gap can be corrected by encouraging the foreign direct investment (FDI) otherwise known as foreign capital inflow. The major focus of this section is to indicate the effect of FDI on economic growth in Nigeria. Attracting foreign direct investment would tend to improve economic conditions while its volatility can trigger macro economic instability in the country, especially Nigeria. From the literature, FDI is an investment made to acquire a lasting management interest (normally 10% of voting stock) in a business enterprise operating in a country other than that of the investor as defined by the residency (World Bank,1996). One of the purposes for which the New Partnership for Africa's development (NEPAD) was established is to encourage the inflow of FDI inform of new technology, refined marketing strategy and management. Asiedu (2001) submits that the determinants of FDI in one region may not be the same for other regions. In that case, the major source of FDI in countries within a region may be different from one another with time variance.

Hanson (2001) argues that the evidence that FDI generates positive spillovers for host countries is weak. In a review of micro data on spillovers from foreign-owned to domestically owned firms, Gorg and Greenwood (2002) conclude that the effects are mostly negative. Basu and Srinivasan (2002) analyzed FDI in African countries and argued that the main determinants of FDI flows in Africa can be divided into four categories – natural resource, specific locational advantage, policies towards FDI and economic reforms. Meanwhile, the ratio of FDI to GDP is captured in figure 1.

Figure 1: FDI as a percentage of GDP in Nigeria



It is instructive to note that successive Nigerian governments reckoned with FDI as a vehicle for political and economic domination. Figure 1 clearly depicts spiral movement of the ratio of FDI inflow to real GDP in Nigeria. In 1983, 1993, 1995 and 1999 (four years), Nigeria witnessed higher ratio of FDI to real GDP. This relationship occupies the

central impact of FDI to the Nigerian economy; one could adjudge this spiral movement, especially from 1970 to 1999, to instability of FDI resulting from unstable political structures of the economy. However, from 1999 to 2007, the ratio is consistent and almost stable; this could have been attributed to the impact of return to democracy in which the governments (both federal and state) wooed the foreign investors of the need to invest in Nigeria economy. This effort no doubt, impacts positively on the economy making the growth in both FDI and real GDP move by almost the same proportion. Success was recorded by embarking on various micro and macroeconomic policies, projects and programmes that facilitated FDI attraction initiatives. No foreign investors would dare to risk his life by investing in a country whose economy is shaky, stunted, and unstable (e.g military rule). But, the success of FDI is determined majorly by the political and economic factors prevailing in that country.

The collapse of the world oil prices of the 1980s due to the glut in the international market accounted for investment withdrawals and thus a low level of FDI inflow. Company Taxes Act 1961, Exchange Control Act and Immigration Act could also have contributed largely in the discouragement of FDI inflows. Basically, the adoption of the Structural Adjustment Programme in 1986 sparked off the journey towards the termination of FDI-hostile policies; given that the elements in the implementation of the Programme were creative steps geared towards encouraging FDI inflow. However, the inflow seemed unsustainable as the period 1990–1993 witnessed a characteristic drop in the rate of inflow which may be attributed to a political stalemate that disrupted productive activities, procured uncertainty and promoted capital flight. The repeal of the NEPAD and its replacement with the Nigerian Investment Promotion Commission (NIPC) restored life to the investment climate as the NIPC provided an opportunity for foreign investors to set up businesses in Nigeria with 100% ownership. This in conjunction with other investment-friendly policies served to promote FDI inflow especially and increasingly to the non-oil sector of the economy. Political factors such as the democratic transition of 1999 introduced some measures aimed at improving the efficiency and productivity of the economy. Notable among this was the privatization and commercialization of public enterprises which contributed greatly to the sustained inflow of FDI over from 1999 to date. A classic example is the deregulation of the telecommunications sector of the economy by granting operating licenses to Global System for Mobile communications operators which has increased FDI inflow in the telecommunication sector of the economy (Ayanwale 2007).

The theoretical work of Findlay (1978) and Wang and Bloomstrom (1992) examined the importance of FDI as a conduit pipe for transferring technology. They warned that in the absence of linkages, foreign investments could have limited effect in spurring growth in an economy. Hirschman (1958:109) emphasized that not all sectors have the same potential to absorb foreign technology or to create linkages with the rest of the economy. He noted, for example, “Linkages are weak in agriculture and mining sectors.

Markusen and Venables (1999) analyzed the effect of foreign firms on the development of domestic firms in the industrial sector. In their model, foreign companies compete with domestic producers while creating additional demand for domestically produced intermediate goods through linkages with local suppliers. De Gregorio (1992) by examining the experiences of 12 Latin American countries over the period 1950-85,

found that FDI provides three times the boost to economic growth as compared with aggregate investment. Blomstrom *et al* (1992) arrived at a similar conclusion using a larger sample of developing countries. They also found that FDI has a strong impact on the economic growth of developing countries. However, they also find that this effect is limited to higher-income developing countries. On the contrary, Carkovic and Levine (2002) used macro level data to find little support for the importance of FDI in stimulating growth. They argue that previous studies showing the benefit of FDI on economic growth has not fully taken into account the endogeneity problem. It has been observed that FDI which repose the inadequate domestic savings might be exogenous, showing that FDI might be absolutely exogenous implying that deficient domestic savings might not be FDI determining factor.

The relationship between FDI and economic growth has become increasingly endogenous. Both Zhang (2002) and Zhang (1999) find evidence of a two-way Granger causality in the relationship between FDI and China's economic growth. Similarly, Choe (2003) in a large sample of 80 countries finds evidence of two-way causality between FDI and economic growth. In addition, he also finds that the effects are more apparent from economic growth to FDI. Human capital can also play an important role in turning the FDI resources to economic growth, Borensztein *et al* (1998) shows that the country needs a certain level of human capital in order for the country to benefit fully from FDI. They performed cross-country regressions on a sample of 69 developing countries and found that FDI contributes more to growth than domestic investment. Balasubramanayam *et al.* (1996) found that FDI flows were associated with faster growth than in those developing countries that pursued inward oriented trade policies. Asiedu (2001) found a positive relationship between the return on capital and FDI, suggesting that higher GDP per capita implies a brighter prospect for FDI in the host economy. Aluko (1961), Brown (1962) and Obinna (1983) report positive linkages between FDI and economic growth in Nigeria. Endozien (1968) discusses the linkage effects of FDI on the Nigerian economy and submits that these have not been considerable and that the broad linkage effects were lower than the Chenery–Watanabe average (Chenery and Watanabe, 1958). Oseghale and Amonkhienan (1987) found that FDI is positively associated with GDP, concluding that greater inflow of FDI will spell a better economic performance for the country. Investment (both foreign and domestic) as a percentage of GDP and trade openness is expected to rise as countries pass through higher stages of development and experience faster growth rates.

2.1.1 Determinants of Foreign Direct Investment

The role of foreign direct investment in growth acceleration and economic transformation has increased interest and drive towards the attraction of foreign exchange. FDI is an intervention that seeks to bridge the gap between domestic savings and investment; while encouraging diffusion of latest technology and management approaches from developed region, it thus plays a vital role in promoting rapid economic growth in developing countries.

Determinants of FDI have been identified as size of the market, openness (Lim 2001). The study further identified infrastructure ability, political/economic stability and free trade zones as important avenues for FDI but had mixed results for fiscal incentives, the

business or investment climate, labour cost and openness. Edozien (1968) in an appraisal of the relationship between FDI and economic growth recognizes that it generates an inflow of capital technical knowhow and managerial capacity. In addition, Loius (1998) employing error correction specification identified both economic and political factors as the major determinants of FDI in Nigeria.

Using panel data for 22 countries over 1984-2000, Asiedu (2005) found that the presence of natural resource and large markets promote foreign direct investment. The study found that lower inflation, good infrastructure, educated population, openness to FDI, less corruption, political stability and a reliable legal system promote FDI. Differentiating the types of FDI into resource seeking, market seeking and efficiency seeking FDI, Nunnenkamp and Spatz (2003) analysed the effect of an interplay of industry and host country characteristics has on the growth of FDI in developing countries. The strategic role of FDI in augmenting domestic investment intensified effort of democratic governments at attracting FDI.

From the foregoing it is established that foreign direct investment produces economic benefits to the recipient countries by providing capital, foreign exchange, technology, competition and enhanced access to foreign markets. It also serves to promote domestic investment and innovation. Thus, we may identify the determinants of Foreign Direct Investment in Nigeria as follows,

$$FDI = f (FDI_{t-1} , HUMAN CAPITAL, NR, IFA, OP, REXR ,GDP, POL)$$

Where: NR = Presence of Natural Resources; IFA = Infrastructural Ability; OP = Openness; REXR = Real Exchange Rate; POL = Political Factors

2.2 Review of Foreign Aid and Economic Growth

While FDI is a long-term capital transfer to finance investment, foreign aid is an official development assistance (ODA) which is monitored and administered by the Development Assistance Committee (DAC) consisting of grants or loans that one government or multilateral organization gives to a developing country to promote economic development and welfare. By concessionary terms, considering loans; it means 25% of ODA must be in the form of grants which includes exports credits and debt forgiveness etc. The aid resources of bilateral donors tend to follow the donor's political and strategic priorities and not those countries that have the greatest need from a development perspective. In his works, Bauer (1991) argued that aid has serious, distorting consequences on the political life of recipient countries. Bauer, one of the critics of foreign aid, claimed that foreign aid has sustained governments in their pursuit of economically counterproductive political and economic policies; such policies include the persecution of particular groups, restriction on private trade and the inflow of private capital and enterprises, price policies that discourage agricultural production.

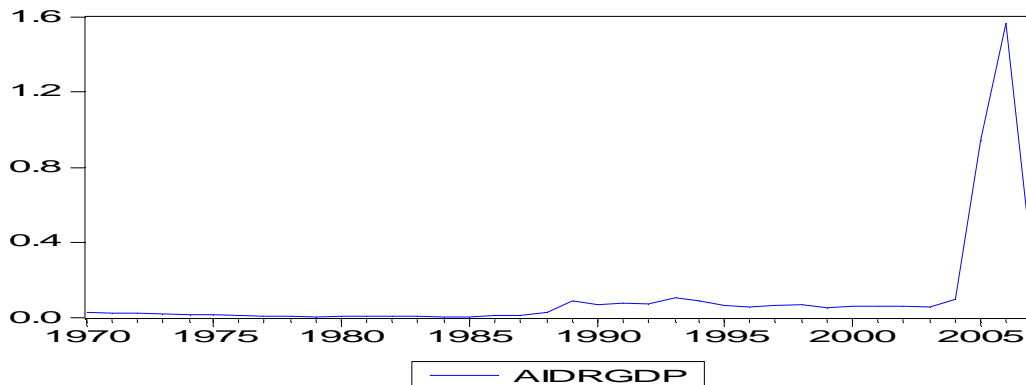
Papers by Svensson (2000a, 2000b) and Collier and Dollar (2004), among others do not only explicitly address the economic growth problems but also explored the channels

through which foreign aid may deteriorate economic policy. The conjectures are such that foreign aid may partially substitute for sound economic policies, or that large aid payments induce wasteful rent-seeking activities. The ‘Fischer-Easterly model’ (Fischer, 1991, 1993; Easterly, 1993) provides a natural context within which the aid-growth relationship can be emphasized. Since 1980s, much aid from the multilateral lending agencies has been linked explicitly to macroeconomic policy reforms and structural adjustment programs (see Krueger 1997, Greenaway 1998, McGillivray and Morrissey 1998).

The aid-growth literature has been dominated by cross-sectional studies using single-equation estimation techniques, producing mixed empirical results. Among early investigations for example, Papanek (1973) appeared to overturn the negative results of Griffin (1970) and Griffin and Enos (1970) by disaggregating capital flows into foreign aid, private capital and other inflows, reporting a positive and significant aid coefficient on economic growth. On the other hand, Voivodas (1973) obtained a negative impact of aid on growth (although not significant) for a sample of 22 LDCs for the period 1956-1968. The ambiguity of these results may have, however, risen at least in part from the poor quality of the data for these early periods. For Sub-Saharan Africa, Levy (1988) reports a significant positive relationship in a regression model including aid (as a ratio of GDP) and income per capita, for 1968-82. Also, Hadjimichael *et al.* (1995) found positive evidence for the period 1986 to 1992 using a sample of 41 countries. Their model is more sophisticated than most predecessors by attempting to capture potential side effects of foreign aid (such as ‘Dutch-Disease’ effects) and other policy variables that are hypothesised to affect growth. Similarly, Burnside and Dollar (1997), using a model including a variety of policy variables, finds that though the ratio of aid to GDP often does not significantly affect growth in LDCs, aid interacted with policy variables does. Boone (1996) however has cast doubt on the growth effects of aid, arguing that, for a sample of LDCs, aid has had no impact on either investment or income growth.

In another development, Knack (2000) shows that aid flows (relative to GDP and to government spending) are significantly correlated with a worsening of political risks for external investors, implying a deterioration in economic institutions. Djankov, Montalvo, and Reynal-Querol (2005) study changes in the quality of political rather than economic institutions. Their results revealed that on the average, countries with above average aid receipts relative to GDP promptly show a political deterioration. The effect of aid over the long run is substantial. While Rajan and Subramanian (2005) find that aid appears to slow the growth of labor intensive industries in developing countries, consistent with a “Dutch disease” effect caused by an appreciating exchange rate. World Bank (2000) on the other hand, finds that Africa’s exchange rates seem to be overvalued—an effect that may be due to a combination of aid flows and natural resource earnings. Mosley (1980), using a simultaneous equation model, found a weak, negative correlation between aid and growth, though he did find a positive, significant relationship for the ‘poorest’ countries in his sample. In this paper, we have concluded that political instabilities, some fundamental rigidities, misappropriation of public funds, amongst others, hinder growth of third world countries of which Nigeria forms a part: which is why foreign aid inflows has not been a determinant of growth. This has been widely supported by many writers. The figure below shows the ratio of AID to GDP from 1970 to 2007.

Figure 2: Aid as a ratio of GDP in Nigeria



A working knowledge of the saying that, 'poverty anywhere being a threat to prosperity everywhere', has been the propelling force behind the commitment of developed countries and international organisations in providing development assistance to developing countries. However, a typical observation of the Official Development Assistance directed to Nigeria has been low over the years 1970-1987; a considerable rise occur consequent to adoption of the Structural Adjustment Programme (SAP) in 1986: this confirmed the relative importance of economic reform in the determination of aid. A sharp increase was recorded in the 2005 and 2006; a period when Nigeria was relieved of \$18 billion debt out of a total debt of \$30 billion. This debt was converted to foreign aid of which \$9 billion each was estimated for year 2005 and 2006 and in year 2005 alone, the foreign aid worth about 150% of the real GDP.

International organisations and developed countries probably grew more confident in the ability of democratic government to manage aid funds to improve the economy and living standards of her people as against the mismanagement vanguard by the military warlords. Nigeria has received more than enough foreign development assistance, yet the economy remained stunted and sticky. Different reforms have been put in place but none have solved the problems of growth of the economy, the growth statistics have not affected the common man on the street.

Knack (2000) argues that high level of aid erodes institutional quality, increases rent-seeking and corruption, thereby negatively affecting growth. Papanek (1973), in a cross-country regression analysis of 34 countries in the 1950s and 51 countries in the 1960s, treating foreign aid, foreign investment, other flows and domestic savings as explanatory variables, finds that foreign aid has a substantially greater effect on growth than the other variables. He explains, "Aid, unlike domestic savings, can fill the foreign exchange gap as well as the savings gap". Fayissa and El-Kaissy (1999), in a study of 77 countries over sub-periods 1971-1980, 1981-1990 and 1971-1990, show that foreign aid positively affects economic growth in developing countries. Using modern economic growth theories, they point out that foreign aid, domestic savings, human capital and export are

positively correlated with economic growth in the countries studied. This is consistent with the economic theory of foreign aid, which asserted that overseas development assistance accelerates economic growth by supplementing domestic capital formation (Chenery and Strout, 1966).

Burnside and Dollar (1997), in their well-known paper “Aid, Policies, and Growth”, find that aid has a positive impact on growth in developing countries with good fiscal, monetary and trade policies but has little impact on countries where such policies are poor. To some, economic growth is elusive because different factors are responsible for growth in different economies of the world.

2.2.1 Determinants of Foreign Aid

Given the high level of unemployment, poverty and poor economic performance of developing countries in general, foreign aid should represent an important source of foreign exchange for most countries of sub-Saharan Africa because it serves as a supplement of their low savings, export earnings and thin tax revenues. The concern for Africa can be seen in the commitment of the Economic Commission on Africa to raise over \$50 billion annually to fuel Africa’s growth. Also, the shriveling state of the African economy with a hope for rejuvenation by aid influences the UN to increasingly advocate for rich countries to raise the ratio of foreign aid to 0.7% of GDP by 2015.

Studies have shown that aid, other than fuel development, has made budget of most of the African countries being aid dependent. Thus, the paradox is observed that the more aid is being redirected to Africa, the more its living standards plummet. This is because aid tends to underwrite misguided policies and is an incentive for the corrupt and bloated institutions which characterize most African countries. Poor countries that are substantial aid recipients have been known with records of negative growth trends. Corruption tends to increase with foreign aid and is negatively related to trade. However, the systematic failure and inefficiency of aid (due largely to weak and unproductive institutions) is not only related to Africa but also to countries of Latin America.

Total foreign inflows to a country could be in form of foreign aid, foreign borrowing and foreign investment. However, aid, as distinct from other forms does not cause an outflow of funds to pay back debt or repatriation of profits. Thus, the potential positive effect of foreign aid should however, be more plausible than the general effect of all foreign inflows. Though we need to know how beneficial or harmful aid is, much more we need to establish why different countries receive or attract aid in different amounts. Ali and Isse (2006) employed a panel approach to establish determinants of aid. The study specified and estimated a model explaining foreign aid allocation among 151 countries over the period 1975-1998. Trade, private credit, foreign direct investment, GDP per worker and government consumption were established as important determinants of foreign aid. From the analysis, factors appearing to decrease aid were years of schooling, private credit, trade and GDP per worker. While the factors appearing to increase foreign aid include taxes on international trade, ethnicity, government consumption. Following is a description of determinants of foreign aid (Economic Development Assistance)

EDA = f (GDPW, TRADE, ETHNO, TOT, CREDIT, EDU, LAND AREA, GOV)

Taxes on trade, (TOT), capture the paradox that characterises the provision of foreign aid on one hand and protective trade policy on the other hand. There is interdependence between foreign aid and a country's tax policies. A rise in trade protection is usually associated with a rise in foreign aid provision. Nugent (1999). The countries that depend greatly on private capital (CREDIT) attract less aid; it fosters institutions and productive ventures and is likely to drive out overly managed government-to-government aid. Krueger (1993)

Government spending (GOV) is the ratio of government consumption expenditure to GDP controlling for size and scope of government. Since aid goes to government and increased government spending amplifies aid, it tends to deter economic performance. The comparison between trade and aid sheds light on how competition and efficiency of each affect resource allocation. Another determinant of aid is GDP per worker (GDPW). Nugent and Krueger established that ethnic diversity (ETHNO) attracts aid for two crucial reasons; the more interest groups are seeking funding for their pet projects, governments may use foreign aid to obtain interest group supports, political undertones.

2.2.2 The International Organizations and Foreign Aid in Africa

From the birth of international organizations, sub-Saharan Africa has been a region of particular interest in the realm of development. The region has been plagued by high economic volatility, extreme poverty, political instability and social unrest. According to the United Nations Industrial Development Organization (UNIDO), sub-Saharan Africa is the only world region where extreme poverty has grown for the past 20 years and is currently at a rate of nearly 50 percent (WB Intranet). While the greatest amount of aid per capita has gone to this region, it has seen the weakest reform (Devarajan et al. 2001). The International Monetary Fund and the World Bank have contributed the largest amount of aid to the region. These two lenders offer lower interest rates than private donors with the intent of aiding nations in financial crisis. Structural adjustment measures, however, are imposed to create greater assurance of debt repayment and stabilization of the development process. The lack of development despite increased foreign capital assistance as well as a heavy debt crisis between 1970 and 1985 resulted in strategic conditionality requirements for borrowing countries as stipulated by international lenders. From 1989-1999, the number of loans with attached structural adjustment requirements increased from 60 percent to 100 percent and the average number of conditions increased from three to 12 (Santiso 2001:11). This notion of conditionality is important for both borrowing countries and international lending organizations because donors develop a vested interest in successful reform and stabilization of finances. Conditionality and surveillance make them active participants in internal policy reform. The expansion of conditionality during the 1990s is notable especially for the IMF in that where it had previously focused on macroeconomic reform; it began to target microeconomic policies (Eldar 2005:511). The most prevalent reform measures include trade reform, price liberalisation and privatisation, promotion of central bank independence, strengthening of financial sector regulations, devaluation of currency, and decentralisation of agencies and national enterprises (IMF 2005).

In addition, many of the changes in the 1990s are a reflection of increased attention to internal social and political factors in borrowing nations, including a good governance emphasis. The World Bank, for example, has significantly expanded its commitment to government related programs. Between 1996 and 2005, more than 600 programs and

initiatives have been created with focus on public sector reform (Santiso 2001:3). The area of sub-Saharan Africa also falls under the category of low-income which makes its countries eligible for the Poverty Reduction and Growth Facility (PRGF) loans. This program is designed for low-income countries because it offers low-interest loans supported by programs with poverty reduction strategies (IMF 10.2007). The World Bank also offers interest-free lending for the poorest countries through its International Development Agency (IDA) (WB Group 2008). Despite these programs, however, sub-Saharan Africa has seen little progress, thereby underscoring the need for a new approach to developmental assistance.

2.3 Review of the Two-Gap Model and the Theoretical Framework

When external finance either grants or loans supplement domestic resources, then we have “the Two-Gap model” the major assumption of this model is that most developing countries either face a shortage of domestic savings to augment for investment opportunities or they (developing countries) are faced with foreign exchange constraints to finance the needed capital and intermediate goods. In their book, *Economic Development* Todaro and Smith (2004) claimed that most Two-Gap models assume that the savings gap and the foreign-exchange gap are unequal in magnitude and independent in nature. The implication of this is that one of the Two-Gaps would be “binding” or “dominant” for any less developed country at any point in time.

McKinnon (1964), Chenery and Strout (1966), Findlay (1973), and others applied the *Harrod-Domar* growth model to show that foreign capital can raise the growth rate by raising the availability of capital for production, where the capital-output ratio is held constant. The *two-gap approach* introduces the assumption that an imported commodity not produced domestically is essential for the production of investment goods. On one hand, if the availability of foreign exchange (if trade gap exist) to purchase these imported capital goods constrains or expands (when the economy has human resources and technology of its own) the growth of the economy, the growth would be *exogenous* of foreign exchange, since it does not depends on foreign investment goods and technology. On the other hand, foreign capital can be introduced in the form of official flows, or FDI (provided saving gap exist). If the availability of foreign capital to compensate for the lack of domestic savings constrains or expands the growth of the economy, we may call the growth endogenous of FDI, since the economy does not have technology and human resources of its own.

The Two-Gap Model

Essentially, the two gap model is based on the gap between a country's own provision of resources and its absorptive capacity. These two gaps are known as the Savings Gap and the Foreign Exchange Gap. Whichever of the two gaps is binding (or is the greatest) will constrain the amount of investment and capital formation, which can be undertaken.

- (1) **The Savings Gap** Where savings fall short of what can be effectively and productively invested.
- (2) **The Foreign Exchange Gap**
Where earnings of foreign exchange fall short of the amounts needed to purchase the necessary foreign materials, components, etc.

Derivation of the Two-Gap Model

We start with the basic Macroeconomic Identity where Aggregate Output = Aggregate Expenditure. Thus, assuming that there is no government sector

$$Y = C + I + (X - M) \quad \text{where: } Y = \text{GNP}$$

Where $Y = \text{GNP}$; $C = \text{Consumption}$; $I = \text{Investment (or Domestic Capital formation)}$

$X = \text{Exports}$; $M = \text{Imports}$

Now,

$$\begin{array}{l} \text{(Sources of Resources used in the economy} \\ \text{Y + M} \end{array} = \begin{array}{l} \text{Uses of Resources in the Economy:} \\ \text{expenditure Targets} \\ \text{C + I + X} \end{array}$$

Subtracting C from both sides we get:

$$Y - C + M = I + X$$

Since $Y - C = S$ Where: $S = \text{Savings (domestic)}$

Then,

$$\begin{array}{l} S + M \\ \text{(Withdrawals)} \end{array} = \begin{array}{l} I + X \\ \text{(Injections)} \end{array}$$

This relationship can be restated as follows

$$\begin{array}{l} M - X \\ \text{(Foreign Exchange Gap)} \end{array} = \begin{array}{l} I - S \\ \text{(Savings Gap)} \end{array}$$

These two constitute two separate constraints. Eliminating one does not get rid of the other.

Note: The analysis rests on the premise that domestic investment can be financed by domestic saving as well as through inflows of capital.

If we let $(M - X) = F$, then we can represent the above as follows

$$F = I - S \text{ or as in the text } I = F + S$$

Possible Scenarios

Using the relationship posited above, the following scenarios may arise:

S may be too small to permit the amount of I that the country would otherwise have the capability to undertake. Therefore, a **SAVINGS GAP** would exist.

X may be too small to permit the M required to make full use of the resources of the economy. Therefore a **FOREIGN EXCHANGE (or TRADE) GAP** would exist.

Additional Discussion

While the two gaps are distinct and separate ones, international transfers can, in fact, be used to fill both. For example, a machine given to a country represents both an import for which no resources need to be exported (thus alleviating the foreign exchange gap) and an investment good which does not have to be offset by domestic saving (thus alleviating the savings gap). We should also note that the notion of two gaps is not consistent with neo-classical economic theory. Neo-classical economics assumes that resources can be easily shifted between different employments. Thus, whenever idle resources (excess capacity) exist, these idle resources can be used to produce exports, and exports can be increased by simply altering the exchange rate - i.e., by devaluing. Conversely, idle resources can be used to produce capital goods, intermediate inputs and the like, so that foreign exchange constraints can be eliminated. Concerning the latter, excess labour can, for example, be put to work to create labour intensive capital goods.

Proponents of the two-gap model contend that imperfections and rigidities exist which preclude the economy from working according to the neo-classical edicts. For example, many governments may not think it desirable to do what neo-classical economics suggests they ought to do. As well, actions which may be theoretically proper may simply not be effective since they are implemented in an environment totally different from that perceived by neo-classical economics.

Assessment of the Two Gaps

In some of the work done on the two-gap model, it is suggested not only that they exist but that, most often; the trade gap exceeds the savings gap. This suggests that the trade gap is more powerful - i.e. is the binding constraint. An early UNCTAD study suggests that the two gaps are about equal.

3. Methodology and Data

In the *Harrod-Domar* model, where production technology and the capital-labor ratio are fixed, capital accumulation is essential for growth. In the neoclassical *Solow-Swan* model, on the other hand, the capital-labor ratio changes to accommodate technology innovation, which is the source of growth. Barro (1990) and others, who advocate the *endogenous growth theory*, assert that the government policies, such as open trade and education, could stipulate the country's long-term growth rate.

In the course of this paper, we shall refer to the impact of time series data on the model used, in response to the influence of time series data, we shall conduct unit root tests using augmented Dickey-Fuller (ADF) and Philip Perron (PP) and the empirical examination of vector autoregressive analysis would be made to explain the Two-Gap model.

3.1 Time Series Data Analysis

Empirical analysis using time-series data requires that each variable x_t is *stationary*, meaning that: 1) its mean $E(x_t)$ and variance $V(x_t)$ are constant over time t , and 2) the value of covariance $Cov(x_t, x_{t-k})$ between two time periods t and $t-k$ depends only on the

lag k and not on the actual time t at which the covariance is computed. The problem of *spurious regression* is likely to arise, when two time-series exhibit both strong upward or downward trends. In this case the high R^2 could be due to the presence of the trend, not due to any meaningful relationship between the two. It is known that if a time-series model includes one non-stationary variable, then the regression could be spurious, even though it exhibits a high R^2 and significant t -values, Yamachita and Khachi (2003). In the course of this paper, time series secondary data obtained from the Central Bank of Nigeria (CBN) statistical bulletin, International Financial Statistics, African Development Bank volume on selected statistics, National Bureau of Statistics and other conference papers.

3.2 Unit Root Test

Let us denote the stochastic error term by u_t , which has zero mean, constant variance, and is not autocorrelated. Such an error term is called *white noise*. If $\Delta x_t = x_t - x_{t-1}$ is stationary, where Δ is the first-difference operator, the original series x_t is called *integrated* of order 1, and denoted by $I(1)$. In general, if a time series has to be differenced r times before it becomes stationary, it is integrated of order r , or $I(r)$.

Consider the autoregressive model $x_t = r x_{t-1} + u_t$, where u_t is white noise. If $r = 1$, then x_t is a non-stationary time-series known as a *random walk*, and we say that x_t has a *unit root*. The model can be modified as $\Delta x_t = (r - 1) x_{t-1} + u_t = a x_{t-1} + u_t$, where $a = r - 1$. The unit root is tested for x_t under the null hypothesis that $a = 0$.

More generally, the unit root is tested for x_t under the null hypothesis that $a = 0$ in the time series model $\Delta x_t = a x_{t-1} + b t + g + u_t$, where t is a time trend, and g is a *drift* parameter (intercept). If the error term u_t is autocorrelated, then the model is modified to include more lags:

$$\Delta X_t = \alpha X_{t-1} + \delta_i \sum_{t-i}^m \Delta X_{t-1} + \beta t + \gamma + u_t \dots \dots \dots (3.1)$$

The number of lagged difference terms to include m is determined empirically by Akaike information criterion (AIC), or Schwarz criterion (SC). The unit root test for x_t under the null hypothesis $a = 0$ applied to the model (1) is called Augmented Dickey-Fuller (ADF) test. However, we shall consider ADF unit root and Phillips-Perron (PP) test appropriate for this research work.

The finding that many macro time series may contain a unit root has spurred the development of the theory of non-stationary time series analysis. Engle and Granger (1987) pointed out that a linear combination of two or more non-stationary series may be stationary.

3.3 Vector Autoregressive Analysis (VAR) Model

Consider a VAR of order P:

$$y_t = A_1 y_{t-1} + \dots + A_p y_{t-p} + B x_t + e_t \dots \dots \dots 3.2$$

Where: y_t is a k -vector of non-stationary $I(1)$ variables, x_t is a d vector of deterministic variables, and e_t is a vector of innovations. We can rewrite the VAR as:

$$Dy_t = Hy_{t-1} + \sum_{i=1}^{p-1} T_i Dy_{t-i} + Bx_t + e_t \dots \dots \dots 3.3$$

Since VAR models do not distinguish the dependent variables from the independent variables, the notation of \mathbf{Y}_t and \mathbf{X}_t is conventional. Under the assumption that e_t is neither autocorrelated nor correlated with any of the right-hand side variables, we can appropriately estimate the coefficients by OLS. The number of lags m is again determined by Akaike information criterion (AIC), or Schwarz criterion (SC).

a) Impulse Response Analyses

An *impulse response function* is created by converting the VAR model (1) to the vector moving average model of infinite order VMA (∞). It traces the effects of one standard deviation shock to one of the impulses u_t on current and future values of the endogenous variables \mathbf{Y}_t in the converted form. The impulses are usually correlated, so that they have a common component which cannot be associated with a specific variable.

A common method of dealing with this issue is to attribute all of the effects of any common component to one variable that comes first in the VMA(∞) model. More technically, the error terms are orthogonalized by *Cholesky decomposition*, so that the covariance matrix of the resulting impulses is diagonal. While this method is widely used, it is rather arbitrary, and changing the *Cholesky ordering* of the variables could dramatically change the impulse responses.

b) Variance Decompositions

Variance decomposition provides a different method of depicting the system dynamics. It decomposes variation in a targeted endogenous variable \mathbf{Y}_t into the component shocks to all endogenous variables in the VMA(∞) model, and provides information about the relative importance of each random impulse u_t to the targeted variable.

4. Estimation

4.1 Data Description and Unit Root Test

Data are prescribed from established theoretical framework of two-gap model. Annual time series data (from 1970-2007) that include real GDP, domestic investment, foreign direct investment (FDI), export, import and aid are all considered germane to this research work. The log form of these variables are represented as LRGDP, LDINV, LFDI, LEXP, LIMP and LAID respectively and on these log form will unit root test be conducted.

The result of both augmented Dickey-Fuller (ADF) and Philip Perron (PP) unit root test are shown in Appendix 1. We reject the null hypothesis of unit root at first difference for all variables except PP unit root test of LFDI. By implication, all variables except LFDI—PP are stationary at critical values -4.23, -3.54 and -3.2 at 1% , 5% and 10%

respectively, though LDINV-ADF is stationary at I(2) thus, we classify it a non stationary variable.

4.2 Vector Autoregression Analysis

The crux of this research is the vector autoregression analysis which represents the impulse response and variance decomposition of the variables. In the context of this research work, the shock of the economic growth will be examined through the innovation of the error term and a recursive VAR was found suitable for this purpose. Evidently, the result of the recursive VAR depends on the order of the variables: changing the order changes the VAR equations, coefficients, and residuals, and there are $n!$ recursive VARs, representing all possible orderings. The cholesky orderings is as follows KLRGDP KLFDI KLAID KLDINV KLEX KLIMP making real GDP the most important variable among the variables. Both impulse response and variance decomposition are observed through the stationary status of the variables.

4.2.1 Impulse Response

Appendix 2 gives the result of the impulse response of the VAR method: in this regard, since, we are more interested in the factor(s) that influence real GDP therefore; we shall consider the real GDP shock through the other variables. The response of KLRGDP to one standard deviation innovation or impulse of KLFDI is volatile as the result indicates both positive and negative response. The volatility nature of KLFDI over the ten year period is relaxed in year nine and ten. The response of KLRGDP to one standard deviation innovation of KLAID is flat, negative and zero. Whereas: the response of KLRGDP to one impulse of KLDINV is consistently positive. Unfortunately, the response of KLRGDP to one standard shock of KLEX and KLIMP revealed negative impact for many years. However, the response of KLAID to one impulse of KLRGDP is positive for many periods.

4.2.2 Variance Decomposition

Variance decomposition results of the VAR approach is explicitly displayed in Appendix 3. At this point, we shall determine vividly factors that influenced real GDP in Nigeria for ten period horizon. 50% of the variation in real GDP is determined by its lagged values starting from horizon one to six. And down the horizon, KLFDI, KLDINV and KLIMP explain at least 10% of the variation in real GDP while KLAID and KLEX have a very low impact on real GDP. More interestingly, KLAID is determined by KLRGDP; this is because more than 20% of the variation in KLAID is consistently explained by KLRGDP. Moreover, over 28% of the variation in KLEX is consistently explained by KLDINV while over 45% of the factors affecting KLIMP can be traced to KLDINV.

No doubt, these results did not only indicate the dominant factors affecting the growth in real GDP in Nigeria but also revealed the necessity and importance of general equilibrium theory of the economy.

Conclusion. We conduct various tests using the VAR model analysis to identify the factors that promote or restrain economic growth based on the two-gap model. The results of the unit root test confirm that all the variables are absolutely nonstationary except for (LFDI) which is stationary at levels using Phillip Peron test. From the VAR analysis, Foreign aid does not give clear evidence of an imperative growth factor in Nigeria while FDI does but volatile. This confirmed the transfer paradox –a condition under which foreign aid immiserates the recipient country. The implication of this is that once a country attains high economic growth, it could resolve the gap by itself and tread a sustainable growth path. This could be achieved through first, increase in exporting commodities, secondly diversification of the economy from oil-which has remained a Dutch disease to the Nigerian economy. Third, import substitution items should be encouraged among the local producers and lastly, trade liberalization should be the key policy thrust to complement foreign aid if aid is needed at all. Either aid conditionality or non-conditionality, the analysis confirmed that aid can distort the welfare of Nigerian citizens. Moreover, there is no theoretical or empirical justification (by this research) for the assumption that filling a “trade gap” determined by “aid requirements” will boost trade and growth in the Nigerian economy.

From the variance decomposition of VAR, foreign direct investment is determined by its past levels while aid is determined by real GDP. The policy implication of endogeneity of aid on real GDP re-emphasizes the imperative of economic reforms as a condition for aid. Aid tying may alter the allocation of resources from an efficient position to an inefficient position of the recipient countries; In this case, aid will deteriorate and immiserate the living well being of the citizen. The fact is that the donor may advise Nigeria to increase her imports by the amount of aid provided and as such, an appropriate import policy to match this requirement may remains sacrosanct to Africa’s developmental problem. Moreover, if the government marginal propensity to spend associated with tying is higher and more than the private agents, then deterioration of the terms of trade may be powerful enough to induce the transfer paradox.

There are two interesting notable results from the variance decomposition result; first about 60% of the variation in import has been consistently explained by foreign direct investment and domestic investment. Hence, investment resources have been channeled to importation which in turn deteriorates Nigeria terms of trade. Secondly, more than 28% of the variation in exportation is constantly determined by domestic investment. This is robust enough to indicate the economic justification of domestic investment designing a development trajectory through a refine economic policy that will enhance domestic investment. Thus, relying solely on FDI in closing the savings gap can cause more harm than good to Nigerian economy.

The two-gap model of Chenery and Strout (1966) showed that developing countries are constrained with little domestic savings and foreign exchange earnings. The model predicted that foreign aid and foreign direct investment are an optimal means to break the poverty circle and solve the two gaps simultaneously. Except the fundamental rigidities which includes, among other things, inappropriate economic policies, corruption, mismanagement of resources and overreliance on oil resources, the vicious circle of poverty in Nigeria economy cannot be broken by attracting foreign aid and foreign direct investment alone.

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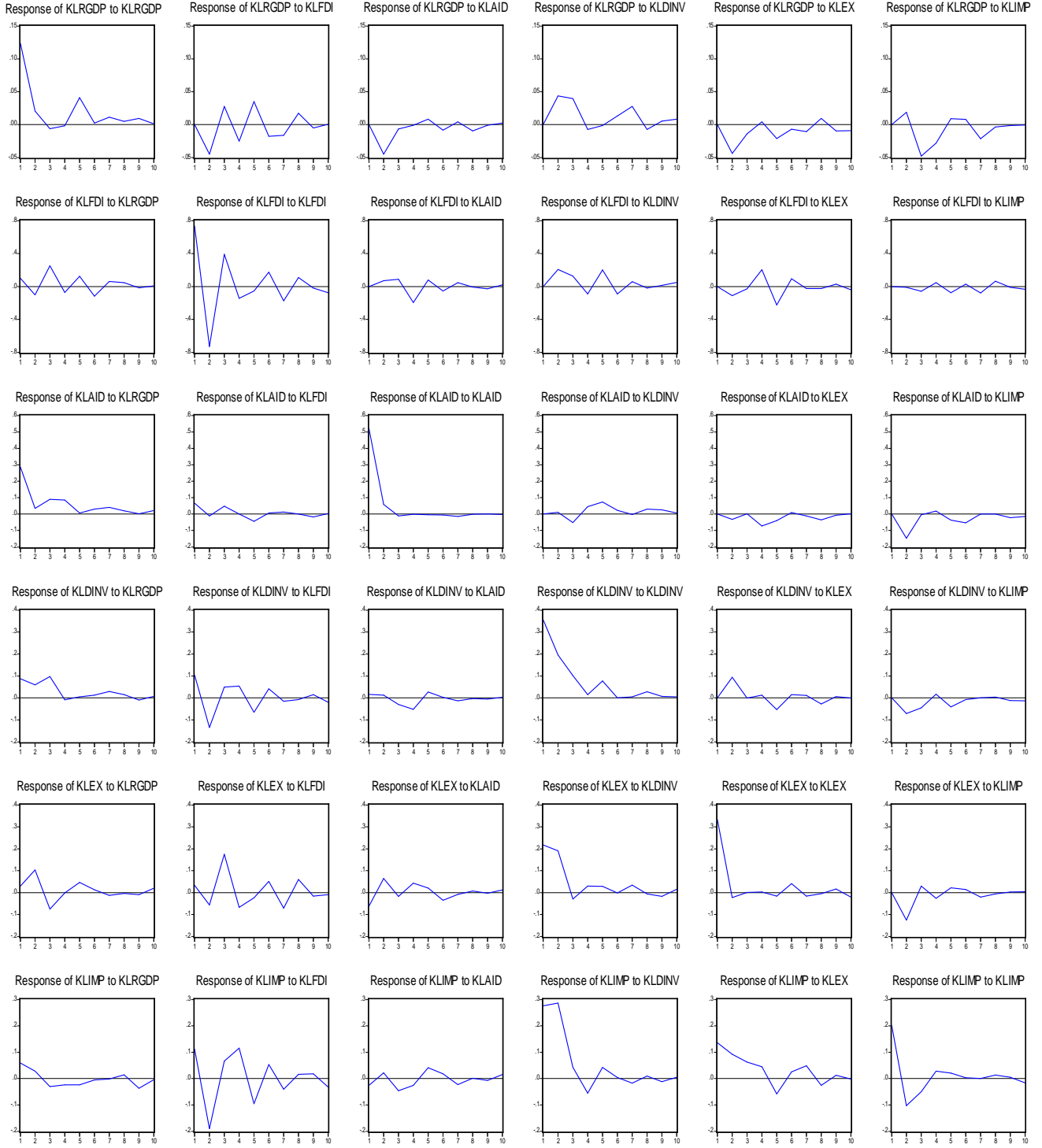
APPENDIX 1: UNIT ROOT TESTS

Variable	Augmented Dickey Fuller (ADF)			Phillip Perron (PP)		
	Level	1 st Difference	Order of Integration	Level	1 st Difference	Order of Integration
LRGDP	-0.5837 *(0.9740)	-4.2573 (0.0097)	I(1)	-0.6151 (0.9721)	-5.787 (0.0002)	I(1)
LEXP	-2.851 (0.1896)	-3.966 (0.0194)	I(1)	-2.9475 (0.1602)	-6.0502 (0.0001)	I (1)
LIMP	-2.62 (0.2751)	-3.874 (0.0240)	I(1)	-2.4776 (0.3367)	-5.0721 (0.0011)	I(1)
LAID	-2.67 (0.255)	-4.83 (0.002)	I(1)	-2.1625 (0.4955)	-4.7354 (0.0028)	I(1)
LFDI	-2.218 (0.4658)	-6.5427 (0.6000)	I(1)	-4.0106 (0.0170)	-13.1793 (0.000)	I(0)
LDINV	-1.9370 (0.6147)	-2.9203 (0.1687)	I(2)	-1.7686 (0.6995)	-4.2547 (0.0095)	I(1)
Critical Values: 1% - 4.23 5% - 3.54 10%- 3.20				() are the P-values		

APPENDIX 2:

IMPULSE RESPONSE

Response to Cholesky One S.D. Innovations



APPENDIX 3:

VARIANCE DECOMPOSITION

of KLRGDP:							
Period	S.E.	KLRGDP	KLFDI	KLAID	KLDINV	KLEX	KLIMP
1	0.123798	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.154767	65.76889	8.437530	8.394068	7.951837	8.013316	1.434354
3	0.169900	54.70480	9.663150	7.122894	12.01037	7.320184	9.178597
4	0.174252	52.01832	11.25674	6.774977	11.58932	7.012901	11.34774
5	0.184054	51.59011	13.70808	6.272471	10.39486	7.621239	10.41323
6	0.185859	50.60722	14.34517	6.356272	10.69483	7.608001	10.38851
7	0.190519	48.50369	14.39567	6.094540	12.28790	7.551852	11.16635
8	0.192010	47.82272	14.97355	6.248031	12.24025	7.684088	11.03136
9	0.192624	47.75430	14.95117	6.211043	12.24017	7.877443	10.96587
10	0.193044	47.55079	14.88652	6.197314	12.36713	8.078873	10.91936

Variance Decomposition of KLFDI:							
Period	S.E.	KLRGDP	KLFDI	KLAID	KLDINV	KLEX	KLIMP
1	0.740623	1.862669	98.13733	0.000000	0.000000	0.000000	0.000000
2	1.073082	1.819130	92.94011	0.431305	3.732261	1.066408	0.010789
3	1.181349	5.973889	87.72340	0.895938	4.232394	0.933037	0.241343
4	1.229572	5.864214	82.32918	3.358659	4.464488	3.620799	0.362660
5	1.278164	6.372320	76.38298	3.494073	6.586062	6.472452	0.692112
6	1.303195	6.944384	75.26702	3.532195	6.811668	6.727778	0.716953
7	1.320870	6.963542	75.01657	3.556731	6.819805	6.588578	1.054779
8	1.328086	7.014028	74.88016	3.520794	6.764158	6.554648	1.266210
9	1.329049	7.019998	74.79121	3.562936	6.765637	6.589367	1.270852
10	1.333349	6.977578	74.63190	3.560927	6.853429	6.642822	1.333340

Variance Decomposition of KLAID:							
Period	S.E.	KLRGDP	KLFDI	KLAID	KLDINV	KLEX	KLIMP
1	0.597454	22.91558	1.221771	75.86265	0.000000	0.000000	0.000000
2	0.620065	21.57543	1.171983	71.32712	0.026677	0.270875	5.627909
3	0.630620	22.88262	1.715176	68.98936	0.703197	0.263567	5.446085
4	0.642386	23.84216	1.652921	66.48559	1.176643	1.509897	5.332788
5	0.650401	23.26748	2.088046	64.86107	2.426237	1.845343	5.511824
6	0.653767	23.24746	2.078224	64.20376	2.515282	1.844644	6.110630
7	0.655418	23.51617	2.102919	63.93372	2.503889	1.863389	6.079914
8	0.657358	23.47424	2.090708	63.55713	2.693975	2.139840	6.044109
9	0.658506	23.39338	2.149365	63.33591	2.840421	2.146238	6.134683
10	0.659074	23.46026	2.148080	63.22837	2.844137	2.143608	6.175539

Variance Decomposition

of KLDINV:							
Period	S.E.	KLRGDP	KLFDI	KLAID	KLDINV	KLEX	KLIMP
1	0.380951	5.201617	7.435944	0.165153	87.19729	0.000000	0.000000
2	0.467856	5.037329	13.28741	0.186418	75.16507	4.002808	2.320969
3	0.493946	8.348750	12.93663	0.527585	71.66756	3.591229	2.928241
4	0.500376	8.166133	13.76463	1.617058	69.92908	3.558631	2.964460
5	0.515652	7.699576	14.55753	1.791411	68.10465	4.418139	3.428699
6	0.517731	7.693714	15.08331	1.780115	67.55868	4.463366	3.420816
7	0.519094	7.968375	15.09438	1.836357	67.21150	4.486486	3.402906
8	0.520926	7.995779	15.01115	1.826053	67.03685	4.747592	3.382574
9	0.521489	8.015348	15.05349	1.834015	66.91229	4.751038	3.433820
10	0.522102	8.012437	15.16254	1.832271	66.76261	4.740464	3.489676

Variance Decomposition of KLEX:							
Period	S.E.	KLRGDP	KLFDI	KLAID	KLDINV	KLEX	KLIMP
1	0.405345	0.521838	0.664525	2.336485	28.67826	67.79890	0.000000
2	0.484393	4.873610	1.811576	3.371461	35.53521	47.69339	6.714751
3	0.522384	6.262767	12.73033	3.008580	30.88581	41.00888	6.103627
4	0.529897	6.087949	13.98512	3.576571	30.31819	39.85655	6.175610
5	0.534328	6.740631	13.96541	3.664868	30.10218	39.28478	6.242128
6	0.539818	6.662690	14.58828	4.018201	29.49420	39.05117	6.185453
7	0.546461	6.556713	15.94324	3.944771	29.17291	38.20116	6.181211
8	0.549874	6.480671	16.92692	3.914999	28.82299	37.73785	6.116565
9	0.550716	6.490750	16.96336	3.906661	28.83054	37.70889	6.099803
10	0.551891	6.584809	16.92255	3.939603	28.78152	37.69396	6.077557

Variance Decomposition of KLIMP:							
Period	S.E.	KLRGDP	KLFDI	KLAID	KLDINV	KLEX	KLIMP
1	0.390089	2.294448	8.281972	0.441789	50.21157	12.22034	26.54989
2	0.538937	1.468271	16.75705	0.395878	54.54992	9.307551	17.52133
3	0.553262	1.686748	17.33250	1.080213	52.36193	10.09890	17.43971
4	0.571545	1.751751	20.34410	1.218479	50.01776	10.08007	16.58784
5	0.586251	1.828539	22.00813	1.641319	48.05927	10.57450	15.88823
6	0.589491	1.817416	22.57070	1.714995	47.53710	10.64315	15.71664
7	0.593562	1.793692	22.72343	1.837123	46.97646	11.16747	15.50182
8	0.594728	1.842128	22.71172	1.830129	46.82011	11.30467	15.49124
9	0.596426	2.211073	22.67156	1.832362	46.59052	11.28334	15.41115
10	0.597759	2.205563	22.86573	1.889806	46.39031	11.23378	15.41481

Cholesky Ordering:
 KLRGDP KLFDI
 KLAID KLDINV KLEX
 KLIMP

DATA SOURCES

Variable	Description	Source
EXP	Exports of Goods and Services	International Financial Statistics
IMP	Imports of Goods and Services	International Financial Statistics
AID	Official Development Assistance, ODA	Quality of Government Data set June 17, 2009
FDI	Net Foreign Direct Investment	Quality of Government Data set June 17, 2009
RGDP	Real Gross Domestic Product	Quality of Government Data set June 17, 2009
DIV	Domestic Investment	International Financial Statistics