Investment, Inflation and Economic Growth: Empirical Evidence from Nigeria

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Abstract
This paper attempts to empirically examine the impact of investment and inflation on economic growth performance as well as showing the trend analysis between inflation and investment in Nigeria from 1981 to 2006 using econometrics model with Ordinary Least Square (OLS) technique. In an attempt to establish long-run relationship between investment, inflation and economic growth, the result of the regression reveals that the coefficient of inflation is negative and significant at 10% while that of Gross capital formation (GCF) is positive and significant at 1%. It implies that 1 per cent increase in inflation will result in 0.09 decreases in economic performance (RGDP). There is therefore a negative relationship between inflation and RGDP. A positive relationship also exists between investment (GCF) and RGDP (economic performance), of which 1 per cent change in investment (GCF) will bring about 0.3 per cent unit increases in economic performance. Increased investment would lead to increase consumption, also increase labour, increase productivity, increase output therefore improve the economic performance because there would be reduction in capital flight. It could therefore be recommended that both supply-side policies and demand management policies such as a reduction in real broad money supply should be adopted to reduce inflation in the short-run and in the long-run.

Keywords: Foreign Direct Investment; inflation; economic growth.

1. Introduction
One of the greatest problems facing Nigerian economy today is inflation which is persistently a complex, economic and social problem of the economy. Government’s inability to provide a lasting solution to this aroused a universal conviction that inflation is inevitable and created pessimism that government has no power to bring rising price (inflation) trend to an end. Inflation is not only a serious problem but also has a disquieting effect on the economic life, political system and the society as a whole. Inflation in Nigeria could be traced to 1950 despite the fact that is not prevalent then. A situation where the value of money continues to depreciate in terms of value, there is the tendency for rising prices for available goods and services generally and such situation is being referred to as inflation. Inflation can be defined as continuous rise in prices of goods and services. Inflation simply means too-much money chasing few goods. Inflation in the country has become a threat to the Nigerian economy particularly to workers as their standard of living gradually fell. The inflationary trend dragged on till 1979 when few months to the end of the military government in Nigeria headed by General Olusegun Obasanjo, prices of petrol went up from 9.5k per litre to 15.4k per litre. This increase in the price of petrol led to increase in the price of transport fares, foodstuffs, building materials, rents and goods and services. The inflation was further aggravated by the increase in the price of petrol. Today the price of petrol is N75.00 per litre which makes the price of goods and services to skyrocket.

In most economies however, domestic private investment has proven to be insufficient in giving the economy the required boost to enable it meet its growth target because of the mismatch between their capital requirements and saving capacity. Foreign private investment, thus, augments domestic resources to enable the country carry out effectively her development programmes and raise the standard of living of her people. Though foreign private investment is made up of Foreign Direct Investment and Foreign Portfolio Investment, Foreign Direct Investment is often preferred as a means of boosting the economy. This is because FDI disseminates advanced technological and managerial practices through the host country and thereby exhibits greater positive externalities compared with Foreign Portfolio investment which may not involve positive transfers, just being a change in ownership. In addition, available data suggest that FDI flows tend to be more stable compared to Foreign Portfolio Investment (Lipsy, 1999). This is because of the liquidity of Foreign Portfolio Investment and the short time horizon associated with such investments. Also, FDI inflows can be less affected by change in national exchange rates as compared to Foreign Portfolio Investment. However, a balanced combination of the two, taking into consideration the unique characteristics of the recipient economy will bring about the required effects on the economy. The benefits of Foreign Private investment include transfer of technology, higher
productivity, higher incomes, more revenue for government through taxes, enhancement of balance of payments ability, employment generation, diversification of the industrial base and expansion, modernization and development of related industries. According to Feldstein (2000), first, international flows of capital reduce the risk faced by owners of capital by allowing them to diversify their lending and investment. Second, the global integration of capital markets can contribute to the spread of best practices in corporate governance, accounting rules, and legal traditions. Third, the global mobility of capital limits the ability of governments to pursue bad policies. Four, Foreign investment through FDI allows for the transfer of technology - particularly in the form of new varieties of capital inputs - that cannot be achieved through financial investments or trade in goods and services. Foreign investment through FDI can also promote competition in the domestic input market. Five, recipients of FDI often gain employee training in the course of operating the new businesses, which contributes to human development in the host country. Lastly, profits generated by Foreign Investments contribute to corporate tax revenues in the host country.

This strand of literature highlights various channels through which inflation can affect economic growth in non linear fashion and investment might be considered as an important channel. Investment, inflation and economic growth non linear nexus can be explained by using financial market development. A predictable increase in the rate of inflation can slow down financial market development. Non linearity between inflation and finance is well documented in literature (Boyd and Smith, 1998; Huybens and Smith, 1998, 1999; Boyd et al. 2001; Khan et al, 2001). Investment is most important channel through which financial market affects economic growth (Li, 2006). Inflation, a tax on real balance, reduces real returns to savings which in turn causes an informational friction afflicting the financial system. These financial market frictions results in credit rationing and thus limit the availability of investment and finally this reduction in investment adversely impacts economic growth. Choi et al. (1996) explains nonlinear effects of inflation on economic growth by saying that credit market frictions are potentially innocuous at low rates of inflation. Thus, in low inflationary environments, credit rationing might not emerge at all, and the negative link between inflation and capital accumulation vanishes. In such a case, higher inflation reduces the rate of return received by savers in all financial markets and consequently increases capital accumulation (Li, 2006).

The preference for FDI stems from its acknowledged advantages (Sjoholm, 1999; Obwona, 2001, 2004). The effort by several African countries to improve their business climate stems from the desire to attract FDI. In fact, one of the pillars on which the New Partnership for Africa’s Development (NEPAD) was launched was to increase available capital to US$64 billion through a combination of reforms, resource mobilization and a conducive environment for FDI (Funke and Nsouli, 2003). Unfortunately, the efforts of most countries in Africa to attract FDI have been futile. This is in spite of the perceived and obvious need for FDI in the continent. The development is disturbing, sending very little hope of economic development and growth for these countries. Further, the pattern of the FDI that does exist is often skewed towards extractive industries, meaning that the differential rate of FDI inflow into sub-Saharan African countries has been adduced to be due to natural resources, although the size of the local market may also be a consideration (Morriset 2000; Asiedu, 2001).

The results of studies carried out on the linkage between FDI and economic growth in Nigeria are not unanimous in their submissions. A closer examination of these previous studies reveals that conscious effort was not made to take care of the fact that more than 60% of the FDI inflows into Nigeria is made into the extractive (oil) industry. Hence, these studies actually modeled the influence of natural resources on Nigeria’s economic growth. In addition, the impact of FDI on economic growth is more contentious in empirical than theoretical studies, hence the need to examine the relationship between FDI and growth in different economic dispensations. There is the further problem of endogeneity, which has not been consciously tackled in previous studies in Nigeria. FDI may have a positive impact on economic growth leading to an enlarged market size, which in turn attracts further FDI. Finally, there is an increasing resistance to further liberalization within the economy. This limits the options available to the government to source funds for development purposes and makes the option of seeking FDI much more critical. This study contributes to the literature by examining the relationship between FDI inflows, inflation and Nigeria’s economic growth, hence addressing the country’s specific dimension to the FDI growth debate. The study is different from previous studies in scope (number of years considered is longer). In addition, the effect of the major components of FDI on economic growth is examined, thereby offering the opportunity to assess the differential impact of oil FDI and non-oil FDI on Nigeria’s economic growth. The study made conscious effort to address the endogeneity issue, and provide justification for the unrelenting efforts of the government to attract FDI, which are being misunderstood and resisted by the Nigerian populace.

However, the arguments against foreign private investment are that it may cause capital flight which may lead to net capital outflow and thus create balance of payment difficulties; it also creates income distribution problems

69 | P a g e  www.iiste.org
when it competes with home investment. Foreign Private investments may also actually be capital intensive, which may not fit in the factor proportions of the recipient country. Since the 1980s, flows of investment have increased dramatically the world over. Despite the increased flow of investment to developing countries in particular, Sub-Sahara African (SSA) countries are still characterized by low per capita income, high unemployment rates and low and falling growth rates of GDP, problems which foreign private investment are theoretically supposed to solve. Nigeria, being one of the top three countries that consistently received FDI in the last decade (Ayanwale, 2007) is not exempted from this category. The Nigerian Government is putting so much effort into attracting foreign investors and yet the economy is still dwindling.

Nigeria has been noted for her average and marginal propensity to import goods and services. And through much importation, inflation is imported too. Since most of the imported items does not carry generous subsidies in their home of manufacture, it is well known in economic theory that when demands are elastic, producers can pass on increases in cost of production to consumer. The Udoji awards of 1975, which was made to alleviate the problems of workers by increasing their wages, salaries and arrears was source inflation as trade union and other associations increased the prices of goods and services rendering the Udoji’s salary increase award useless. The rate and nature of inflation differ from economy to economy depending on among other factors like the level of economic development, the structure of production and the efficiency of resources utilization. In view of this there is a compelling need for more empirical studies on inflation in diverse direction. Such studies will unravel new facts on the causes, nature and consequences of inflation for control policy formulation.

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2. Literature Review

The contribution of Foreign Private Investment to the economy has been debated extensively over the years. This debate covers both the developed and developing economies. However, a lot more focus has been put into the study of Foreign Direct Investment since it is seen to have a larger impact on the economy. In the developed world, it is agreed that foreign private investment generally play a positive role in the economy, although it varies from county to country and depends on country characteristics, policy environment and sectors. Blomström and Kokko (1997) reviewed the empirical evidence on host country effects of foreign direct investment. They conclude that MNCs may play an important role for productivity and export growth in their host countries, but that the exact nature of the impact of FDI varies between industries and countries, depending on country characteristics and the policy environment. Alfaro (2003) in an empirical analysis using cross-country data for the period 1981-1999 suggests that total FDI exerts an ambiguous effect on growth. From the results, foreign direct investments in the primary sector tend to have a negative effect on growth, while investment in manufacturing a positive one. Evidence from the service sector is ambiguous.

2.1 Review of Empirical Literature

Understanding the relationship between inflation and real growth has all along been a key concern in macroeconomic research. Kumar and Pradhan (2002) analyze the relationship between FDI, growth and domestic investment for a sample of 107 developing countries for the 1980-99 periods. Their model uses flow of output as the dependent variable and domestic and foreign owned capital stock, labor, human skills capital stock and total factor productivity as their independent variables. Their results show that panel data estimations in a production function framework suggest a positive effect of FDI on growth and although FDI appears to crowd-out domestic investments in net terms, in general, some countries have had favourable effect of FDI on domestic investments in net terms suggesting a role for host country policies. Aitkin and Harrison (1999) in testing if domestic firms
benefit from direct foreign investment in Venezuela used panel data on Venezuelan plants, and found that foreign equity participation is positively correlated with plant productivity, but this relationship was only robust for small enterprises. They concluded that foreign investment negatively affects the productivity of domestically owned plants. The net impact of foreign investment, taking into account these two offsetting effects, is quite small.

Weeks (2001) investigates the relationship between FDI and domestic investment: that foreign direct investment may ‘crowd-in’ or ‘crowd out’ domestic investors using 18 countries in Latin America. He incorporates real export growth and elasticity of domestic and foreign investment into his model and concludes that the stimulant effect foreign direct investment varies considerably across Latin American countries. This suggests that purposeful policy can increase the benefits of foreign investment inflows.

Empirical evidence from the Czech Republic points to a mixed experience for the impact of foreign investment on domestic firms. Based on firm-level data from the period 1994-1998, an industry-wide inverse relationship was detected between the extent of foreign investment and the turnover of domestic firms (Djankov and Hoekman, 2000). This finding was similar to that of a study focusing on regional effects (1993-1998) which indicated that the productivity of Domestic Firms had declined in proportion to the level of foreign investment (Torah, 2004) in a given industry. However, these negative or neutral findings stand in contrast to those of other studies that have detected positive effects. For instance, the introduction of foreign investment was found to have a positive effect on the entry rates of domestic firms at intra- and inter-industry level (Ayyagari and Kosova, 2006), across all industries, during the period 1994-2000.

Ewe-Ghee Lim (2001) summarizes recent arguments/findings on FDI and its correlation with economic growth focusing on literature regarding spillovers from FDI and finds that while substantial support exists for positive spillovers from FDI, there is no consensus on causality.

Mishara and Mody (2001) observed that foreign private investment has been associated with higher growth in some advanced countries. Within the LDCs, however, foreign private investment is associated with high incidence of crises. The hypotheses which have been advanced to explain the effects of inflation on economic growth fall into two basic categories. In the first are the Phillips Curve and the neo-Keynesian approaches of such economists as Akerlof, Dickens and Perry, who have found Phillips Curve-like tradeoffs between growth and inflation at low levels of unemployment. In the opposing camp are the advocates of the efficient firm hypothesis, such as Rudebusch and Wilcox, who have found inverse correlations between inflation and growth. Empirical studies by Fischer, Barro, De Gregorio and others support the Rudebusch-Wilcox view, as doe’s previous work by the author of this paper, although results vary by region and stage of economic development. The robustness of these relationships is, in turn, challenged by Levine, Renelt, Bruno and Easterly, who find that the growth inflation correlations reported by other researchers are fragile and tend to be influenced unduly by outlying observations.

The effect of macroeconomic instability on growth comes largely from the effect of uncertainty on private investment. Multi-country panel data studies on investment report that measures of macroeconomic instability, like the variability in the real exchange rate or the rate of inflation, have an adverse impact on investment (Serven and Solimano 1992). In a study of 17 countries, Cordon (1990) finds that although there are outliers, evidence generally supports the view that high growth is associated with low inflation. This is suggested both by cross-country evidence and comparison over time for countries where the rate of growth has fallen in relation to an increased as the rate of inflation. Fischer (1993) examines the role of macroeconomic factors in growth. He found evidence that growth is negatively associated with inflation and positively associated with good fiscal performance and undistorted foreign exchange markets. Growth may be linked to uncertainty and macroeconomic instability where temporary uncertainty about the macro economy causes potential investors to wait for its resolution, thereby reducing the investment rate (Pindyck and Solimano 1993). Uncertainty and macroeconomic stability are, however, difficult to quantify. Fischer suggests that, since there are no good arguments for very high rates of inflation, a government that is producing high inflation is a government that has lost control. The inflation rate thus serves as an indicator of macroeconomic stability and the overall ability of the government to manage the economy.

Fischer finds support for the view that a stable macroeconomic environment, meaning a reasonably low rate of inflation, a small budget deficit and an undistorted foreign exchange market, is conducive to sustained economic growth. He presents a growth accounting framework in which he identifies the main channels through which inflation reduces growth. He suggests that the variability of inflation might serve as a more direct indicator of the uncertainty of the macroeconomic environment. However, he finds it difficult to separate the level of
inflation from the uncertainty about inflation, in terms of their effect on growth. This is because the inflation rate and its variance are highly correlated in cross-country data. Evidence is in favour of the view that macroeconomic stability, as measured by the inverse of the inflation rate and the indicators of macroeconomic trends, is associated with higher growth.

3. Research Methodology and Data Presentation and Analysis

Data used for this study was obtained from Central Bank statistical bulletin (2008). The type of data to be used is secondary and includes data on Gross Domestic Production (RGDP) which is the proxy for economic growth, Gross capital formation (GCF) proxy for investment and consumer price index (CPI) proxy for inflation. The ordinary least square method of econometric approach was used in estimation.

Economic performance is proxy by real GDP. This is because the real GDP show the monetary value of goods and services excluding inflation. Inflation on the other hand will be proxy by consumer price index (CPI), which measures price level, while investment is proxy by Gross capital formation. The model could therefore be specified as follows:

Model 1:
Model specification is a mathematical expression used to measure the economic relationship existing between economic variables (dependent and independent).

\[
\text{RGDP} = F (\text{CPI, GCF})
\]

Where,
- RGDP = Real Gross Domestic Product
- CPI = Consumer Price Index
- GCF = Gross Capital Formation

For this analysis, the model is specified thus;

\[
\text{LOGRGDP} = \beta_0 + \beta_1 \text{LOGINF} + \beta_2 \text{LOGGCF} + \mu
\]

Model 1 shows the relationship between economic performance, (RGDP), inflation and investment (GCF)

3.1 Presentation of Result

Dependent Variable: LOG(RGDP)
Method: Least Squares
Sample: 1981 2006
Included observations: 26

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG(GCF)</td>
<td>0.295522</td>
<td>0.052650</td>
<td>5.612906</td>
<td>0.0000</td>
</tr>
<tr>
<td>LOG(INF)</td>
<td>-0.087750</td>
<td>0.048597</td>
<td>-1.805667</td>
<td>0.0841</td>
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<tr>
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<td>9.440840</td>
<td>0.472433</td>
<td>19.98343</td>
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</tr>
</tbody>
</table>

R-squared: 0.923367
Adjusted R-squared: 0.916703
S.E. of regression: 0.099598
S.D. dependent var: 0.345093
Durbin-Watson stat: 0.484626

The equation is a **DOUBLE LOG** equation. The regression analysis above indicates that the coefficient of inflation is negative and significant at 10% while that of Gross capital formation (GCF) is positive and significant at 1%. It implies that 1 per cent increase in inflation will result in 0.09 decreases in economic performance (RGDP). There is therefore a negative relationship between inflation and RGDP. That is, an increase in inflation will result in a decrease in economic performance. An increase in inflation means increase in general price level and will result to money illusion because what money can buy is lower compared to the
previous period. A positive relationship also exists between investment (GCF) and RGDP (economic performance), of which 1 per cent change in investment (GCF) will bring about 0.3 per cent unit increases in economic performance. Increased investment would lead to increase consumption, also increase labour, increase productivity, increase output therefore improve the economic performance because there would be reduction in capital flight.

The intercept \( \beta_0 \) (9.440840) shows the value of the GDP when the values of the independent variables are indeterminate or when they are zero.

From the regression analysis, the value of the \( R^2 \) is 0.923367 suggests that a 92% of change in RGDP in Nigeria can be explained or caused by changes in the independent variable (inflation rate and investment) \( F \)-statistics (0.000) shows that even at 1%, the overall fitness of the model is good which implies the model is well specified.

The graph in figure 1 shows the trend analysis of growth rate in inflation. It could be deduced that the growth rate of inflation had been fluctuating over time. An outlier (sharp increase) occurred in 1988 whereby growth rate of inflation rose from 9.77% in 1987 to 61.02% and later became negative (-9.09%) in 1990. The inflation rate rose to 64.88% in 1994 and decreases marginal afterwards. This implies that its favourable to the economic performance of Nigeria because a decrease in growth rate of inflation rate though its increasing at a decreasing rate shows a better performance in economic growth of Nigeria.

While the graph in figure 2 shows the trend analysis of growth rate in gross capital formation. It could be deduced that from 1981 -1985 that GCF was negative. An outlier however occurred in 2002 whereby growth rate of GCF rose from -4.37% in 1999 to 42.91%.

4. Conclusion and Policy Recommendation

Investment has increased dramatically since 1980s. Furthermore, many countries have offered special tax incentives and subsidies to attract foreign capital. An influential economic rationale for treating foreign capital favourably is that investment and portfolio inflows encourages technology transfers that accelerate overall economic growth in recipients countries. While micro-economics studies generally, though not uniformly, shed pessimistic evidence on the growth effects on foreign capital. Many macro-economic studies find a positive link between investment and economic growth.

Investment augments domestic resources of any economy and enhances the economic development of the country. With current increased in-flow of foreign capital, Sub-Sahara African (SSA) countries including Nigeria are still characterized by low per-capita income, high unemployment rates and low and falling growth rates of GDP. This has stimulated a lot of arguments in the literature. This study therefore examined the issue of Investment and its impact on the Nigerian Economy. Among the findings was that Investment was non-stationary while the variables were jointly co-integrated. Also, gross capital formation growth was positively related to GDP growth rate. Based on the above, it can be deduced that though the experience of other developing countries give contradicting reports on the effect of Investment, the Nigerian case is a bit different in that Foreign Private Investment has a positive significant effect on GDP growth rate of Nigeria. By implication issues on Investment should not be ignored in policy decisions aimed at promoting the economic development of Nigerian. Consequently, steps to attract more Investment should be undertaken by the Nigerian government as one of the ways of boosting the Nigerian economy.

Broad money supply impacted positively on inflation in the long-run, confirming the theoretically-posed positive correlation between money supply and inflation as argued by the Monetarists. That import-dependency ratio had a positive long-run impact on inflation corroborates the view that most of the inflationary trend experienced in import-dependent developing economies are due to imported inflation. The significant short-run dynamics of inflation emanate principally from broad money supply and the real exchange rate. This suggests that controlling inflation in the short-run could only be achieved by demand management policies. Contemporaneously, there is a negative correlation between capital accumulation and economic growth in the long-run. This means that increasing investment today may actually lead to economic slowdown today. The short-run dynamics, however, indicate that investment has a positive impact on economic growth as predicted by the neoclassical economic growth and development models. The negative impacts of the past levels of investment and economic growth on their current levels respectively suggest that import dependent developing economies find it difficult sustaining the level of investment and economic growth. Since these are short-run phenomena, they cannot be attributed to changes in the business cycle. The difficulty in sustaining economic growth and investment in import-dependent developing economies could be explained by the fact that these economies are bombarded continuously by external shocks, notably oil price shocks. This fact is supported by
the empirical evidence that import-dependency ratio depresses economic growth in these economies in the short-run. Another interesting result is that, though the real exchange rate does not have any significant impact on inflation, investment and economic growth in the long-run, it does have significant dampening effect on inflation and expansionary effect on economic growth in the short-run. This is consistent with output gap theories and competition theories of international trade. Thus, properly realigning the real exchange to reflect economic fundamentals in the short-run can have desirable impact on inflation and growth in Nigeria.

It is recommended that demand management policies such as a reduction in real broad money supply should be adopted to reduce inflation in the short-run; both demand management and supply-side policies should be pursued for the control of the rate of inflation in the long-run; exchange rate policy that ensures international competitiveness of domestically produced goods should be pursued, while economic openness policy that ensures availability of critical inputs for industry and agriculture must be adopted for short run economic growth; and, overreliance on imports should be reduced over the long term through aggressive export promotion to ensure long-run economic growth.

References


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**Figure 1. Showing Trends Analysis of Growth Rate in Inflation**

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Table 1. Datasheet of Analysis of Real GDP, Inflation and Gross Capital Formation

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<tr>
<th>YEARS</th>
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<th>INF</th>
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