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Fiscal Deficits and inflation in Nigeria.

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INTRODUCTION

Recent years have seen a worldwide movement toward greater emphasis upon the achievement of inflation targets as the primary criterion for judging the success of central banks' conduct of monetary policy. At the same time, the independence of central banks in their choice of the means with which to pursue this goal has also increased. An implication would seem to be that it is now widely accepted that the choice of monetary policy to achieve a target path for inflation is a problem that can be, and indeed ought to be, separated from other aspects of government policy, such as the choice of fiscal policy. But is this really so clear? Or do the agencies responsible for inflation stabilization properly need to concern themselves with fiscal policy choices as well, while the agencies concerned with fiscal policy have a corresponding need to coordinate their actions with those of the monetary authority.

The argument for separation of decision-making about these two aspects of macroeconomic policy necessarily relies upon two theses: first, that fiscal policy is of little consequence as far as inflation determination is concerned, and second, that monetary policy has little effect upon the government budget. I shall argue here that neither proposition is true, for reasons that are related. The fiscal effects of monetary policy are often thought to be an insignificant consideration in the choice of monetary policy by the major industrial nations, because revenues are such a small fraction of total government revenues in these countries. But such a calculation neglects a more important channel for

fiscal effects of monetary policy, namely the effects of monetary policy upon the real value of outstanding government debt, through its effects upon the price level (given that much of the public debt is nominal) and upon bond prices, and upon the real debt service required by such debt (insofar as monetary policy can affect real as well as nominal interest rates).

Fiscal policy is often thought to be unimportant for inflation determination at least when, as in countries like the U.S. and the U.K., a desire to obtain seignorage revenues plays no apparent role in the choice of monetary policy {on two different, though complementary, grounds. On the one hand, it is often argued that inflation is purely a monetary phenomenon, and hence that only the choice of monetary policy matters for what level of inflation one will have. And on the other, the celebrated “Ricardian equivalence" proposition implies that insofar as consumers have rational expectations, fiscal policy should have no effect upon aggregate demand, and hence no effect upon inflation. I shall argue that neither proposition is of such general validity as is often supposed.

As a considerable recent literature has stressed, fiscal shocks affect aggregate demand, and the specification of fiscal policy matters for the consequences of monetary policy as well, in rational expectations equilibria associated with policy regimes of the kind that I shall call “non-Ricardian" (Woodford, 1995, 1996)[1], even when the monetary policy rule involves no explicit dependence upon fiscal variables of any sort. This happens, essentially, through the effects of fiscal disturbances upon private sector budget constraints and hence upon aggregate demand. Such effects are neutralized by the existence of rational expectations and frictionless financial markets only if it is understood that the government budget itself will always be subsequently adjusted to neutralize the effects, in present value, of any current fiscal disturbance. A “non-Ricardian" fiscal policy is one that does not have this property; we show that non-Ricardian policies may easily be consistent with the existence of a rational expectations equilibrium, which means that the expectation that the government will follow such a rule need never be disconfirmed. This

possibility, however, means that a central bank charged with maintaining price stability cannot be indifferent as to how fiscal policy is determined. To be concrete, I shall argue that the mere commitment of a central bank to conduct monetary policy according to a rule such as the "Taylor rule" (Taylor, 1993)[2] is insufficient to ensure a stable, low equilibrium rate of inflation.

On the one hand, (non-Ricardian) fiscal expectations inconsistent with a stable price level may frustrate this outcome, even when monetary policy is itself consistent with price stability. Indeed, the combination of a Taylor rule with certain kinds of fiscal policy may result in an inflationary or deflationary spiral. And on the other hand, even when fiscal policy is consistent with stable prices, the policy regime (including the commitment to a Taylor rule) may not preclude other equally possible rational expectations equilibria, such as equilibria involving self-fulfilling deflationary spirals.4 Alternative fiscal policy commitments may instead exclude these undesired deflationary equilibria (as discussed in Woodford, 1999)[3], and thus in this way help to ensure stable prices. As a practical proposal that addresses both of these issues, I shall suggest that a Taylor rule for monetary policy should be accompanied by targets for the size of government budget deficits.

STATEMENT OF THE PROBLEM

Monetary and fiscal policies have been concurrently used in Nigeria with a view of achieving some macroeconomic objectives such as price stability. Inspite of these efforts, inflation had been fluctuating above the ideal level suggested by inflation targeters. According to Mishkin (2000)[4], any rate of inflation above 3% is not ideal for the economy. Except for 1972, Nigeria's inflation rate had not gone below 4% where as it has gone above 10% in 24 years between 1970 and 2003 reaching a level of 72.8% in 1995[5].

The Nigerian economists and the Central Bank had employed all instruments of fiscal and monetary policy with a view to reducing inflation, yet the results have been figures far above the defined inflation goal. For instance, inflation rate skyrocketed from 9.9% in 1981 to 20.9% in 1982 before it witnessed a sharp reduction to 7.7% in 1983. It rose

again to 23.2% in 1984 and 39.6% in 1985. 1986 and 1987 witnessed relatively low and stable inflation rates of 5.5% and 5.4% respectively. Inflation rose again to 10.2% in 1988, 38.3% in 1989 and 40.9% in 1990. Another reduction was witnessed in the rate of inflation in 1991 to the tune of 7.5% before it showed a persistent rise over the next five years (13.0% in 1992, 44.5% in 1993, 57.2% in 1994, 57.0 in 1995, and 72.8% in 1996). It again dropped in 1997 to 8.5%, rose to 10.0% in 1999, dropped to 6.6% and 6.9% for the years, 2000 and 2001 respectively. Since then till 2013, inflation has shown figures far above 5% [6].

The economic consequences of inflation are not only witnessed in the short term difficulties it presents to people, it also has serious long term effects on the economy. Rising prices have negative effects on both producers and consumers of goods and services in different magnitude. In an export dependent economy such as Nigeria, inflation could be crippling as the increase in prices could raise production costs making domestic goods and services costlier and this reduces such economies global competitiveness.

Inflation also has adverse negative effect on fixed income earners and as consumers adjust their spending priorities to compensate for inflation ravaged purchasing power, businesses across a wide spectrum of the economy are adversely affected leading to unemployment[7].

It therefore beholds this study to consider Nigeria's peculiarity as a developing country, and ascertain whether or not budget deficits has any impact on inflation more so when literatures on inflation especially those championed by the monetarists see inflation as 'always and everywhere, a monetary phenomenon' and if it has, to what extent? It is therefore in order to stem the dangers associated with inflationary pressures that will consider it very necessary to investigate the relationship between fiscal deficits and inflation in Nigeria.

RESEARCH QUESTIONS

This research work shall seek relevant answers to these posers otherwise referred to as the research questions. They include:

1. Is there any significant long run equilibrium relationship between fiscal deficit and inflation in Nigeria?

2. To what extent fiscal deficit and inflation impact in Nigeria?

OBJECTIVES OF THE STUDY

The major aim of this study is to investigate the impact of fiscal deficit and inflation in Nigeria. However, specific objectives of the study, which are to provide reasonable answers to the research questions, shall be to:

1. Investigate the extent to which long run equilibrium relationship exists between fiscal deficit and inflation in Nigeria.

2. Determine the extent to which fiscal deficit and inflation impact in Nigeria.

HYPOTHESES OF THE STUDY

This research work shall be guided by the following hypotheses:

1. There is no significant long run equilibrium relationship between fiscal deficit and inflation in Nigeria.

2. Fiscal deficit and inflation do not impact in Nigeria.

SIGNIFICANCE OF THE STUDY

The study which is on Nigeria is more recent and will definitely close the lacuna existing as a result of conflicting causal relationships between fiscal deficit and inflation in Nigeria.

Specifically therefore, the following individuals and groups will find the study very useful: The government that make both fiscal and monetary policies would find the study very important as it would guide its choice of policy option especially as it work towards achieving its vision of becoming one of the best twenty economies of the world in the year 2020. The Central Bank of Nigeria whose duty among others, is to assist government in the implementation of its monetary policy will find the study relevant as it shall for the bases for valuable pieces of advice to government on some of the dangers that may be identified by the study. Members of the academia will find the study relevant as it will also form basis for further research and a reference tool for academic works. This study shall also be significant to the private sector especially those who may have research interest as it shall guide their private investment decisions. The study shall also form reasonable tool for the private sector's contribution to National debates. Finally, this study shall expose the relationships and impacts of budget deficits on inflation in Nigeria; a knowledge that will be beneficial to many stakeholders who will find relevance in it. It will in the long run, guide policy formulation and implementation for a better Nigeria.

SCOPE AND LIMITATIONS OF THE STUDY

Though the research would make reference to the related studies of other economies of the world with a view to reviewing related literature on the subject matter, data for this work shall only be on Nigeria economy. Such variables shall include those related in existing literature to fiscal deficits and inflation. It shall be collected between wide ranges of time spanning over a period of thirty three years from 1982 to 2014.

Data for this study shall be secondary, majorly from government own institutions like the Central Bank of Nigeria.

REVIEW OF RELATED LITERATURE

THEORETICAL LITERATURE

The need for stable prices in an economy has been documented in both theoretical and empirical literatures. This is because of the adverse effect of inflation on the economy which includes price distortion, flourishing of rent seeking activities, misallocation of scarce resources and social unrest. According to Barro (1977), Bruno (1995), and Gosh (1998)[8],[9],[10], inflation distorts resource allocation in an economy; it hurts the poorest members of the society disproportionately, creates uncertainty and arbitrarily redistributes income and wealth. It undermines macroeconomic stability and makes sustained rapid growth impossible to achieve.

This part of the study undertakes a review of all theories that relate to the subject under study. It is concisely structured to take a look at some theories of inflation, including the monetarist hypotheses (MH), Fiscal theory of the price level (FTPL) and the new Keynesian approach (NK).

THE MONETARIST HYPOTHESES (MH)

With the quantitative theory of money, the pattern of real economic activity requires a certain desired level of real money balances, and the price level is controlled by the nominal money supply. The reasoning is straightforward. Given the nominal money supply exogenously determined by the monetary authority the price level is determined as the unique level of prices that will make the purchasing power of the money supply equal to the desired level of real balances. From an operational point of view, it means the central bank seeks to ensure the quantity of money agents want for their transactions. Given a

price level, if the nominal money supply differs from the desired real balances, it will translate into changes in that price level. Hence, the price level has to be fully flexible and determined exclusively by the exogenous nominal money supply.

With regard to fiscal policy, the nominal money supply could change due to the use of seignorage as a main source of financing for public expenditure, or as the result of an open market operation in which the central bank purchases interest-bearing government debt. Since these two money-expansion mechanisms may have different repercussions for taxes and the stock of government debt, they may lead to different effects on prices/or interest rates. While the monetarist hypothesis comments on the first mechanism, the second is analyzed extensively by the FTPL.

The budget deficit and its subsequent financing through money creation (seignorage) are regarded as exogenous to the monetary authority. Hence, money growth would be dominated by the government's financing requirements, and the price level increases as result of that monetary expansion. From an empirical point of view, in terms of the deficit-money growth-inflation system, it means the first two variables in the system have to satisfy the weak exogeneity property, while the later has to be determined endogenously. Consequently, with a monetarist approach, there is expected to be a positive correlation between monetary growth and inflation. A regime of that nature is known as fiscal dominance, pursuant to the spirit of Sargent and Wallace's seminal paper (1981)[11]. Strictly speaking, they emphasized the causality runs from fiscal deficit to money growth and, subsequently, from money growth to inflation. Moreover, in the long-run money growth equation, the fiscal deficit needs to be weakly exogenous.

In practice, the monetarist view founded on the quantitative theory of money faces serious difficulties when it comes to controlling inflation. One of those difficulties is the appropriate definition of nominal money supply, mainly due to the substitution between financial monetary and non-monetary assets. Asset substitution to conduct transactions has increased, given the rapid pace of financial innovations and global deregulation of the

financial system. The effectiveness of influencing prices via the standard nominal money supply was questioned, because of the amount of financial non-monetary assets within the scope of the monetary authority's control. Instead, the nominal interest rate becomes the instrument used to control the price level, and the nominal quantitative supply of money ends up being determined endogenously in the money market.

FISCAL THEORY OF THE PRICE LEVEL (FTPL)

The FTPL links fiscal and monetary policies through the government's intertemporal budget constraint (GBC), which also is understood as a long-term solvency condition for public sector finances. The GBC is satisfied when the discounted value of the government's future primary surplus is larger than (or equal to) the current nominal value of the public debt. It is important to note that seigniorage is included in the government's primary surplus as a revenue source, while the nominal public debt takes into account the monetary base. This is why the relevant public sector is comprised of both the government and the central bank. Because the GBC is expressed, most often, as a percentage of nominal GDP, the discount rate is determined by the ratio of the real interest rate to the economic growth rate.

According to the FTPL, the GBC is assumed to be an equilibrium condition, and the future path of revenues and primary expenditures is decided exogenously by the fiscal authority. Therefore, given a discount rate, if the discounted value of the primary surplus is lower than a pre-determined level of nominal debt (both as a percentage of nominal GDP), the price level has to "jump" to equalize the GBC condition: i.e. the price level becomes the exclusive adjustment variable to maintain that condition.

So as to be more explicit about how the price level is affected by fiscal actions, Woodford (1995)[1] suggests first considering a positive and exogenous price shock that reduces the real value of the government's liabilities and leads to a parallel a reduction in the real value of private portfolios invested in government securities. The lower real value

of these private assets generates a negative wealth-effect, which will be reflected ultimately in less demand for goods. According to the FTPL, the agent's expectations concerning the sustainability of fiscal policy would produce a similar wealth-effect.

If the market has a negative perception of the sustainability of public finances; that is, if the discounted value of the government's primary surplus does not cover the nominal value of its liabilities, that perception will prompt an increase in the price level to the extent required to restore GBC equilibrium. The higher price level reduces the real value of private portfolios, thereby generating the aforementioned wealth effect. The higher the nominal government liabilities (nominal debt), the greater the adjustment required in the price level. Hence, the FTPL is also known as the quantitative theory of the public debt. As a result, the presence of a budget deficit caused long-run inflation equation, with money growth playing no role, may constitute strong support for the FTPL.

THE NEW KEYNESIAN APPROACH (NK)

With the NK standard approach, the relationship between money growth, inflation and budget deficit can be derived from a system of two equations: aggregate supply (or an inflation equation) and aggregate–demand. The system, which is well-substantiated for a closed economy, is obtained with a dynamic stochastic general equilibrium framework based on maximization of the agent's behavior, with imperfect competition. The nature of the NK theory is, therefore, quite different from the approaches discussed earlier, as it does not constitute a quantitative theory on price determination, since money amount is conceived in a monetarist way or as the stock of debt in the FTPL.

The demand equation is a "special" IS–function. It is achieved on a micro fundamental basis and is affected by both the output gap and real interest rate expectations (i.e. it is an expectational, forward-looking IS curve). The supply equation corresponds to a NK version of the Phillips curve, based on maximization of the firm's profits, which adjust its prices temporarily, in a staggered way. This two-equation system represents the equilibrium conditions for a well-specified general equilibrium model, which

is usually completed with an interest-rate rule used by the central bank to control inflation (when monetary policy is rule-based instead of discretion-based).

The output gap (current and expected), inflation (current and expected) and the nominal interest rate are the variables to be solved in the system. Even though money is not taken into account as an explicit variable of the standard model, its inclusion throughout the utility function poses no problem. More importantly, when solving the NK model with money, the quantity of money ends up being endogenous to the nominal interest rate (or inflation), and becomes in an irrelevant variable for policy purposes. According to Woodford (2007)[12], because the system is self-contained, the money-demand function is not required to solve the model for inflation (this function is redundant).

In an additional simplification of the NK standard model, output is consumed entirely by households (i.e. consumption is the unique demand component), while the role of private investment and that of government expenditure are ignored. Nevertheless, public expenditure shocks can be incorporated feasibly into the standard model in the same way the productivity shock is introduced. Specifically, the effects of fiscal policy on the real economy will depend on agents' expectations about the current (in t) and future (in t+1) level of government expenditure.

Given an output gap and inflation expectations for t+1, if individuals expect government expenditure to increase en t+1, with respect to its current level, it is reasonable to expect that private consumption will fall in t+1. Because families have to save, at present, to finance added public spending in t+1, consumption in t will have to be reduced. With a Keynesian multiplier, the lower current consumption level implies a contemporary decline in output, the output gap and inflation. The contrary case could be interesting, because current output (as well as the output gap) would increase, thus forcing up the price level, if individuals believe current government expenditure (in t) is greater than its trend in long-term sustainability (in t+1). In short, individual expectations with

respect to current and future fiscal action could affect inflation directly and induce money expansion through a higher price level.

THEORETICAL LINKS OF FISCAL DEFICIT AND INFLATION

In the monetarist perspective, money supply drives inflation. If monetary policy is accommodative to a budget deficit, money supply continues to rise for a long time. Aggregate demand increases as a result of this deficit financing causing output to increase above the natural level of output. Growing labour demand increases wages which in turn leads to shift in aggregate supply in a downward direction. After sometime, the economy returns to the natural level of output. This happens at the expense of permanent higher prices.

According to the monetarists, budget deficit can lead to inflation, but only to the extent that they are monetized (Hamburger and Zwick 1981)[13]. Generally, the budget deficit per se does not cause inflationary pressure, but rather affects the price level through the impacts on money aggregates and public expectations, which in turn triggers movement through the inter-temporal budget constraint, which implies that a government with a deficit must run, in present value terms, future budget surpluses (Walsh, 1998)[14]. One possible way to generate surpluses is to increase the revenues from Seignorage, so the public might expect future money growth.

The deficit-inflation relationship is also viewed by considering direct effects of inflation on outstanding debt, tax, revenues and expenditures. The dynamic interaction between public deficits and inflation could go in one of two directions. Either the effect of inflation to reduce the real value of debts dominates or the effect worsens the fiscal position of the government due to collection lags, which reduces government's real revenue[15].

DEFICITS AND THE SUPPLY OF MONEY

As indicated before, federal government deficits do not directly cause money growth. As a practical matter, however, government deficits can have an important indirect effect on money supply growth.

When the federal government spends more than it takes in as revenue, the treasury must finance the deficit by borrowing in private marketplace (selling government securities). The increased demand for credit in financial markets, if not offset by a reduction in credit demand elsewhere or an increase in credit supply, naturally puts upward pressure on all market interest rates. Monetary authorities may then attempt to prevent the rise in interest rates from taking place.

To do this, the Federal Reserve will buy government securities, thus monetizing part of the public debt by increasing the level of reserves. The increase in bank reserves, as explained above, will result in a larger money stock and, other things equal, a subsequently higher rate of inflation. Consequently, there is an indirect channel via the response of monetary authorities to higher interest rates by which deficits can influence the inflation rate. However, the existence of this indirect channel does not indicate that deficits cause inflation. The deficits themselves do not increase the money stock; only monetary authorities can do this. Only when monetary authorities attempt to prevent market interest rates from rising will deficits produce a larger money supply. If deficits persist over an extended period of time, Federal Reserve attempts to prevent market interest rates from rising will result in continual increases in the money stock. Viewed in this fashion, inflation represents the cost associated with trying to prevent market interest rates from rising.

DEFICITS AND THE DEMAND FOR MONEY

Inflation can also be associated with government deficits if such deficits induce reductions in the public's desired money balances. There appear to be two possible

channels through which this might occur. The first channel operates through the effect of changes in interest rates on the public's demand for money balances. A higher level of interest rates will reduce desired money balances causing an excess supply of money.

As a practical matter, this effect is minor, while the demand for money is sensitive to changes in interest rates, quantitatively the effect is small. It would take a substantial rise in interest rates to reduce desired money balances enough to actually produce a measurable increase in inflation. One estimate indicates that interest rates would have to increase 500 percent (for example, from 5 percent to 25 percent) to induce the same amount of inflation associated with a permanent one percentage-point increase in money supply growth.

A second channel through which federal deficits can affect desired money holdings and the inflation rate is changing individuals' wealth holdings. Desired money balances are positively related to an individual's wealth. Thus, if individuals observe their wealth falling over an extended period of time, their desired money balances will also fall, and higher inflation will result despite the fact that the growth of the money stock remains unchanged.

While such adverse effects on wealth are possible, they are the direct result of fiscal mismanagement, not deficit financing. The public could be made to feel spending programs that the public deemed worthless. As long as the federal government allocates resources inefficiently, the public will be poorer. This is true regardless of how the resources are obtained, that is, through taxation or by debt. On the other hand, if the public approves of the federal government expenditures, it makes little difference whether the resources are obtained from current taxes or from the issuance of debt which will be paid off by future taxes.

IMPLICATIONS FOR INFLATION CONTROL

I now turn to the implications for the design of public policy of a recognition that non-Ricardian fiscal regimes are possible (though not, of course, a necessity). Consideration of this possibility has consequences of several sorts. In taking them up, I shall assume that a key goal of policy is the maintenance of as stable a general price level as possible; the question whether, or to what extent, this should be a goal is left for another occasion. First of all, in the case that the government's budgetary policy is expected to be non- Ricardian for reasons that a policymaker choosing a monetary policy rule is not in a position to change this fact affects which monetary policy rules should be expected to be consistent with the greatest degree of price stability. Rules that would be quite desirable in the context of a (locally) Ricardian fiscal policy, such as a “Taylor rule", may instead have disastrous consequences for price stability when combined with an alternative fiscal policy. But this very fact implies that the choice of fiscal policy is also relevant to an economy's chances of achieving price stability, and so our second category of policy implications considers the choice of a fiscal policy rule that would be consistent with price stability. Here the essential point is that fiscal policy should be locally Ricardian, so that fiscal expectations do not frustrate the central bank's use of a suitably \active" monetary policy to stabilize the price level.

Finally, the contribution that a suitable fiscal policy commitment can make to price stability is not simply a matter of failing to interfere with a desirable equilibrium that would otherwise be consistent with the central bank's monetary policy rule. A globally non-Ricardian (though locally Ricardian) fiscal commitment may be useful in order to exclude undesirable equilibria, ones involving less stable prices, that would otherwise be consistent with the monetary policy regime. I take up each of these categories of implications in sequence.

EMPIRICAL LITERATURE

There has been an agreement that government expenditure that is not financed by tax or non-tax revenue contributes to excess demand in the economy and thus inflation. Theoretically, it has been established that fiscal dominant government running persistent deficit have to sooner or later, finance those deficits with money creation thus producing inflation[11].

The empirical evidence of statistically significant links among budget deficits, money and inflation has shown mixed results with both studies of developing and developed economies proving inconclusive.

Sahay and Vegh (2002)[16] find a strong relation in a broad country sample between fiscal

deficits and high inflation, they do not find such a link for low inflation rates.

Catao and Terrones (2001)[17] who report a strong positive deficit-inflation relationship for a panel of 23 emerging market countries using a dynamic panel estimation. Finally, for ten accession countries

Arratibel (2002)[18] provide evidence of a significant impact of fiscal deficits on inflation. In this study, the results are derived from a model assuming an independent central bank behaving optimally, which would preclude the central bank channel as the link between the deficit and inflation.

Perotti (2002)[19] sets up a VAR for 5 OECD countries to study the impact of fiscal policy on GDP and its components, the price level and the short term interest rate. He finds a small positive impact of fiscal policies on prices about 4 quarters after the shock for all countries excluding the US, while he also points to a relatively large degree of uncertainty around

these results.

For the four largest euro area countries, also Marcellino (2002)[20] finds a small positive relationship, although differences across countries are large. For the US, Perotti's findings are supported by [21].

Similarly, Mountford and Uhlig (2002)[22] report for the US a weak link between fiscal policies and inflation which depends to a large extent on the respective model specification.

Marius and Moisa (2002)[23] conducted a study on budget deficit and inflation in Romania between 1991 and 2001. They used both the Johansen's test and vector error correction (VEC) model in their estimates and found a long run relationship between inflation and budget deficits in Romanian.

Darrat (2000)[24] utilised an error correction model (ECM) to investigate if high budget deficits have any inflationary consequences in Greece over the period 1957-1993. Their empirical results found that the deficit variable exerts a positive and statistically significant impact upon inflation in Greece.

Saleh (2003)[25] conducted a cross country survey on "the budget deficit and economic performance'. Employing the vector auto regressive (VAR) and the Vector Error Correction Model (VECM) on time series data, his results show among other findings, strong evidence that budget deficits financial through monetization and a rising money supply leads to inflation.

Solomon and Walter (2004)[26] in their own study on Tanzania also sought to identify the effect of budget deficit on inflation. They collated and used annual data of relevant variables on the country from 1967 to 2001 and employing the co-integration analysis approach in their methodology, established the causal link from budget deficit to inflation. Further simulations show a significant effect of budget deficit on inflation in Tanzania.

Nachega (2005)[27] assessed the fiscal dominance (FD) hypothesis dining the period 1981-2003, using a co-integration analysis. The empirical findings reveal a strong and statistically significant long- term relationship between fiscal deficit and money growth, and between money creation and inflation. This supports the assumption that the FD hypothesis applies throughout the period studied.

Ogunmuyiwa (2008)[28] argued that, there is unidirectional causality between budget deficit and inflation in Nigeria. The result of the study shows that, the causality runs from inflation to budget deficit in Nigeria. This implies that, inflation causes budget deficit in Nigeria.

Omoke and Oruta (2010)[29] studied the causal long term effect relationship between budget deficit, money supply and inflation. They employed Vector Error Correction Model (VECM). Findings from the study revealed that there is a long run relationship between the variables and that money supply Granger causes budget deficit.

Oladipo and Akinbobola (2011)[30] used Granger causality pair-wise test in determining the causal relationship between budget deficit and inflation. The results showed that there was no causal relationship from inflation to budget deficit, while the causal relationship from budget deficit to inflation exists in Nigeria. Furthermore, the result showed that budget deficit affects inflation directly and indirectly through fluctuations in exchange rate in the Nigerian economy.

Also, Chimobi and Igwe (2010)[31] investigated the causality between budget deficit, money supply growth and inflation, using Vector Error Correction (VEC) model and Pair wise Granger causality test. The result revealed that inflation and budget deficit have bilateral/feedback causality.

Olegs (2006)[32] in his study titled “The impact of fiscal policy on prices: does the fiscal theory of the price level (FTPL) matter in Lativa?, used vector autoregressive (VAR) in two variables primary balance ratio to Gross Domestic Products (GDP) and public debt ratio

to Gross Domestic Products (GDP) as well. His overall finding shows that fiscal deficits lead to upward price adjustments needed for solvency.

Adebayo (2007)[21] while attempting to proffer solution to the question does money tells us anything about inflation in Nigeria? employed both the mean absolute percentage errors (MAPE) and the simple autoregressive model in their estimation and his result shows that all the monetary variables examined have relationships with inflation in Nigeria.

Lozano (2008)[33] in his study on budget deficit, money growth and inflation: Evidence from the Columbia case, for a period of twenty five years, used the Johansen's so-integration and Vector Error Correction (VEC) model and finds a causal long term relationship between budget deficits, money growth and inflation which could vary from country to country and in between times in the same country depending on the degree of independence of the central bank.

Menji (2008)[34] in his study titled "the determinants of recent inflation in Ethiopia' made use of quarterly data from 1997 to 2008. He employed the co-integration regression model and his finding among other things was that money supply positively and significantly affects inflation in Ethiopia.

Chuku (2010)[35] in his study on monetary and fiscal policy interactions in Nigeria between 1970 and 2008 uses vector auto regression (VAR) model to explore the nature of fiscal policies in Nigeria. The end result suggests the existence of fiscal dominance in Nigeria.

Tahir and Muhammad (2010)[36] presented a contradictory result of Pakistan's inflationary experience. Their study which re-examined their earlier hypothesis of positive relationship between budget deficits and inflation employed the Johansen's co-integration analysis as well but empirical results of their study show that in the long run, inflation is

not related to budget deficit but to money supply which has no causal link with fiscal imbalance.

Ndanshau (2010)[37] in his study of Tanzania attempts to establish the relative importance of money in explaining inflation. He generated and used quarterly data of Tanzania from 1967 to 2005 and applying the auto regressive distributive lag (ARDL) and error correction model, his findings show that changes in money play a very minute role when compared to other structural factors in determining inflation in Tanzania. His findings aligned Ndanshau (2010)[37], with the structuralism's view on inflation.

Mendee and Nembee (2012)[38] examined the impact of fiscal deficits on inflation in Nigeria between 1980 and 2010, a period of thirty one years. They employed the ordinary least square estimation technique of multiple regressions and found out that inflation rate impacts on fiscal deficits while interest rates do not. This finding somewhat agrees with earlier studies suggesting a causal relationship running from inflation to budget deficits.

Akinbobola (2012)[39] in his study on the dynamics of money supply, exchange rates and inflation in Nigeria using quarterly data samples from 1986 to 2008, employed the vector error correction mechanism (VECM). His results show that there is an inverse effect of money supply and exchange rates on inflation in the long run. He identified the possible reason for his findings on the fact that inflation may arise not as a result of pressure on aggregate demand but due to the vagaries of supply chain of goods and services from both the domestic and from supply sources.

Tiwari and Pandey (2012)[40] conducted a study using India as a case study. They examined the direction of causality among key macro economic variables such as fiscal deficits, government expenditure, money supply and inflation. Embodying the Granger causality approach in their study, the results show that government expenditure causes budget deficits; money supply causes government expenditure and fiscal deficit causes

money supply. The overall analysis of their results indicates a bi-directional causation between budget deficit and inflation in India.

Other studies had several efforts to identify those factors other than budget deficit and money growth that influence inflation. Their results suggested so many variables. Several cross country studies on the determinants of inflation for instance, do not include fiscal imbalances in their regressions, implicitly or explicitly believing that fiscal balance plays no role or that their effects are indirectly captured by other variables[41],[42],[43].

In summary, the above empirical review indicates that most of the works mentioned were studies of other countries. Those of Nigeria were either weak due to fewer numbers of years covered in the study or suffer from inadequacies that the study extends its scope to 2014 from 1982.

RESEARCH METHODOLOGY

RESEARCH DESIGN AND METHODOLOGY

The research design to be employed in this work is the ex-post facto or multiple regression method, based on ordinary least square. The choice for the ex-post facto stems from its major objective which is to explore the relationship between budget deficits and inflationary trends in Nigeria. The Ex-post facto methodology is considered most appropriate for a research of this sort for the following reasons: This research design tries to dig out the cause and effect relationships where causes already exists and cannot be manipulated. The ex-post facto or causal comparative research design makes use of what already exists and looks backwards to explain why it is so and. It provides a means to measure the effects of the independent variables on the dependent variable.

To achieve the full objectives of this study, Gross domestic product which is the dependent variable shall be modelled against the following independent variables; overall

fiscal deficits and inflation so as to ascertain the relationship between them and the possible impact of one on the other.

Multiple regressions involving the ordinary least square method of estimation shall be employed in this research.

MODEL SPECIFICATION

Various econometric methods are available for use in estimating parameters of economic relations from statistical observations. The Fiscal theory of the price level (FTPL) is adopted in building the model for this research and the research also adopts the methods and processes applied by Nachega (2005)[27], in a similar work on "fiscal dominance and inflation in the democratic Republic of the Congo' and Ezeabasili (2012)[43], with a little modification suitable for the Nigeria case.

The functional relationship on which the econometric models shall be based is given as:

$Y = f(X)$

In this study, Y represents the dependent variables whereas X represents the independent variables and F is a functional notation.

Gross domestic product shall be modelled against overall fiscal deficits and inflation, thus:

$GDP = f(FD, INF)$ (1)

It shall further be expressed in an expanded form as:

$GDP = a_o + a_1FD + a_2INF + U_t$ (2)

Where a_o is the regression constant

$a_1 - a_2$ are the regression coefficients of the regressors

GDP = gross domestic product

FD = past year's overall fiscal deficits

INF = inflation rate

U_t = the error term

In equation 2 above, gross domestic product (GDP) is the dependent variable while overall fiscal deficits (FD) and inflation rate (INF) represent the independent variables or the regressors.

ESTIMATION PROCEDURE

Prior to running a regression to obtain the ordinary least square (OLS) estimates and the non linear component of the system using the state space model (SSM), the entire series shall be subjected to some econometric and deterministic examinations.

UNIT ROOT TEST

The unit root test is utilized to test for the stationary of time series data. Since most of the macroeconomic time series are non-stationary (Nelson and Plosser, 1982)[44] and are prone to spurious regression, the first step in any econometric or time series analysis is always to test for stationary. The widely used augmented dickey fuller (ADF) test statistic shall be used to test for stationarity. It shall be compared with the critical values at 5% level of significance. If the ADF test statistic is at any level, greater than the critical values with consideration on their absolute values, the data at the tested order is said to be stationary. Augmented Dickey-fuller test relies on rejecting a null hypothesis of stationary. The tests are conducted with and without a deterministic trend (t) for each of the series. For the purpose of this research, an augmented dickey-fuller (ADF) test shall be conducted by carrying out a unit root test based on the following structure: s

$$\Delta x_t = k + a_t + \theta x_{t-1} + \Sigma_{t=1} \Phi \Delta_{t-1} + e_t \quad (3)$$

Where X is the variable under consideration, Δ is the first difference operator, t captures time trend, at is a random error, and n is the maximum lag length. The optimal lag length is identified so as to ensure that the error term is white noise. K, a, θ and Φ are the parameters to be estimated. If we cannot reject the null hypothesis that θ=o, then we conclude that the series under consideration has a unit root and is therefore non-stationary. On the assumption of unit root for all the variables employed, we would proceed to test for co integration.

ARDL BOUNDS TESTS FOR COINTEGRATION

Engel and Granger (1987) pointed out that a linear combination of two or more non-stationary variables may be stationary. If such a stationary combination exists, then the non-stationary time seriesare said to be co-integrated.It is therefore used to test for the long run relationship between the variables. Cointergration means that despite being individually non-stationary, a linear combination of the two or more time series can be stationary.

In order to empirically analyze the long-run relationships and short run dynamic interactions among the variables of interest (Gross domestic product (GDP), fiscal deficits (FD) and inflation rate (INF)) this study employs the Auto Regresive Distributed Lag (ARDL)/ Bounds testing methodology developed by Nelson and Plosser, (1982) and Jhingan, (2000)[44],[45] to test for the short run relationship among the variables and the long run relationship among those integrated of same order. The major reason for the use of ARDL/Bound test is informed by the numerous advantages which it possesses among which are: First of all, it can be used irrespective of the order of integration of the variables in question. In order words, it can be used when the variables are fractionally integrated i.e. I (1) and I (2). Secondly, the procedure is fairly simple as it involves just a single equation set up which makes implementation and interpretation very simple. Finally, as various

variables enter the model, they can be assigned different lag lengths. However, the ARDL procedure usually make sure that any variable that is integrated of order two (I (2)) does not enter the model as such will invalidate the methodology. The procedure involves formulation of an unrestricted error correction model after which the appropriate lag structure will be determined. Having done this, the model is tested against serial dependency of error terms and stability using the appropriate tests before performing the bound testing to see if there is evidence long run relationship between the variables. If there is evidence of long run relationship, a long run level model will be estimated alongside restricted error correction which measures the short run dynamic effects. The general form of the ARDL is given below:

$$y_t = \beta_0 + \beta_1 y_{t-1} + ...+ \beta_k y_{t-p} + \alpha_0 x_t + \alpha_1 x_{t-1} + \alpha_2 x_{t-2} + ... + \alpha_q x_{t-q} + \varepsilon_t, \qquad (4).$$

DATA DISCUSSION

Data to be employed for this research includes:

Gross domestic product (GDP) according to Jhingan, M.N. (2002) is a measure of all income generated by all factors of production within the country in a certain accounting year. It is earned domestically hence net income from abroad is usually excluded. Hence it is computed by subtracting net income from abroad from the Gross national product (GNP). All these variables shall be collected from their secondary sources as time series data in their original forms. Thus there shall be no further manipulations.

Fiscal deficits denoted by (FD), is defined in so many ways in the literature of macro economics. Agenor and Montiel (1999)[41] identified three versions commonly used as primary deficit, conventional deficit and operational deficit. The primary deficit according to Agenor and Montiel (1999)[41] is the simple difference between government revenues and her expenditure. Conventional deficit is primary deficits augmented by interest payments on both domestic and foreign debts while operational deficit is conventional

deficit adjusted for, inflation (Agenor, 1999)[41]. In this research work, primary deficit shall be used because data on it is readily available, easy to manipulate and is the most common and standard way of explaining fiscal deficits. Therefore, FD = G - T where G is real public spending on goods and services (including current and capital expenditure) and T is real tax revenue.

Inflation rate denoted by INF, used in this study was gotten from past years under the scope of this study.

SOURCES OF DATA

Data is obtained from secondary sources. Secondary data according to Awoke (2001) are those that have already been collected by some other persons and have passed through some statistical processes. Hence, he refers to such data as "second hand". All the variables to be employed in the empirical estimation and analysis shall be sourced from various issues of the Central Bank of Nigeria.

PRESENTATION AND ANALYSIS OF RESULTS

The attempt to study the impact of fiscal deficits and inflation in Nigerian led the researcher to subject the data collected to Unit Root, Co integration, and vector Error Correction tests. The variables considered in this research work are: Gross domestic products, which represent Nigeria (GDP) (dependent variable) and the independent variables include: fiscal deficits (FD) and inflation rate (INF). The empirical results are presented below:

UNIT ROOT TEST

In other to test for the presence or absence of unit root in the data used for the empirical analysis, Augmented Dickey-Fuller (ADF) test was employed and the test result is as presented below:

Table1: Augmented Dickey Fuller Unit Root Test at level (Trend and intercept)

Variables	ADF @ Level	1st difference	Critical value (5%)	Order of integration	Remarks
D(GDP)	-5.389927	-	-3.557759	I(0)	Stationary
D(FD)	-4.156558	-	-3.557759	I(0)	Stationary
D(INF)	-3.049069	-5.187459	-3.562882	I(1)	Stationary

SOURCE: Researcher own compilation

From the result above, Gross domestic products, which represent Nigeria (GDP) and fiscal deficits (FD) exhibited stationarity at level, and only Inflation rate (INF) exhibited stationarity at first difference. The stationarity is achieved by comparing their respective ADF test statistics with the 5% critical values; it is observed that their respective test statistics are greater than the critical values in absolute terms. Thus, the series are stationary.

CO-INTEGRATION RESULT

The outcome of the unit root results instigated the researcher to test for co-integration. Cointegration is used to test for long run relationship between the variables considered. In order to empirically analyze the long-run relationships and short run dynamic interactions among the variables of interest, we apply the autoregressive distributed lag (ARDL) The ARDL cointegration approach was developed by Nelson and Plosser, M. (1982) and Jhingan,

(2000)[44],[45]. The first step in the ARDL bounds approach is to estimate the equations by ordinary least squares (OLS). Below is the result of ARDL model.

Table 2: ARDL RESULT

Included observations: 32 after adjustments			
Variable	Coefficient	Std. Error	t-Statistic
C	8.945068	114.0269	0.078447
GDP(-1)	0.127447	0.249125	0.511580
FD(-1)	-0.124122	0.114790	-1.081293
INF(-1)	-0.264338	0.655122	-0.403494

R^2 = 0.840155 D-W = 1.849652 F-Statistic = 3.400980

Sources: Researchers' compilation from E-view (version 7.0)

DIAGNOSTIC TESTS

The validity of the regression for the underlying ARDL equation was tested against serial correlation using Breusch-Godfrey test and the result is presented below.

BREUSCH-GODFREY SERIAL CORRELATION LM TEST

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.611244	Prob. F(2,12)	0.5587
Obs*R-squared	2.681202	Prob. Chi-Square(2)	0.2617

Sources: *Researchers' compilation from E-view (version 7.0)*

The Observed R-squared is 2.61 while its P-value is 0.26. Similarly, the p-value of the F-statistics is 0.55. Since the P-value is greater than the chosen level of significance (0.05), we therefore cannot reject the null hypothesis. This implies that there is absence of autocorrelation in the model.

The estimation of the equation test for the existence of a long-run relationship among the variables was conducted by employing an F-test for the joint significance of the

coefficients of the lagged levels of the variables, leading to the Bound testing the result of which is presented below:

Table 3: Bounds Test

Test Statistic	Value	K		
F-statistic	6.697412	2		
Critical Value Bounds				
Significance	I0 Bound	I1 Bound		
10%	3.17	4.14		
5%	3.79	4.85		
2.5%	4.41	5.52		
1%	5.15	6.36		

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDP(-1))	-0.444792	0.784353	-0.567081	0.5781
D(GDP(-2))	-0.368457	0.623437	-0.591009	0.5623
D(GDP(-3))	-0.599294	0.419596	-1.428264	0.1713
D(FD)	0.058445	0.120852	-0.483608	0.6348
D(FD(-1))	-0.072176	0.150688	-0.478974	0.6381
D(FD(-2))	0.009439	0.125301	0.075333	0.9408
D(FD(-3))	-0.067134	0.103394	-0.649297	0.5248
D(INF)	-0.266371	0.471159	0.565353	0.5792
C	-54.13093	99.54593	0.543778	0.5937
FD(-1)	-0.104241	0.180136	-0.578679	0.5704
INF	0.201770	0.439332	0.459264	0.6519
GDP(-1)	-0.421133	0.867777	-0.485301	0.6337

R-squared	0.919833	Mean dependent var	2574.555
Adjusted R-squared	0.795938	S.D. dependent var	372289.6
S.E. of regression	168175.3	Akaike info criterion	9.736235
Sum squared resid	12557.43	Schwarz criterion	10.30201
Log likelihood	-129.1754	Hannan-Quinn criter.	9.913429
F-statistic	7.424299	Durbin-Watson stat	1.937644
Prob(F-statistic)	0.000856		

From the Bound test, the F-statistic value is 6.697412. We compare the F-statistic value with the lower and upper bound values (3.79 and 4.85) at 5 percent level of significance. The first level is calculated on the basis that the ARDL model is integrated of order zero, while the second is calculated on the basis that the variables are integrated of order one. Using the Pesaran Critical value at 5% level with restricted intercept and no trend, the lower boundary is 3.79 while the upper bound is 4.85. The null hypothesis of no cointegration is rejected since the value of the F-statics statistic (6.69) is greater than the upper critical bounds value.

From these results, it is clear that there is an evidence of long run relationship amongst the variables when GDP is the dependent variable because its F-statistic value is greater than the upper-bound critical value at the 5% level. This implies that the null hypothesis of no cointegration among the variables is rejected.

From the result of the ARDL Bound test presented above, the coefficient of the constant term is -54.13093 implying that when other variables are kept constant gross domestic products (GDP) decreased by 54.13093 units. The coefficient of D(FD) is 0.058445 implying that a unit change in fiscal deficit brought about 0.058445 units increase in GDP. While the coefficient of D(INF) is -0.266371 meaning that a unit increase in inflation brought about 0.266371 units decrease in GDP.

The result is significant since the coefficient of multiple determinations (0.919833) is greater than zero. The above result indicates that the R^2 is 0.919833 indicating that the explanatory variables explain about 91.98% of the total variations in GDP during the period under consideration while other variables not captured in the model accounted for about the remaining 8.02 percent.

TEST OF HYPOTHESES

HYPOTHESES ONE

$H_{o:}$ There is no significant long run equilibrium relationship between fiscal deficit and inflation in Nigeria.

$H_{1:}$ There is significant long run equilibrium relationship between fiscal deficit and inflation in Nigeria.

To test the hypothesis stated above, we consider the result from the bound test presented in table 3. From these results, it is clear that there is an evidence of long run relationship amongst the variables when GDP is the dependent variable because its F-statistic value is greater than the upper-bound critical value at the 5% level. This implies that the null hypothesis of no cointegration among the variables is rejected.

HYPOTHESES TWO

H_o: Fiscal deficit and inflation do not impact in Nigeria.

H_1: Fiscal deficit and inflation do impact in Nigeria.

From the relationship existing between fiscal deficits and inflation in Nigeria as was revealed by the ARDL bound test analysis, we observed that there was a positive relationship between fiscal deficits and gross domestic product, a negative relationship between inflation and gross domestic products and as such we reject the null hypothesis and conclude that fiscal deficits and inflation do impact in Nigeria.

IMPLICATION OF THE STUDY

The ARDL Bound test result indicated that there was a positive relationship between fiscal deficits and gross domestic products and a negative relationship between inflation

and gross domestic products. This does conform to a priori expectation. A positive relationship was expected to exist among fiscal deficits and gross domestic products and a negative relationship among inflation and gross domestic products. The economy would benefit from a sustained period of fiscal discipline, which will help maintain the economy along a sustainable growth path, with moderate rates of inflation. The results also suggest that it is a just fiscal discipline per se that will help to keep inflation in check and a tight monetary policy can help to hold down inflationary pressures in the light of the economy's experience of insufficient monetary control, which resulted in the monetary growth fuelled by the monetization of the fiscal deficit and domestic credit creation more generally. Thus the government should rely more on borrowing in financial markets than on debt monetization. Failure to adopt these types of policies is likely to lead to a rise in the debt burden and eventually to higher inflation rates. Overall, and on the basis of our results, there is a strong case to be made for central bank independence with complete autonomy in the conduct of monetary policy.

SUMMARY, CONCLUSION AND RECOMMENDATION

SUMMARY OF FINDINGS

The study investigated empirically the relationship between fiscal deficits and inflation in Nigeria for the period between 1982 and 2014 employing various techniques of econometric analysis. In the course of the study, the main objective was to investigate the impact of fiscal deficits and inflation related variables on Nigerian for the period under review. The variables used for the empirical analysis in this study are; gross domestic products (GDP), fiscal deficits (FD) and inflation rate (INF) On the application of advanced econometric techniques (Augmented Dickey Fuller and Autoregressive Distributed Lag test), the following information were extracted;

- Two of the variables (GDP and FD) became stationary at level by ADF

- The remaining variable (INF) became stationary at first difference; this means they all have unit roots which necessitates the test for long run relationship.
- The Auto regressive distributed lag result shows that the variables are cointegrated. Hence, there is presence of long-run equilibrium relationship between the variables used for the estimation.
- To ascertain the impact of fiscal deficits and inflation in Nigeria, the study made use of Autoregressive Distributed Lag. From the result of the ARDL, there exist a positive relationship between fiscal deficits and gross domestic products, a negative relationship between inflation rate and gross domestic products. The positive relationship between GDP and FD and a negative relationship between GDP and INF does conform to a priori expectations.

Finally, the regression result indicated that the coefficient of determination (R^2) was 0.919833. This indicates that the explanatory variables explain about 91.98% of the total variations in GDP during the period under consideration while other variables not captured in the model accounted for about the remaining 8.02 percent.

CONCLUSION

The Nigerian government should be mindful about the sources of the fiscal deficits so as to be able to manage the economic fluctuations and increase activities in the real sector. The need to entrench fiscal discipline in government operations at all levels that will ensure management of public finances, improve budgetary processes, including openness in the budget preparation, execution and reporting is been advocated. Consequently, it could be concluded that, in Nigeria, what should be of paramount concern to policy makers as regards inflation should not so much be the level of fiscal deficits but the sources of its financing as well as the absorptive capacity of the economy. On the whole, policies to control inflation should have in-built ability to increase the productive capacity of the economy.

RECOMMENDATION

Our government should follow the following aspects at least do good jobs on the fiscal deficit inflation risk, prevention work:

i. To strengthen the independence of the central bank, clear the central bank's monetary policy objectives. Right to give a legal guarantee for the independence of the central bank will help cut the fiscal deficit and the money supply of the internal relations, thereby limiting the Government directly through the central bank the possibility of an overdraft to cover the deficit.

ii. Our government should present the implementation of prudent fiscal policy as an opportunity, through the establishment of a sound modern tax collection system, optimize the Structure of government spending and speed up the reform of budget management system and other means to create conditions for the gradual reduction of fiscal deficit.

iii. The Nigerian government should be mindful about the sources of the fiscal deficits so as to be able to manage the economic fluctuations and increase activities in the real sector.

iv. There is need to support growth in the real sectors of the economy by encouraging investors to have access to investible funds.

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APPENDIX I

DATE FOR REGRESSION

YEARS	GDP (GROWTH RATE)	FD (GROWTH RATE)	INF (%)
1982	107.088	37.706	7.70
1983	108.962	34.266	23.20
1984	105.641	28.482	39.60
1985	115.750	108.152	5.50
1986	100.013	23.820	5.41
1987	143.478	25.919	10.20
1988	136.333	71.635	38.30
1989	145.184	2.205	40.90
1990	123.645	51.798	7.50
1991	115.450	135.130	13.00
1992	160.415	197.575	44.50
1993	124.486	156.431	57.20
1994	128.451	55.119	57.00
1995	107.712	79.073	72.80
1996	138.693	114.257	29.30
1997	103.892	171.549	8.50
1998	95.231	71.353	10.00
1999	117.290	106.477	6.60
2000	143.477	124.454	6.90
2001	102.705	146.128	18.90
2002	113.061	161.670	12.90
2003	127.166	110.564	14.00
2004	115.106	182.328	10.10
2005	128.041	10.785	11.50
2006	127.060	44.257	8.60
2007	112.273	103.053	6.60
2008	117.616	70.204	15.10
2009	102.049	59.284	12.10
2010	137.067	113.738	11.80
2011	110.078	36.399	10.30
2012	108.378	113.003	12.00
2013	19.786	95.590	12.10
2014	110.997	109.950	14.21

SOURCE: i) Central Bank Statistical Bulletin, 2014.

ii) www.indexmundi.com

REGRESSION RESULTS

UNIT ROOT TESTS

GDP @ LEVEL

Null Hypothesis: GDP has a unit root				
Exogenous: Constant, Linear Trend				
Lag Length: 0 (Automatic - based on SIC, maxlag=0)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-5.389927	0.0006
Test critical values:	1% level		-4.273277	
	5% level		-3.557759	
	10% level		-3.212361	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(GDP)				
Method: Least Squares				
Date: 09/27/16 Time: 13:55				
Sample (adjusted): 1983 2014				
Included observations: 32 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP(-1)	-0.986827	0.183087	-5.389927	0.0000
C	128.4242	24.96067	5.145063	0.0000
@TREND("1982")	-0.782912	0.460327	-1.700773	0.0997
R-squared	0.500824	Mean dependent var		0.122156
Adjusted R-squared	0.466398	S.D. dependent var		31.61656
S.E. of regression	23.09529	Akaike info criterion		9.206195
Sum squared resid	15468.38	Schwarz criterion		9.343607

Log likelihood	-144.2991	Hannan-Quinn criter.		9.251743
F-statistic	14.54786	Durbin-Watson stat		2.031679
Prob(F-statistic)	0.000042			

FD @ LEVEL

Null Hypothesis: FD has a unit root				
Exogenous: Constant, Linear Trend				
Lag Length: 0 (Automatic - based on SIC, maxlag=0)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-4.156558	0.0132
Test critical values:	1% level		-4.273277	
	5% level		-3.557759	
	10% level		-3.212361	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(FD)				
Method: Least Squares				
Date: 09/27/16 Time: 13:56				
Sample (adjusted): 1983 2014				
Included observations: 32 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
FD(-1)	-0.740299	0.178104	-4.156558	0.0003
C	54.75341	22.00145	2.488628	0.0188
@TREND("1982")	0.803718	1.008160	0.797213	0.4318
R-squared	0.373843	Mean dependent var		2.257625
Adjusted R-squared	0.330660	S.D. dependent var		62.52909
S.E. of regression	51.1570	Akaike info		10.796

	5	criterion		74
Sum squared resid	75894.27	Schwarz criterion		10.93415
Log likelihood	-169.7478	Hannan-Quinn criter.		10.84229
F-statistic	8.657136	Durbin-Watson stat		2.012469
Prob(F-statistic)	0.001127			

INF @ LEVEL

Null Hypothesis: INF has a unit root				
Exogenous: Constant, Linear Trend				
Lag Length: 0 (Automatic - based on SIC, maxlag=0)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-3.045174	0.1363
Test critical values:	1% level		-4.273277	
	5% level		-3.557759	
	10% level		-3.212361	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(INF)				
Method: Least Squares				
Date: 09/27/16 Time: 13:56				
Sample (adjusted): 1983 2014				
Included observations: 32 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
INF(-1)	-0.455826	0.149688	-3.045174	0.0049
C	15.35394	6.744767	2.276422	0.0304
@TREND("1982")	-0.365601	0.283628	-1.289015	0.2076
R-squared	0.24538	Mean dependent		0.2034

	8	var		37
Adjusted R-squared	0.193346	S.D. dependent var		15.73938
S.E. of regression	14.13615	Akaike info criterion		8.224408
Sum squared resid	5795.094	Schwarz criterion		8.361821
Log likelihood	-128.5905	Hannan-Quinn criter.		8.269957
F-statistic	4.715177	Durbin-Watson stat		1.627386
Prob(F-statistic)	0.016865			

INF @ 1ST DIFFERENCE

Null Hypothesis: D(INF) has a unit root				
Exogenous: Constant, Linear Trend				
Lag Length: 0 (Automatic - based on SIC, maxlag=0)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-5.187459	0.0011
Test critical values:	1% level		-4.284580	
	5% level		-3.562882	
	10% level		-3.215267	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(INF,2)				
Method: Least Squares				
Date: 09/27/16 Time: 13:58				
Sample (adjusted): 1984 2014				
Included observations: 31 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(INF(-1))	-0.967096	0.186430	-5.187459	0.0000

C	-0.038150	6.298388	-0.006057	0.9952
@TREND("1982")	-0.015089	0.327983	-0.046007	0.9636
R-squared	0.491139	Mean dependent var		-0.431935
Adjusted R-squared	0.454792	S.D. dependent var		22.05974
S.E. of regression	16.28852	Akaike info criterion		8.510563
Sum squared resid	7428.841	Schwarz criterion		8.649336
Log likelihood	-128.9137	Hannan-Quinn criter.		8.555800
F-statistic	13.51244	Durbin-Watson stat		2.007416
Prob(F-statistic)	0.000078			

ARDL

Dependent Variable: GDP				
Method: ARDL				
Date: 09/27/16 Time: 14:07				
Sample (adjusted): 1986 2014				
Included observations: 29 after adjustments				
Dependent lags: 4 (Fixed)				
Dynamic regressors (4 lags, fixed): FD INF				
Fixed regressors: C				
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GDP(-1)	0.127447	0.249125	0.511580	0.6169
GDP(-2)	0.281590	0.435129	0.647142	0.5280
GDP(-3)	-0.122600	0.410293	-0.298812	0.7695
GDP(-4)	0.697025	0.470221	1.482334	0.1604
FD	-0.090331	0.131607	-0.686371	0.5037
FD(-1)	-	0.114790	-	0.2978

	0.124122		1.081293	
FD(-2)	0.070644	0.116632	0.605704	0.5544
FD(-3)	-0.082409	0.112024	-0.735641	0.4741
FD(-4)	0.097932	0.113497	0.862861	0.4028
INF	0.416509	0.471802	0.882805	0.3922
INF(-1)	-0.264338	0.655122	-0.403494	0.6927
INF(-2)	-0.065092	0.571055	-0.113985	0.9109
INF(-3)	-0.387029	0.586229	-0.660202	0.5198
INF(-4)	0.434927	0.456219	0.953330	0.3566
C	8.945068	114.0269	0.078447	0.9386
R-squared	0.840155	Mean dependent var		117.7632
Adjusted R-squared	0.593122	S.D. dependent var		24.61911
S.E. of regression	168175.3	Akaike info criterion		9.854112
Sum squared resid	11487.88	Schwarz criterion		10.56133
Log likelihood	-127.8846	Hannan-Quinn criter.		10.07561
F-statistic	3.400980	Durbin-Watson stat		1.849652
Prob(F-statistic)	0.021953			
*Note: p-values and any subsequent tests do not account for model				
selection.				

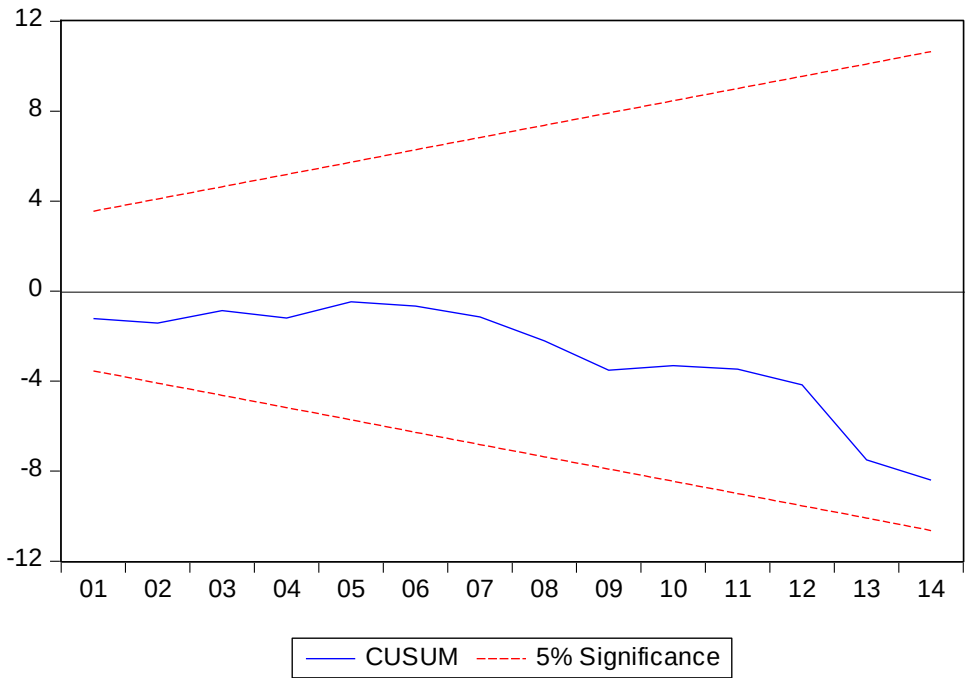
LM TEST RESULT

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.611244	Prob. F(2,12)	0.5587
Obs*R-squared	2.68120	Prob. Chi-	0.2617

	2	Square(2)		
Test Equation:				
Dependent Variable: RESID				
Method: ARDL				
Date: 09/27/16 Time: 14:09				
Sample: 1986 2014				
Included observations: 29				
Presample missing value lagged residuals set to zero.				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP(-1)	-0.598117	0.607835	-0.984012	0.3445
GDP(-2)	0.048301	0.662781	0.072877	0.9431
GDP(-3)	0.084755	0.445205	0.190372	0.8522
GDP(-4)	-0.121602	0.515992	-0.235667	0.8177
FD	-0.008404	0.136587	-0.061532	0.9519
FD(-1)	0.008079	0.119547	0.067583	0.9472
FD(-2)	-0.054754	0.133031	-0.411587	0.6879
FD(-3)	0.008668	0.121559	0.071304	0.9443
FD(-4)	-0.004271	0.118164	-0.036145	0.9718
INF	-0.012571	0.486081	-0.025862	0.9798
INF(-1)	0.159226	0.691597	0.230230	0.8218
INF(-2)	0.162321	0.608083	0.266938	0.7940
INF(-3)	-0.253491	0.654124	-0.387528	0.7052
INF(-4)	0.159971	0.510959	0.313081	0.7596
C	68.89495	133.8050	0.514891	0.6160

RESID(-1)	0.719765	0.683099	1.053675	0.3128
RESID(-2)	0.161608	0.614050	0.263184	0.7969
R-squared	0.602455	Mean dependent var		-2.77E-14
Adjusted R-squared	0.587604	S.D. dependent var		20.25541
S.E. of regression	29.47565	Akaike info criterion		9.895031
Sum squared resid	10425.77	Schwarz criterion		10.69655
Log likelihood	-126.4779	Hannan-Quinn criter.		10.14606
F-statistic	3.076406	Durbin-Watson stat		1.952990
Prob(F-statistic)	0.079996			

CUSUM TEST RESULT



LONG RUN TEST (BOUND TEST)

ARDL Bounds Test				
Date: 09/27/16 Time: 14:13				
Sample: 1986 2014				
Included observations: 29				
Null Hypothesis: No long-run relationships exist				
Test Statistic	Value	k		
F-statistic	6.697412	2		
Critical Value Bounds				
Significance	I0 Bound	I1 Bound		
10%	3.17	4.14		
5%	3.79	4.85		
2.5%	4.41	5.52		
1%	5.15	6.36		
Test Equation:				
Dependent Variable: D(GDP)				
Method: Least Squares				
Date: 09/27/16 Time: 14:13				
Sample: 1986 2014				
Included observations: 29				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDP(-1))	-0.444792	0.784353	-0.567081	0.5781
D(GDP(-2))	-0.368457	0.623437	-0.591009	0.5623
D(GDP(-3))	-0.599294	0.419596	-1.428264	0.1713
D(FD)	0.058445	0.120852	-0.483608	0.6348
D(FD(-1))	-0.072176	0.150688	-0.478974	0.6381
D(FD(-2))	0.009439	0.125301	0.07533	0.9408

			3	
D(FD(-3))	-0.067134	0.103394	-0.649297	0.5248
D(INF)	-0.266371	0.471159	0.565353	0.5792
C	-54.13093	99.54593	0.543778	0.5937
FD(-1)	-0.104241	0.180136	-0.578679	0.5704
INF	0.201770	0.439332	0.459264	0.6519
GDP(-1)	-0.421133	0.867777	-0.485301	0.6337
R-squared	0.919833	Mean dependent var		2574.555
Adjusted R-squared	0.795938	S.D. dependent var		372289.6
S.E. of regression	168175.3	Akaike info criterion		9.736235
Sum squared resid	12557.43	Schwarz criterion		10.30201
Log likelihood	-129.1754	Hannan-Quinn criter.		9.913429
F-statistic	7.424299	Durbin-Watson stat		1.937644
Prob(F-statistic)	0.000856			