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IMPACT OF CAPITAL FLOWS ON ECONOMIC GROWTH IN NIGERIA

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Abstract

This study empirically investigated the effect of Capital Flows on economic Growth in Nigeria. Data was majorly sourced from National Bureau of Statistics and few others, were analyzed by Augmented Dickey Fuller was employed to test of Stationarity, conintegration and recursive residuals (Cusum). A unique long run equilibrium relationship between economic growth, Foreign Direct Investment Net flow, trade openness, Government expenditure, and exchange rate for Nigeria were established. The recursive residuals was also adopted to establish the shortrun dynamics and long run parameters of Capital Flows. It is evidently proved that the residuals and cusum of squares stay within 5% as demonstrated and represented by stylized fact depicted and detailed in section three. The result suggests the stability of the coefficients. Therefore we were arrived at the estimated parameters for the shortrun and longrun dynamics of Capital Flows function which exist over the entire period shows the future tendency of further stability. This study therefore shows that by encouraging exports and diversify to other useful areas will help the economy in term of improving the real Gross domestic product.

Key words: Foreign Direct Investment Net-flow, Trade Openness, Exchange Rate, Real GDP.

INTRODUCTION

It is crystal clear that one country needs another for survival through improvement of the citizen welfare and to develop wealth of nation which can be achieved through capital flow (i.e inflow and outflow). Capital flows became necessary when actual savings exceed desire investment (outflows) or when probable savings are more than actual savings (inflows), but certain factors such as; Restrictions on Gross inflows, Encouragement of Gross Outflows, Trade Liberalization, Exchange rate Flexibility, Sterilization, Policies to Influence the Money Multiplier and Fiscal Contraction must put into cognizance in order for a country's capital flows to be well managed, otherwise capital flows will become capital burden (debt).

The quest of economic growth has been at the front burner of economic policy of most less developed countries. This, however, is frequently hindered by the non-availability of resources that would drive the process of achieving the required economic growth.

Large inflow linger the exigent task for countries that uphold an officially determined nominal exchange rate at the commencement of the inflow and the macroeconomic challenge relates to the fact that huge inflows may result in overheating – that is, an excessive expansion of aggregate demand, resulting in an increase in domestic inflation and an appreciation of the real exchange rate. With a predetermine exchange rate, large capital inflows are likely to engender an overall balance-of-payment surplus. The central bank would have to purchase the excess supply of the foreign currency at the existing exchange rate, this would upshot in an expansion of the monetary base. Base expansion would lead to growth in broader monetary aggregates, which would fuel an expansion of aggregate demand. This, in revolve, would put upward pressure on the domestic price level. With the nominal exchange rate fixed, rising domestic prices would entail an appreciation of real exchange rate.

The need for foreign capital flow happened when the preferred investment exceeds the genuine savings, and also due to investments with long gestation periods that generate non-monetary returns, growing government expenditure that are not tax-financed; and when actual savings are lower than potential savings due to repressed financial markets and even capital flight (Essien & Onwioduokit, 1999).

Nigeria, like most developing economies has benefited enormously from capital flows. However, Nigeria's share in global flows is a miniscule when compared to the net private capital flows for developing countries worth US$491.0 billion in 2005 (World Bank, 2006). In the 1980s and capital flows took the form of foreign direct investment (FDI) and foreign portfolio investment (FPI). While portfolio investment has been a notable feature of developed economies, it is becoming a very important component of the balance of payments of many promising economies, such as China, Hong Kong, India, Singapore, Taiwan, Brazil, South Africa etc. (Obadan, 2004). Recently, portfolio investment has gained prominence in Nigeria. Before the middle of 1980s, Nigeria did not record any figure on portfolio investment (inflow or outflow) in her balance of payment (BOP) accounts. This was attributable to the non-internationalization of the country's money and capital markets as well as the non-disclosure of information on the portfolio investments of Nigerian investors in foreign capital/money markets (CBN 1997:151).On the other hand, FDI dominated Nigeria's capital flows and its benefits are aptly captured by Sadik and Bolbol (2001) in their study. They argued that FDI is the least volatile of capital flows, and more important, can have direct and indirect effects on economic growth. The stability of FDI stems from the fact that direct investors have a longer-term view of

the market, thus making them more resistant to herd behaviour, and from the sheer difficulty of liquidating assets at short notices.

Although, large capital flows could stimulate economic growth or have destabilizing effect in the country, if not well managed. The destabilizing effect of foreign capital inflow has aroused concern over their potential effects on macroeconomic stability, the competitiveness of the export sector, and external sector viability. The most serious risks are that they fuel inflation and drive the real effective exchange rate to unsustainably high levels. In view of the preceding, the study scrutinized the impact of capital flows (foreign direct investment), exchange rate and trade openness on economic growth in Nigeria and the long-run causal relationship existing among the variables. Following the introduction, section 2 presents the theoretical framework and review of relevant literature. Section 3 preview policy reforms, economic growth, capital flows and export in Nigeria. Section 4 presents method of analysis and model specification, while Section 5, focuses on the empirical result and analysis. Finally, section 6 concludes the paper.

THEORETICAL FRAMEWORK AND EMPIRICAL LITERATURE REVIEW

Theoretical Framework

In economic growth literature, the initial model for determining the foreign capital-growth nexus was based on the pioneering works of the post-Keynesian growth models for closed economies as designed by Harrod (1939) and Domar (1946). They tried to identify the pre-conditions needed to enable an industrialized economy, in this case the U.S., to reach steady-state equilibrium of growth. In the early 1960s, the Harrod-Domar approaches, nevertheless, were modified to open economies in the so-called Third World (Little, 1960; Chenery and Bruno, 1962; McKinnon, 1964; Chenery and Strout, 1966).The models assumed that, there is an excess supply of labour, and growth is only constrained by the availability and productivity of capital. Three gaps were identified as constituting constraints to growth, and these gaps were needed to be filled by foreign capital to enable investment. The three gaps are: savings gap; trade balance gap (foreign exchange); and fiscal gap. Theoretically, the rationale for the relationship between capital flows and the savings–investment gap can be explained within the framework of a simple Keynesian macroeconomic model of an open economy or national income identities, where; GDP (Y) = Consumption (C) + Investment (I) +Government (G) and Net Exports (X-M).

Therefore;

$$Y= C + I + G + (X-M) \quad \text{---------- (a)}$$

Also,

GDP (Y) = C + S + T ---------- (b)

Where:

C = Consumption

S = Savings

T = Tax

FCR = Foreign Capital Requirement

From (a) and (b)

C + I + G + (X-M) = C + S + T ----------(c)

(X-M) = C + S + T – C – I – G ---------- (d)

(X-M) = S – I + T– G ---------- (e)[2]

(X-M) = (S + T – G) – I ---------- (f)

FCR = (X-M) = (S + T – G) – I ---------- (g)

In eqn. (f), the gap between aggregate domestic saving (private and public) and domestic investment is equal to the gap between exports and imports. The Two-gap model postulates that if the foreign exchange gap (X – M) required for achieving a target rate of growth is greater than the domestic savings–investment gap, foreign aid is needed to fill the foreign exchange gap. Similarly, foreign aid is needed to fill the savings–investment gap if it is the larger of the two gaps3.The foreign capital requirement (FCR) in the economy could be articulated in terms of the gap between aggregate domestic saving (private and public) and domestic investment and the gap between exports and imports-eqn. (f).

Empirical Literature Review

There exist divergent scholarly opinions on the determinants of foreign capital flow in developing countries as well as its importance in enhancing economic growth. Some empirical studies of foreign capital flow to developing countries indicate that changes in output are the most important determinant of private foreign capital flows (Greene and Villanveva; 1991), while Serven and Solimano (1992), conversely, portrayed the results as puzzling because a substantial amount of variation in output are mostly transitory and hence should not affect investment. Solimano (1992) undertakes an excellent review of other variables that influence foreign capital flows to include exchange rate, irreversibility of investment, uncertainty, and the role of credibility. He concludes that if the domestic private investment climate is not conducive, it becomes difficult to attract a substantial inflow of capital across the borders.

Kang et al (2002) empirically analyzed the determinants of capital flows in Korea and captured cross-country variations in East Asia based on quarterly data from 1990-2001 and concludes that interest rate, inflation rate, real GDP growth and exchange rate volatility were statistically significant. In a related study, Kohli (2003) empirically examines how capital flows affect a range of economic variables such as exchange rates, interest rates, foreign exchange reserves, domestic monetary condition and financial system in India during the period, 1986-2001 and concludes that the inflows of foreign capital have a significant impact on domestic money supply and stock market growth, liquidity and volatility. Froot and Ramadorai (2002) concluded that investor flows are important for understanding deviations of exchange rates from fundamentals, but not for understanding long-run currency values. Using daily, weekly and monthly data for 17 OECD countries, Rey (2002) noted that equity flows have become increasingly important over time and correlate strongly with exchange rates (Hau and Rey, 2002). Pavlova and Rigobon (2003) also estimated OLS regressions to show that demand shocks, linked with increased equity returns and capital inflows, correlate strongly with nominal exchange rates.

Essien and Onwioduokit (1999) in their study on foreign capital flow in Nigeria, using Cointegration technique, identified some variables that influence capital flow to include credit rating, debt service ratio, interest rates differentials, nominal exchange rate, and real income. Ayanwale, (2007) suggested that the determinants of FDI in Nigeria are market size, infrastructure development and stable macroeconomic policy. He posited that FDI contributes positively to economic growth in Nigeria, although the overall effect of FDI on economic growth may not be significant. Chakraborty (2001) explained the effects of inflows of private foreign capital on some major macroeconomic variables in India, using quarterly data for the period, 1993-1999. She analyses the effect of private foreign capital inflows and some macroeconomic variables; foreign currency assets, wholesale price index, money supply, real and nominal effective exchange rates and exports. She confirms the presence of long-run equilibrium relationships between some pairs of variables. The Granger Causality test shows unidirectional causality from private capital flows to nominal effective exchange rates- both trade-based and export based-, which raises concern about the RBI strategy in the foreign exchange market.

Policy Reforms, Economic Growth and Capital Flows in Nigeria

Federal Government of Nigeria's indigenization policy of the 1960s and 70s affected the growth of foreign capital flows into Nigeria. As observed by Anyanwu (1998), changes in domestic investment, change in domestic output or market size, indigenization policy, and change in openness of the economy as the major determinants of FDI. He further noted that the abrogation of the indigenization policy in 1995 encouraged FDI inflow into Nigeria and that effort

must be made to raise the nation's economic growth so as to be able to attract more FDI. Prior to the promulgation of the Nigerian Enterprises Promotion (NEP) Act of 1972, there were some laws (e.g. Exchange Control Act of 1962, Section 7 of the Act, stipulates that "nobody within Nigeria could make any payment to anybody outside Nigeria or make such payment on behalf of anybody resident outside Nigeria without the permission of the Minister of Finance", Companies Act of 1968, Banking Act of 1969, Petroleum Act of 1969, Patents and Design Act of 1970 and Copy Rights Act of 1970) laid the relevant legal framework for the eventual take-off of the indigenization policy.

Nevertheless, different policy reforms led to the change in the investment atmosphere in Nigeria for both domestic and foreign investors. The abrogation of the Nigerian Enterprises Promotion Decree 1989 and the Exchange Control Act of 1962 as well as their succeeding replacements with Nigerian Investment Promotion Council Decree No 16 of 1995 and Foreign Exchange (Monitoring and Miscellaneous Provisions) Decree 17 of 1995, publication of Industrial Policy for Nigeria in January, 1989 provided foreign investors enormous impetus to participate in the economy. The Company and Allied Matters Act 1990 and Nigerian Investment Promotion Commission (NIPC) decree No. 16 of 1995 represented an institutional framework for the formation, management and winding-up of companies as well as registration of business names and incorporated trusteeship in Nigeria, while NIPC is to encourage, promote and co-ordinate investment in the country.

Stylized Fact

With the introduction of various structural reforms: internationalization of domestic money and capital markets; repealing of the Exchange Control Act of 1962; Nigerian Enterprise Promotion (Issue of Non-Voting Equity Shares) Act of 1987 and enactment of the Nigerian Investment Promotion Commission Decree No. 16 of 1995; Foreign Exchange (Monitoring and Miscellaneous Provisions) Decree 17 of 1995; Company and Allied Matters Act 1990; and financial sector reforms aimed at promoting private sector led-growth and ensuring macroeconomic stability, Nigeria attracted substantial volume of foreign capital flows. For example, the FDI was N128.60 million (US$180.04 million) in 1970 and rose to N253.00 million (US$410.78 million) in 1975.By 1985, it has jumped to N434.10 million (US$485.68 million) and further N75,940.60 million (US$937.27 million) in 1995, a decade later. Between 2005 and 2010, FDI increased from N654,193.15 million (US$5,009.07 million) to N905,730.80 million (US$6,011.63 million), indicating a growth rate of 38.5 per cent. As the FDI was growing, the Gross Domestic Product (GDP) and export witnessed tremendous growth. The GDP grew by N5,281.10 million (US$7,393.39 million), N21,475.20 million (US$34,868.00 million),

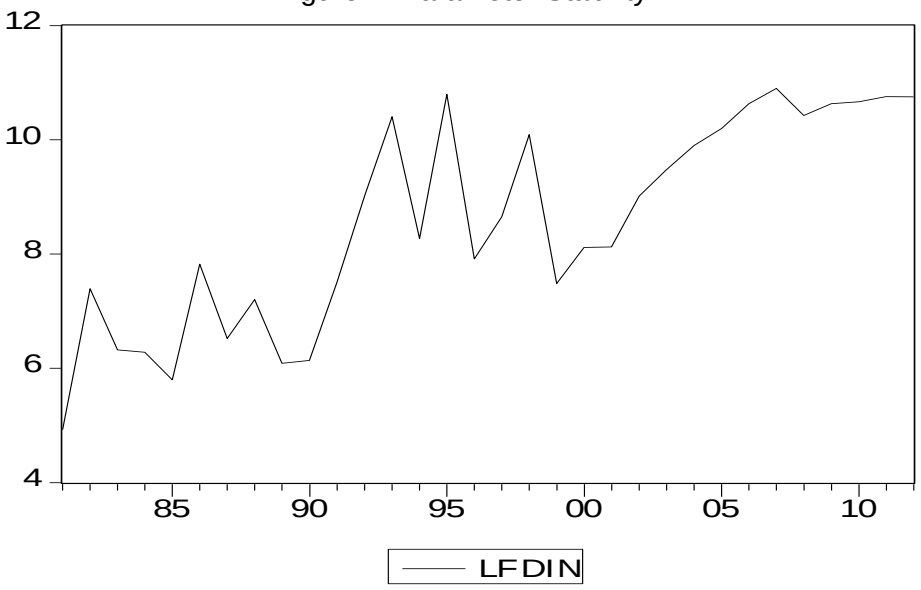
N67,908.60 million (US$75,977.40 million), N1,933,211.60 million (US$23,860.09 million), N14,572,239.10 million (US$111,577.80 million) and N29,108,670.82 million (US$193,203.72 million) for the period, 1970, 1975, 1985, 1995, 2005 and 2010, respectively. The export grew by N885.67 million (US$1,239.91 million), N4,925.50 million (US$7,997.24 million), N11,720.80 million (US$13,113.45 million), N950,661.40 million (US$11,733.26 million), N6,372,052.44 million (US$48,790.00 million) and N11,035,794.50 million (US$73,2248.16 million), respectively, during the same period. Meanwhile, the Nigerian naira exchange rate against the USA dollar fluctuated throughout the period.

Trend Analysis of Economic Growth, Capital Flows and Export in Nigeria

The Nigerian economy has been growing tremendously, especially after the discovery of crude oil and its subsequent dominance from the 1980s. The economy grew by 1985, 1990, 1995, 2000, 2005, 2010 and 2012, respectively. The growth in GDP was mostly driven by the agricultural sector, which forms the mainstay of Nigerian economy. Averagely, the sector contributed 56.4, 28.9, 35.8, 32.9 and 36.5 per cent for the period,1981- 85, 1986-90, 1991- 95, 1996-2000, 2001-2005, 2006-2012, respectively. In addition, while it may be argued that the export sector has increased over the past decades, the sector is dominated by the crude oil. As observed by Gbayesola and Uga (1995), oil has consistently accounted for over 80.0 per cent of total government revenue and over 90.0 per cent of foreign exchange earnings over the past two decades. The oil contributed 22.6, 88.9, 95.3, 97.5 and 97.3 per cent to the export, while the non-oil contribution was 77.4, 11.1, 4.7, 2.5 and 2.7 per cent, respectively, during the period. Correspondingly, capital flows has been increasing in Nigeria. Nigeria's foreign capital flows involve mostly the Foreign Direct Investment (FDI) and Foreign Portfolio Investment (FPI).The FPI is not a very prominent component of capital flows in Nigeria. Until 1986, it was not a component of the capital account of Balance of Payment (BOP) account. On the other hand, FDI forms a miniature percent of the Nigeria's nominal GDP. In average, during the period, 1981-2012, the FDI/GDP ratio was 2.38 per cent. According to CBN (2001:64), the low level of FDI in Nigeria was attributed to a number of factors, among which include; macroeconomic instability, as evidenced by rising inflation, interest and exchange rates volatility, owing to fiscal dominance. Obadan (2004) noted other constrictions as poor infrastructural facilities, frequent interruption of power supply, inadequate water supply and poorly maintained network of roads. Nonetheless, it has grown immensely over time. it was N434.10 million (US$485.68 million) and further N75,940.60 million (US$937.27 million) in 1995. Between 2005 and 2012, FDI increased from N654,193.15 million (US$5,009.07 million) to N905,730.80 million (US$6,011.63 million), respectively.

Provisionally, as the economy was experiencing large inflows of FDI, it also witnessed some outflows. Figure 1 underscores the inflow and outflow of FDI4 into the Nigerian economy during the study period. By 1990, the FDI inflow and outflow were N10,450.2 million (US$1,300.13 million) and N10,914.5 million (US$1,357.90 million) compared to N786.4 million (US$1,439.24) million) and N319.4 million (US$584.55 million) in 1980, respectively. Nonetheless, between 2000 and 2009, the FDI inflow increased to N43,334.7 million (US$291.07 million) from N16,453.6 million (US$163.23 million), while the outflow dropped to N1,905.3 million (US$12.80 million) from N13,106.6 million (US$130.02 million). The net inflow/GDP ratio increased from 0.07 to 0.17 per cent in the same period, perhaps indicating more investors' confidence in a more stable political landscape as well as robust macroeconomic environment. Throughout the period, 1981-2012, the average net flow to GDP was 1.06 per cent.

Figure 1: Parameter Stability



Source: Computed from CBN Statistical Bulletin data

METHODOLOGY

The Data

The time series used in the analysis are annual observation expressed in natural logarithms with sample period, from 1980-2012. The data source is from the various issues of the Central Bank of Nigeria Annual Reports and Statement of Account as well as the Statistical Bulletin, which includes Real Gross Domestic Product (RGDP), Foreign Direct Investment Net flows (FDIN), Foreign Exchange (EXCR), and Trade Openness (TRAP).

Model Specification

In analyzing the long-run static and short-run dynamics relationships among nominal Gross Domestic Product (RGDP), Foreign Direct Investment (FDIN), Foreign Exchange (EXCR) and Trade Openness (TRAP), we used the Johansen Cointegration and CUSUM test for stability. The primary model is specified below:

rgdp = f(fdin, excr, trap) ---------- (1)

The function can also be represented in a log-linear econometric form:

$logrgdp_t = \alpha_0 + \alpha_1 logfdin_t + \alpha_2 logexcr_t + \alpha_3 logtrap_t + \epsilon_t$----------(2)

Where:

rgdp is Real Gross Domestic Product (Proxy for Economic Growth);

excr is Foreign Exchange Rate;

fdin is Foreign Direct Investment netflows

trap is Trade Openness (Export and Import/Nominal Gross Domestic Product); and

α_0 is the constant term, 't' is the time trend, and 'ϵ' is the random error term.

Estimation Techniques

The study took cognizance of the challenges (non-stationarity/unit root) that may arise with econometric modeling, using time-series data. Results from a regression exercise involving non-stationary data is observed to be spurious (Granger and Newbold, 1974 and Granger, 1981). Therefore, the empirical analysis is carried out in the light of the recent developments in the time series analysis and this would check for the order of integration of these variables.

Cointegration Rank Test

For the cointegration test, the maximum likelihood test procedure established by Johansen and Juselius (1990) and Johansen (1991) was used. In the test, if y_t is a vector of n stochastic variables, then there exists a p-lag vector auto regression with Gaussian errors. Johansen's methodology takes its starting point in the vector autoregression (VAR) of order P given by

$y_t = \mu + \Delta y_{t-1} - - - + \Delta P y_{t-p} + \epsilon_t$----------(3)

Where y_t is an (nx1) vector of variables that are integrated of order commonly denoted (1) and is an ϵ_t(nx1) vector of innovations. In order to determine the number of co-integration vectors, Johansen (1988, 1989) and Johansen and Juselius (1990) suggested two statistic tests, the first one is the trace test. It tests the null hypothesis that the number of distinct cointegrating vector is less than or equal to q against a general unrestricted alternatives q = r. the test calculated as follows:

trace (r) = T_{r+1}(*In* 1-$_t$---------- (4)

T is the number of usable observations, and the $_i$ is the estimated eigen value from the matrix. The second statistical test is the maximum eigen value test (max) that is, calculated according to the following formula;

max(r, r +1) = T In (1-$_r$+1). The test concerns a test of the null hypothesis that there is r of co-integrating vectors against the alternative that r + 1 co-integrating vector.

ANALYSIS & RESULTS

The result of the unit root test shows that all the series are not stationary at level, thereby indicating the presence of unit root (Appendix). However, following the differencing of all the variables once, both the ADF and PP test suggested the absence of unit root (Appendix). We therefore concluded that the variables are stationary at first difference. This implies that the variables are integrated of order one, i.e. 1(1). With a maximum lag length of p – 2, the Schwarz criterion (SC), the Hannan-Quinn (HQ), the Akaike criterion (AIC) and Final Prediction Error (FPE), all indicates a VAR order of p=1 (Appendix). The Johansen cointegration test was used to examine the presence or non-presence of cointegration among the variables. When a cointegration relationship is present, it means that nominal Real Gross Domestic Product (RGDP), Foreign Direct Investment Netflow (FDIN), Exchange Rate (EXCR) and Trade Openness (TRAP) share a common trend and long-run equilibrium. The result indicates the trace statistics having at least one (1) cointegrating vector and maximum Eigenvalue statistic indicates one (1) cointegrating vector at the 5 per cent level of significance, suggesting that there is cointegrating (long-run) relations between the variables tested.

Following the above results, Pairwise Granger Causality Test procedure was applied and Cusum Trend was developed. It provides evidence that FDIN, EXCR and TRAP accounts for a large share of the explained variation in RGDP. The estimated coefficient indicates that about 40 per cent of the errors in the short-run are corrected in the long-run.

From the short-run dynamic model, all the variables appear to be statistically significant, except the Foreign Direct Investment Netflow (FDIN), that is, statistically not significant. Furthermore, the model's R-squared and Adjusted R-squared are 0.752 and 0.743, respectively, thus, indicating that over 75 per cent of the variation in the dependent variable is explained by changes in the explanatory variables. The F-statistic (51.0), which measures the overall significant of the model, was equally high. Considering that FDIN is not statistically significant in the model, we conducted exogeneity test by using a less direct root (estimating a marginal model of the variable) through a dynamic short-run equation.

In addition, the Granger causality test was conducted and its decision rule requires that, for a high F-statistic value and low probability value, we reject null hypothesis and accept the alternative hypothesis. However, given a low F-statistic and high probability value, we accept the null and reject the alternative hypothesis. The outcome of the causality test indicates that foreign direct investment net flow does not granger cause real gross domestic product. However, real gross domestic product granger causes foreign direct investment net flow, indicating uni-directional causality. Causality runs from real gross domestic product to exchange rate granger causes real gross domestic product, foreign direct investment net flow. Also, bi-directional causality runs between trade openness and exchange rate.

CONCLUSION

We attempts to offer evidence on the relationship among real gross domestic product (rgdp), foreign direct investment netflow (fdin), and exchange rate (excr) and trade openness (trap) in Nigeria. The series used in the analysis was tested for stationarity, using Augmented Dickey-Fuller (ADF). The result indicted that the variables are not stationary at level, though stationary at first difference. On the Johansen Cointegration test, it shows the presence of long-run relationship among the cointegrating variables. The model indicated that all the variables are statistically significant, except the FDIN and this was confirmed by the exogeneity test. The granger causality test indicates both the existence of uni-directional and bi-directional causality among some of the variables.

POLICY RECOMMENDATION

Capital flows are very important because of their potential effects on the macroeconomic stability, monetary and exchange rate management as well as competitiveness of the export and external sectors viability of a country. This is because no matter the nature of capital flows (flows over a medium-to long-term), they are expected to influence the monetary aggregates, especially, the economy's net foreign assets (NFA), inflation as well as real effective exchange rate, aggregate output (GDP) and possibly the domestic interest rates. Consequently, any policy recommendation on this should understand, the nature, what drives the capital flows and the impact of its sudden surge or reversal on economy. It is recommended that government should continue to pursue trade and foreign exchange policies that would ensure competitiveness of the export sector viability and economic growth, while foreign direct investment should be encouraged amidst thriving business environment that would engender economic growth. Major limitations encountered while working on this paper are financial and time constrain among others.

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APPENDIX 1 - 4

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LRGDP)
Method: Least Squares
Date: 10/31/14 Time: 16:12
Sample(adjusted): 1983 2012
Included observations: 30 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LRGDP(-1)	-0.002198	0.006922	-0.317610	0.7531
D(LRGDP(-1))	-0.175366	0.658909	-0.266146	0.7921

R-squared	0.004328	Mean dependent var	-0.030854
Adjusted R-squared	-0.031232	S.D. dependent var	0.446167
S.E. of regression	0.453081	Akaike info criterion	1.318847
Sum squared resid	5.747897	Schwarz criterion	1.412260
Log likelihood	-17.78271	Durbin-Watson stat	1.112566

ADF Test Statistic	-1.512100	1% Critical Value*	-2.6453
		5% Critical Value	-1.9530
		10% Critical Value	-1.6218

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LRGDP,2)
Method: Least Squares
Date: 10/31/14 Time: 16:19
Sample(adjusted): 1984 2012
Included observations: 29 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LRGDP(-1))	-1.501026	0.992676	-1.512100	0.1421
D(LRGDP(-1),2)	0.208795	0.641937	0.325258	0.7475

R-squared	0.107492	Mean dependent var	-0.076606
Adjusted R-squared	0.074436	S.D. dependent var	0.479248
S.E. of regression	0.461066	Akaike info criterion	1.355922
Sum squared resid	5.739718	Schwarz criterion	1.450219
Log likelihood	-17.66087	Durbin-Watson stat	1.109789

ADF Test Statistic	1.126143	1% Critical Value*	-2.6423
		5% Critical Value	-1.9526
		10% Critical Value	-1.6216

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(EXCR)
Method: Least Squares
Date: 10/31/14 Time: 16:20
Sample(adjusted): 1983 2012
Included observations: 30 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EXCR(-1)	0.038979	0.034613	1.126143	0.2697
D(EXCR(-1))	0.045952	0.200228	0.229500	0.8201

R-squared	-0.074374	Mean dependent var	5.221333
Adjusted R-squared	-0.112745	S.D. dependent var	13.97540
S.E. of regression	14.74219	Akaike info criterion	8.283644
Sum squared resid	6085.297	Schwarz criterion	8.377057
Log likelihood	-122.2547	Durbin-Watson stat	2.003412

ADF Test Statistic	-2.986492	1% Critical Value*	-2.6453
		5% Critical Value	-1.9530
		10% Critical Value	-1.6218

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(EXCR,2)
Method: Least Squares
Date: 10/31/14 Time: 16:21
Sample(adjusted): 1984 2012
Included observations: 29 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(EXCR(-1))	-0.750426	0.251273	-2.986492	0.0059
D(EXCR(-1),2)	-0.130411	0.191131	-0.682311	0.5009

R-squared	0.440788	Mean dependent var	0.117241
Adjusted R-squared	0.420077	S.D. dependent var	19.98390
S.E. of regression	15.21828	Akaike info criterion	8.349344
Sum squared resid	6253.096	Schwarz criterion	8.443641
Log likelihood	-119.0655	Durbin-Watson stat	2.019087

ADF Test Statistic	1.091922	1% Critical Value*	-2.6423
		5% Critical Value	-1.9526
		10% Critical Value	-1.6216

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LTRAP)
Method: Least Squares
Date: 10/31/14 Time: 16:23
Sample(adjusted): 1983 2012
Included observations: 30 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LTRAP(-1)	0.031253	0.028622	1.091922	0.2842
D(LTRAP(-1))	-0.092350	0.194823	-0.474019	0.6392

R-squared	-0.057432	Mean dependent var	0.256000
Adjusted R-squared	-0.095198	S.D. dependent var	0.810830
S.E. of regression	0.848548	Akaike info criterion	2.573759
Sum squared resid	20.16092	Schwarz criterion	2.667172
Log likelihood	-36.60639	Durbin-Watson stat	2.034117

ADF Test Statistic	1.091922	1% Critical Value*	-2.6423
		5% Critical Value	-1.9526
		10% Critical Value	-1.6216

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LTRAP)
Method: Least Squares
Date: 10/31/14 Time: 16:24
Sample(adjusted): 1983 2012
Included observations: 30 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LTRAP(-1)	0.031253	0.028622	1.091922	0.2842
D(LTRAP(-1))	-0.092350	0.194823	-0.474019	0.6392

R-squared	-0.057432	Mean dependent var	0.256000
Adjusted R-squared	-0.095198	S.D. dependent var	0.810830
S.E. of regression	0.848548	Akaike info criterion	2.573759
Sum squared resid	20.16092	Schwarz criterion	2.667172
Log likelihood	-36.60639	Durbin-Watson stat	2.034117

ADF Test Statistic	0.822478	1% Critical Value*	-2.6423
		5% Critical Value	-1.9526
		10% Critical Value	-1.6216

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LFDIN)
Method: Least Squares
Date: 10/31/14 Time: 16:26
Sample(adjusted): 1983 2012
Included observations: 30 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LFDIN(-1)	0.018981	0.023078	0.822478	0.4178
D(LFDIN(-1))	-0.507034	0.154057	-3.291216	0.0027

R-squared	0.273376	Mean dependent var	0.111889
Adjusted R-squared	0.247425	S.D. dependent var	1.251429
S.E. of regression	1.085628	Akaike info criterion	3.066535
Sum squared resid	33.00046	Schwarz criterion	3.159948
Log likelihood	-43.99802	Durbin-Watson stat	2.157145

ADF Test Statistic	-5.053845	1% Critical Value*	-2.6453
		5% Critical Value	-1.9530
		10% Critical Value	-1.6218

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LFDIN,2)
Method: Least Squares
Date: 10/31/14 Time: 16:27
Sample(adjusted): 1984 2012
Included observations: 29 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LFDIN(-1))	-1.631869	0.322896	-5.053845	0.0000
D(LFDIN(-1),2)	0.093764	0.179880	0.521258	0.6064

R-squared	0.752252	Mean dependent var	0.036745
Adjusted R-squared	0.743076	S.D. dependent var	2.195779
S.E. of regression	1.112989	Akaike info criterion	3.118448
Sum squared resid	33.44613	Schwarz criterion	3.212744
Log likelihood	-43.21750	Durbin-Watson stat	1.983761

Date: 10/31/14 Time: 16:32
Sample: 1981 2012
Included observations: 30
Test assumption: Linear deterministic trend in the data

Series: LRGDP EXCR LTRAP LFDIN
Lags interval: 1 to 1

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.459458	31.63728	47.21	54.46	None
0.243659	13.18177	29.68	35.65	At most 1
0.100508	4.803889	15.41	20.04	At most 2
0.052762	1.626148	3.76	6.65	At most 3

*(**) denotes rejection of the hypothesis at 5%(1%) significance level
L.R. rejects any cointegration at 5% significance level

Unnormalized Cointegrating Coefficients:

LRGDP	EXCR	LTRAP	LFDIN
0.097652	0.001891	-0.189099	0.207121
-1.255564	0.004323	0.073341	0.009670
-0.499783	-0.002308	0.089861	0.133263
0.818502	-0.008255	0.001178	-0.022401

Normalized Cointegrating Coefficients: 1 Cointegrating Equation(s)

LRGDP	EXCR	LTRAP	LFDIN	C
1.000000	0.019368	-1.936450	2.121003	-22.36689
	(0.07738)	(6.03175)	(6.92453)	
Log likelihood	-191.2895			

Normalized Cointegrating Coefficients: 2 Cointegrating Equation(s)

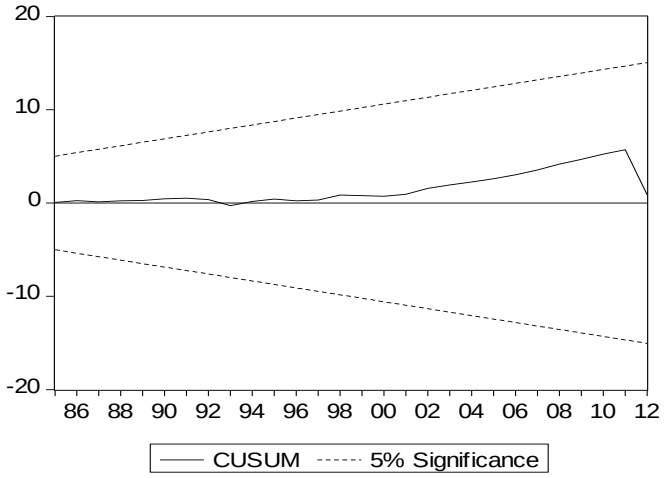
LRGDP	EXCR	LTRAP	LFDIN	C
1.000000	0.000000	-0.341901	0.313625	-13.68977
		(0.18101)	(0.26466)	
0.000000	1.000000	-82.32727	93.31571	-448.0036
		(43.1901)	(63.1512)	
Log likelihood	-187.1006			

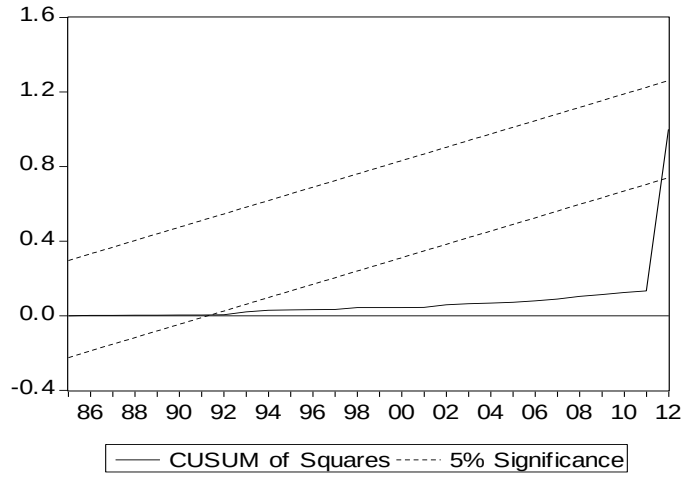
Normalized

Cointegrating Coefficients: 3 Cointegrating Equation(s)

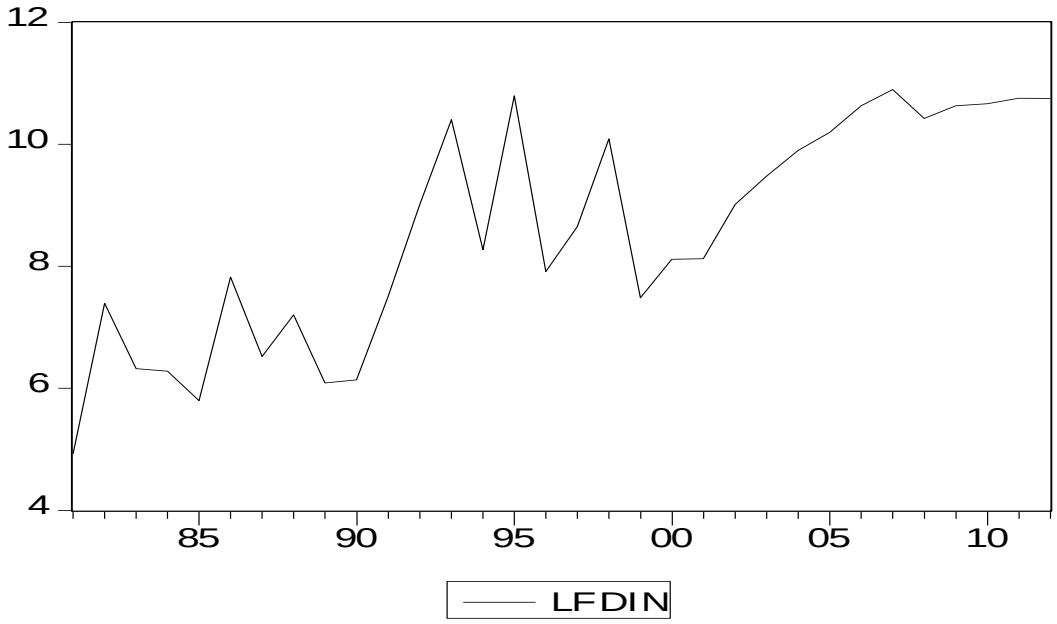
LRGDP	EXCR	LTRAP	LFDIN	C
1.000000	0.000000	0.000000	-0.323909	-9.929089
			(0.17976)	
0.000000	1.000000	0.000000	-60.19777	457.5407
			(43.0982)	
0.000000	0.000000	1.000000	-1.864674	10.99932
			(0.61220)	
Log likelihood	-185.5117			

CUSUM





FDI netflow trend from 1981 – 2012



Pairwise Granger Causality Tests
Date: 11/05/14 Time: 07:01
Sample: 1981 2013
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Probability
LFDIN does not Granger Cause LRGDP	31	0.26660	0.76805
LRGDP does not Granger Cause LFDIN		1.80662	0.18422
EXCR does not Granger Cause LRGDP	31	0.54076	0.58871
LRGDP does not Granger Cause EXCR		0.68866	0.51118
LTRAP does not Granger Cause LRGDP	31	1.33918	0.27954
LRGDP does not Granger Cause LTRAP		0.33014	0.72179
EXCR does not Granger Cause LFDIN	31	2.18788	0.13237
LFDIN does not Granger Cause EXCR		0.94460	0.40178
LTRAP does not Granger Cause LFDIN	31	4.21804	0.02591
LFDIN does not Granger Cause LTRAP		2.62776	0.09133
LTRAP does not Granger Cause EXCR	31	3.68720	0.03893
EXCR does not Granger Cause LTRAP		1.48906	0.24420

Pairwise Granger Causality Tests
Date: 11/05/14 Time: 07:06
Sample: 1981 2013
Lags: 1

Null Hypothesis:	Obs	F-Statistic	Probability
LFDIN does not Granger Cause LRGDP	32	0.00953	0.92290
LRGDP does not Granger Cause LFDIN		4.18102	0.05005
EXCR does not Granger Cause LRGDP	32	0.02871	0.86663
LRGDP does not Granger Cause EXCR		0.36062	0.55283
LTRAP does not Granger Cause LRGDP	32	0.02290	0.88077
LRGDP does not Granger Cause LTRAP		0.63494	0.43203
EXCR does not Granger Cause LFDIN	32	8.71653	0.00619
LFDIN does not Granger Cause EXCR		1.91617	0.17684
LTRAP does not Granger Cause LFDIN	32	15.9733	0.00040
LFDIN does not Granger Cause LTRAP		4.09259	0.05238
LTRAP does not Granger Cause EXCR	32	0.51556	0.47849
EXCR does not Granger Cause LTRAP		2.43662	0.12938