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The Determinants and Roles of Capital Flight in the Growth Process of Nigerian Economy: Vector Autoregressive Model Approach

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ABSTRACT

A plethora of studies in recent years have focused attention on the determinants and roles of capital flight in the development process. This paper contributed to this body of knowledge by filling a noticeable gap. Principally, the paper examined the extent and magnitude of contributions of external debt and corruption to capital flights plus other factors that have been examined in the literatures. The paper employed standard methodological approach, Vector Autoregressive Model, to determine the sources of shock to capital flight in Nigeria. The study found that the greatest shock to capital flight came from external debt and corruption. Nevertheless the debt relief of 2005 minimized the capital flight in Nigeria. The findings of the study demonstrated that, capital flight limits growth potential, crowds-out investment, and worsens capital formation. The study suggested the need for the policy makers to encourage growth, and reverse the negative distributional effects of capital flight. Specific policies might include repatriation of flight capital to boost the growth initiatives with selective controls on capital outflows, changes in Nigeria tax laws, and a bias toward poor wages. More generally, a new overall strategy that would encourage Nigerians abroad to come back home and invest in the country was recommended.

Keywords: Capital flight; external debt; corruption; economic growth; debt relief;

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1. INTRODUCTION

Capital flight which derives its name from the term flight can be described as capital movements from one country to another. Whereas some label these capital movements as flight; some others label it as foreign investment. In the light of this; some economists argue that it is unnecessarily pejorative to label capital movements from Nigeria for instance flight while terming movements from the U.S. foreign investment. Moreover, much of the capital that exited did so with either government approval or acquiescence, rendering untenable an attempt to label these flows flight on the basis of their illegality. There are, however, good reasons for labeling the vast majority of these capital movements flight. There is a general presumption in the literatures that capital movements from capital-scarce countries such as those in the developing world to higher-wage areas of advanced countries are thus unexpected and unusual. A good reason for the labeling is that capital flight means lost of resources to the domestic economy, and therefore, lost of opportunities. It is paradoxical that resources are flowing out of developing countries rather than to them, although it is in developing countries that resources are most needed to generate economic growth and development. Even very poor countries have become net lenders to the rest of the world (see, e.g., Boyce and Ndikumana, 2001). Such lost of resources does not contribute to the expansion of domestic economic activities or to the improvement of the social welfare of domestic residents. On the contrary, they imply foregone goods and services essential to sustaining economic growth. Moreover, capital flight can also mean lost of resources for debt servicing, thus making the social burden of external debt heavier. Since in the developing countries institutions are weak, fragile or missing, the social and economic costs can be large and can affect many in society. And because capital flight is often undertaken by the elite, the rest of society carries a disproportionate burden of the external debt. In fact, the elite are often able to avoid these costs because they are able to transfer their wealth abroad. Thus in context of this study, capital flight is defined as capital movement from capital-scarce countries to higher-wage areas.

A plethora of studies in recent years have focused attention on the determinants and roles of capital flight in the development process. These issues are particularly more pertinent to Nigeria in view of its relatively high incidence of capital flight in the presence of foreign exchange constraints, limited foreign capital inflows, external indebtedness and high dependence on overseas development assistance. The Nigeria debt crisis that started in the early 1980s with a growing strand of debt services triggered the concern over the impact of capital flight in the development process in the country. The phenomenon termed '*capital flight'* therefore became a heated issue since 1980s. It came to be recognized as a reasonably good indicator to the investment climate in the country. It thus gained increasing prominence as an indicator of credibility when the IMF and World Bank began to attach much importance to it. It was argued that the occurrence of capital flight severely constrains the development of economies that are already burdened by debt and poor economic performance. Capital flight measures are thus viewed as important indicators of a nation's predicament in financing international debt repayments and a warning to the international bank community as to the risk of further lending to these countries.

1.1 The Problem and the Objectives

Capital flight is a phenomenon, which though unobservable, is still assumed to be widely prevalent in Nigeria despite the debt relief of 2005. It was expected that the debt relief of 2005 should have solve the problem of capital flight in Nigeria. This study was motivated by

the fact that we had no record of recent experience and that the compilation procedures for Balance of Payments at the IMF – on which these estimates are based – has changed since 2005. Therefore a consistent study was needed to review the historical experience. This paper examines the evidence to see if the debt relief has made any noticeable impact on the development of Nigeria. This paper further examines the determinants of the estimated capital flight. A case is made to support the argument that capital flight estimates are determined majorly by corruption, political instability and macroeconomic instability in Nigeria. The study also captures other items that relate to the flight of capital. This paper thus provides evidence of resident capital outflows and makes the case for country specific case studies to interpret these numbers as capital flight. The estimates provide a useful ground for carrying out further research on capital flight and can be used in conjunction with recorded flows to analyze movements of capital in developing countries. The rest of this paper is organized as follows: Section 2 presents the literature review. The methodology of the study is discussed in section 3. In section 4 we carry out the data analysis and discuss the findings while section 5 summaries the findings, draws conclusions and makes policy recommendations.

2. LITERATURE REVIEW

Capital flight is common phenomenon that has been discussed both in theoretical and empirical literatures with divergent views on its concepts, definitions, causes and effects. Clearly, this gives the background for further studies and prescriptions for policy formulations. It is therefore needful to probe into these studies to discover the gap and the need for additional studies in terms of methodological approaches, statistical techniques, cross-country coverage, time-period used and nature and sources of data. Among the studies that shall be examined on the determinants of capital flight are Ajayi (1997); Boyce and Ndikumana (2001); Collier, Hoeffler and Pattilo (2001); Hermes et al. (2002); Ndikumana and Boyce (2002); Mohamed and Finnoff (2004)]. These studies identified macroeconomic instability, political instability, external borrowing and financial development, as major determinants of capital flight.

Fischer (1993) identified macroeconomic variable such as inflation, fiscal balance, economic growth, current account position, and exchange rate movements as factors that can influence the nature and extent of capital flight. According to him, high inflation, for instance, make domestic asset holders react to the erosion of the real value of their assets by moving their assets abroad. Also, since inflation is often regarded as an indicator of the government overall ability to manage the economy, a rising inflation rate tends to undermine that ability. Some other empirical studies that have found evidence of a positive relationship between capital flight and inflation, include, Murinde et al., (19960; Lensink et al. (1998); Olopoenia (2000); Nyoni (2000;) Ndikumana and Boyce, (2002). While Hermes and Lensink (1992) found a strong support for a positive link between real effective exchange rate and capital flight in Cote d'Ivoire, Nigeria, Sudan, Tanzania, Uganda, and Zaire (now Democratic Republic of Congo) for the period 1978-88. Murinde et al. (1996); Lensink et al. (1998); and Ng'eno 2000) found no statistically significant relationship between the two variables.

As discussed in the literatures budget deficit, may also encourage capital flight. Increased budget deficit raises expectations of domestic economic agents regarding future tax increases to meet the government debt repayment obligations, thereby resulting in capital flight. For instance, Ndikumana and Boyce (2002) found a negative and statistically significant relationship between budget 'surplus' and capital flight in cross-sectional regressions, but a positive and statistically significant relationship in panel data regressions.

Another variable that can influence capital flight is fiscal balance that is taxation. In the words of Ndikumana and Boyce (2002), tax incentives to foreign investors, as opposed to domestic investors, may drive domestic capital out of the country. Yet another macroeconomic driver of capital flight is growth rate of an economy, or growth rate differentials between countries. Here, the hypothesis is that the lower the growth rate of an economy, the higher is the capital flight. Nyoni (2000) finds strong support to the link between capital flight and the growth rate differential between Tanzania and the UK; whereas Hermes et al. (2002) Provided a plausible explanation for a mixed effects of the economic growth rate on capital flight.

Hermes and Lensink, (2000) and Lensink et al., (2000) in their empirical studies discovered that political instability in Africa is associated with greater capital flight whilst democracy and political freedom tend to reduce the incidence of capital flight. These together with weaknesses in the institutions for protecting property rights and incessant political unrest and associated general sense of insecurity to life and property tend to encourage capital flight in Nigeria.

In his empirical study, Boyce (1992) identified 2 sets of bi-directional causality between external debt and capital flight, leading to the categorization of causal linkages into: debt-driven capital flight; debt-fuelled capital flight; flight-driven external borrowing; and flight-fuelled external borrowing. Contrary to the findings of Boyce, Ajayi (1997) found no evidence of causal links (in any direction) between external debt and capital flight. However, Collier et al. (2001), in a cross-sectional study, which includes some African countries, found evidence of debt-fuelled capital flight. Such finding is not surprising, as it must have been largely influenced by the presence of non-African countries in the sample where evidence of debt-fuelled capital flight and flight-fuelled external borrowing had been reported earlier.

Another major determinant of capital flight is risk-adjusted returns to investment. Certain studies have demonstrated a linkage between risk-adjusted returns to investment and capital flight. This is argued on the assumption that investors attempt to maximize profits by diversifying their portfolios between foreign and domestic investments based on the relative risk-adjusted rate of return abroad and at home. Ndikumana and Boyce (2002 in their empirical studies, used exchange rate volatility, interest rate differential between home and abroad, and a host of survey-based measures of institutional investor risk perceptions to explain the concept of risk-adjusted returns to investment. Ndikumana and Boyce (2002 including Hermes and Lensink, (1992); Murinde et al., (1996); Nyoni, (2000); Ng'eno, (2000), which used interest rates as an explanatory variable in their models found no statistically significant relationship between interest rates and capital flight. However Murinde, et al., (1996); Hermes and Lensink, (1992) and Lensink et al., (1998), which used exchange rate indicators as an indicator of risk-adjusted returns found some evidence of the link between exchange rate overvaluation and capital flight in Sub-Saharan Africa.

2.1 Summary of the Literature Review and Gap to Be Filled

In our literature review, care has been taken to critically examine the determinants of capital flight in developing nations including Nigeria .The review shows that several variables except corruption and debt relief leads to capital flight. Most of the empirical studies did not include corruption and debt relief to verify the determinants of capital flight. Whereas most of the capital flight that occur in developing nation emanated from corrupt practices. This study shall incorporated corruption and debt relief as explanatory variables and tests if any

significance relationship exists between corruption, debt relief and capital flight in Nigeria. This study fills this gap.

3. METHODOLOGY AND MATERIALS

3.1 The Data

The study focused on the determinants and the roles of capital flight in the growth process of Nigerian economy. Time series secondary data were used for the analysis. The secondary data were obtained from such publications as World Bank Digest of Statistics, Central Bank of Nigeria statistical bulletin and International Financial Statistics. Data were also obtained from website, Journals and Newspapers.

Since the study makes use of time series secondary data, we checked the temporal properties of the variables in the model via unit root tests in order to determine the stationarity of the variables. The study use vector autoregressive model approach for the data processing and use some diagnostic tests such as F-test, Akaike , Schwarz criteria test and variance decomposition analysis to determine the sturdiness and significance of the empirical model.

3.2 The Model

This study uses vector autoregressive model. The term autoregressive is due to the appearance of the lagged value of the dependent variable on the right-hand side and the term vector is due to the fact that we are dealing with a vector of two or more variables. The model is based on 2 lags of each endogenous variable. In a VAR model, each variable is in turn explained by its own lagged value, plus current and present value of the remaining variables. The VAR model present all variables as dependent variables which have the dynamic power to reflect impact of random disturbance on the variables, thereby modeling every endogenous variable in the system as a function of the lagged value of all the endogenous variable in the system. The VAR model presented here is composed of seven variables, namely: Capital flight (CAPFL) Exchange rate (EXCHR), Inflation rate (INFR) External Debt Relief(EXDR), Economic growth (GDP), wage rate(WR) and Corruption Perception Index(CPI)

Thus, this research work adopts a VAR model of Abdul Majid (2007) as modified by the researcher as follows:

$$\alpha_t = \Sigma A_i \alpha_{t-1} + \varepsilon_t \quad \text{.....1}$$

Where:

$\alpha_{t=}$ is a column vector of observation at time t on all the variance in the model, i.e. Σ= summation of exogenous variable at time t

$\alpha_{t-1=}$ lag of endogenous variable.

$\varepsilon_t = V_1.V_7$ are the impulse or innovation of shocks.

$A_i = x_1\text{-}x_7$

Following the literatures and the modeling approach of Abdul Majid (2007), we can specify the capital flight model in a functional form as:

Capital flight = f(Exchange rate, ,inflation rate external debt, Economic growth, wage rate,).

$CAPFL = \alpha 0 + \alpha_1 EXCHR + \alpha_2 EXDR + \alpha_3 INFR + \alpha_4 GDP + \alpha_5 WR + \alpha_6 CPI + U$……..(2)

Where:
CAPFL = Capital flight
EXCHR = Exchange rate
EXDR = External Debt Relief
INFR = Inflation rate
GDP = Economic growth
WR = Wage rate.
CPI = Corruption Perception Index

Using Vector Autoregressive model,

$CAPFL_t = \alpha_0 + \alpha_1 EXCHR_{t-1} + \alpha_2 EXDR_{t-1} + \alpha_3 INFR_{t-1} + \alpha_4 GDP_{t-1} + \alpha_5 WR_{t-1} + \alpha_6 CPI_{t-1} + \alpha_7 CAPFL_{t-1} + v_1$.... (3)
$EXCHRt = \alpha_0 + \alpha_1 EXCHR_{t-1} + \alpha_2 EXDR_{t-1} + \alpha_3 INFR_{t-1} + \alpha_4 GDP_{t-1} + \alpha_5 WR_{t-1} + \alpha_6 CPI_{t-1} + \alpha_7 CAPFL_{t-1} + v_2$...(4)
$EXDRt = \alpha_0 + \alpha_1 EXCHR_{t-1} + \alpha_2 EXDR_{t-1} + \alpha_3 INFR_{t-1} + \alpha_4 GDP_{t-1} + \alpha_5 WR_{t-1} + \alpha_6 CPI_{t-1} + \alpha_7 CAPFL_{t-1} + v_3$.....(5)
$INFt = \alpha_0 + \alpha_1 EXCHR_{t-1} + \alpha_2 EXDR_{t-1} + \alpha_3 INFR_{t-1} + \alpha_4 GDP_{t-1} + \alpha_5 WR_{t-1} + \alpha_6 CPI_{t-1} + \alpha_7 CAPFL_{t-1} + v_4$……...(6)
$GDPt = \alpha_0 + \alpha_1 EXCHR_{t-1} + \alpha_2 EXDR_{t-1} + \alpha_3 INFR_{t-1} + \alpha_4 GDP_{t-1} + \alpha_5 WR_{t-1} + \alpha_6 CPI_{t-1} + \alpha_7 CAPFL_{t-1} + v_5$…….(7)
$WRt = \alpha_0 + \alpha_1 EXCHR_{t-1} + \alpha_2 EXDR_{t-1} + \alpha_3 INFR_{t-1} + \alpha_4 GDP_{t-1} + \alpha_5 WR_{t-1} + \alpha_6 CPI_{t-1} + \alpha_7 CAPFL_{t-1} + v_6$……..(8)
$CPIt = \alpha_0 + \alpha_1 EXCHR_{t-1} + \alpha_2 EXDR_{t-1} + \alpha_3 INFR_{t-1} + \alpha_4 GDP_{t-1} + \alpha_5 WR_{t-1} + \alpha_6 CPI_{t-1} + \alpha_7 CAPFL_{t-1} + v_7$……..(9)

The parameters to be estimated are: α_1, α_2, α_3, α_4 ,α_5, α_6, α_7

4. RESULTS AND DISCUSSIONS

The output of the regression is given in table 1.The standard error and the t-statistics are written in the parentheses .With several lags of the same variables each estimated co-efficient will not be statistically significance possibly because of multi-co linearity but collectively they may be significant on the bases of the F-test.

Looking at the result, individually, only capital flight at lag 1 is statistically significance. But at lag 2, inflation, is statistically significance. But the F-value is high so that we cannot reject the hypothesis that collectively all lag terms are statistically significant. The akaike and Schwarz statistics strength the statistically significance of the estimate since the lower value of the akaike and Schwarz suggest that, the parameter estimate are significant statistically. The low values of the akaike and Schwarz put at 18.6186 and 19.2604 suggest that the parameters are statistically significant.

4.1 The Variance Decomposition

The variance decomposition measures the proportion of forecast error variance in one variable explained by innovations in itself and the other variables. The results are summarized in Table 2. The salient results from the variance decomposition technique are as follows: in general, own shock constitutes the predominant source of variations for all the variables in the model.

Table 1. Vector autoregressive estimates

Date: 05/12/11 Time: 20:18
Sample(adjusted): 1988-2010
Included observations: 23 after adjusting endpoints
Standard errors & t-statistics in parentheses

	CAPFL	EXCHR	EXD	INFR	GDP	WR	CPI
CAPFL(-1)	0.204796	0.000909	-0.707144	-0.000279	0.000121	0.000147	-4.31E-05
	(0.15922)	(0.00263)	(0.56157)	(0.00100)	(0.00015)	(0.00053)	(2.1E-05)
	(1.28627)	(0.34523)	(-1.25922)	(-0.28035)	(0.81351)	(0.27874)	(-2.00927)
CAPFL(-2)	-1.121853	0.004721	0.363868	0.000457	0.000195	0.000261	-1.04E-05
	(0.20154)	(0.00333)	(0.71083)	(0.00126)	(0.00019)	(0.00067)	(2.7E-05)
	(-5.56650)	(1.41599)	(0.51189)	(0.36235)	(1.03439)	(0.39101)	(-0.38328)
EXCHR(-1)	145.7475	0.518500	-450.7210	-0.004298	0.059950	0.079415	-0.011303
	(48.6456)	(0.80467)	(171.577)	(0.30439)	(0.04544)	(0.16108)	(0.00655)
	(2.99611)	(0.64436)	(-2.62693)	(-0.01412)	(1.31921)	(0.49303)	(-1.72535)
EXCHR(-2)	-253.7401	1.661806	51.35032	-0.004106	0.089602	0.129863	0.004133
	(76.0462)	(1.25792)	(268.221)	(0.47584)	(0.07104)	(0.25181)	(0.01024)
	(-3.33666)	(1.32108)	(0.19145)	(-0.00863)	(1.26127)	(0.51573)	(0.40356)
EXD(-1)	-0.369963	0.002421	-0.020050	0.000171	7.56E-05	0.000275	3.31E-06
	(0.09759)	(0.00161)	(0.34419)	(0.00061)	(9.1E-05)	(0.00032)	(1.3E-05)
	(-3.79113)	(1.49965)	(-0.05825)	(0.28043)	(0.82938)	(0.85112)	(0.25161)
EXD(-2)	0.024922	0.001179	-0.154694	6.29E-05	-6.01E-05	0.000206	-6.42E-06
	(0.06594)	(0.00109)	(0.23257)	(0.00041)	(6.2E-05)	(0.00022)	(8.9E-06)
	(0.37797)	(1.08060)	(-0.66516)	(0.15241)	(-0.97541)	(0.94480)	(-0.72351)
INFR(-1)	71.80568	-0.473193	149.3796	-0.215316	-0.041217	-0.141125	0.002681
	(67.8648)	(1.12258)	(239.364)	(0.42464)	(0.06340)	(0.22472)	(0.00914)
	(1.05807)	(-0.42152)	(0.62407)	(-0.50705)	(-0.65013)	(-0.62802)	(0.29336)

Table 1 continues……

INFR(-2)	-42.82083	0.235757	-51.67714	-0.246292	0.083681	0.033862	0.004951
	(50.5681)	(0.83647)	(178.358)	(0.31642)	(0.04724)	(0.16744)	(0.00681)
	(-0.84680)	(0.28185)	(-0.28974)	(-0.77838)	(1.77141)	(0.20223)	(0.72695)
GDP(-1)	-270.8382	-2.852853	411.4254	-4.395231	-0.049475	-0.443664	0.007948
	(240.896)	(3.98477)	(849.657)	(1.50733)	(0.22504)	(0.79766)	(0.03244)
	(-1.12430)	(-0.71594)	(0.48423)	(-2.91590)	(-0.21985)	(-0.55621)	(0.24501)
GDP(-2)	505.2758	-2.754534	1337.923	-1.836078	-0.096640	-0.731944	-0.021338
	(348.861)	(5.77068)	(1230.46)	(2.18290)	(0.32590)	(1.15516)	(0.04698)
	(1.44836)	(-0.47733)	(1.08733)	(-0.84112)	(-0.29653)	(-0.63363)	(-0.45417)
WR(-1)	-524.4931	1.485629	2395.060	0.842563	-0.090286	0.459805	0.058539
	(263.862)	(4.36467)	(930.663)	(1.65104)	(0.24650)	(0.87371)	(0.03553)
	(-1.98775)	(0.34038)	(2.57350)	(0.51032)	(-0.36628)	(0.52627)	(1.64737)
WR(-2)	976.5817	-8.131301	-1363.916	2.306870	-0.979707	-0.302537	0.006734
	(473.592)	(7.83391)	(1670.40)	(2.96336)	(0.44242)	(1.56817)	(0.06378)
	(2.06207)	(-1.03796)	(-0.81652)	(0.77846)	(-2.21441)	(-0.19292)	(0.10558)
CPI(-1)	-2865.721	3.368992	8335.508	-25.13933	0.908655	-1.359348	0.464534
	(2899.82)	(47.9673)	(10227.9)	(18.1448)	(2.70897)	(9.60192)	(0.39052)
	(-0.98824)	(0.07024)	(0.81498)	(-1.38549)	(0.33542)	(-0.14157)	(1.18952)
CPI(-2)	1034.873	14.86899	-6921.453	-5.514221	-0.200374	-1.610820	0.499532
	(2708.82)	(44.8080)	(9554.23)	(16.9497)	(2.53054)	(8.96950)	(0.36480)
	(0.38204)	(0.33184)	(-0.72444)	(-0.32533)	(-0.07918)	(-0.17959)	(1.36932)
C	6856.624	-16.84805	15267.06	32.82889	12.69924	2.971182	-0.472407
	(3503.51)	(57.9532)	(12357.2)	(21.9222)	(3.27293)	(11.6009)	(0.47182)
	(1.95707)	(-0.29072)	(1.23548)	(1.49752)	(3.88009)	(0.25612)	(-1.00124)

Table 1 continues……

R-squared	0.887747	0.816287	0.874063	0.782588	0.772710	0.669785	0.960168
Adj. R-squared	0.691304	0.494789	0.653674	0.402118	0.374954	0.091910	0.890462
Sum sq. resids	45636013	12486.94	5.68E+08	1786.771	39.82666	500.3600	0.827676
S.E. equation	2388.410	39.50782	8424.106	14.94478	2.231218	7.908540	0.321651
F-statistic	4.519113	2.539011	3.965991	2.056896	1.942671	1.159048	13.77451
Log likelihood	-199.3938	-105.0504	-228.3846	-82.69130	-38.94957	-68.05367	5.597636
Akaike AIC	18.64294	10.43917	21.16388	8.494896	4.691267	7.222058	0.817597
Schwarz SC	19.38348	11.17971	21.90442	9.235435	5.431807	7.962598	1.558137
Mean dependent	674.1174	57.03435	18265.00	19.08261	4.573913	16.56304	1.221739
S.D. dependent	4298.763	55.58360	14314.66	19.32776	2.822188	8.299116	0.971857
Determinant Residual Covariance		7.92E+14					
Log Likelihood		-622.9584					
Akaike Information Criteria		63.30073					
Schwarz Criteria		68.48451					

Table 2. Variance decomposition

PERIOD	CAPFL	EXCHR	EXDR	INFL	GDP	WR	CPI
CAPFL							
1	1408.607	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
4	-253.9733	1139.917	1425.836	-563.0218	393.2255	845.0538	480.7897
8	240.7611	-145.3925	360.2923	1.967382	-139.5835	113.7787	146.1582
10	-235.7044	318.1083	-334.0632	-85.45469	-15.71132	-166.1896	-129.5291
EXCHR							
1	8.175119	21.81921	0.000000	0.000000	0.000000	0.000000	0.000000
4	5.337807	8.595464	4.349881	1.608259	-0.042822	2.605478	0.960882
8	5.771794	9.682730	0.411052	1.917605	0.044579	2.070667	-0.293780
10	9.491098	15.34744	2.651108	1.194599	1.274288	3.167743	-0.223448
EXDR							
1	1425.186	2973.133	3716.584	0.000000	0.000000	0.000000	0.000000
4	2096.533	965.0271	-1980.033	897.9915	601.7938	199.7264	-448.9047
8	-1751.206	-3011.558	-483.0744	-511.6103	-226.7868	-1199.347	-129.1385
10	-3664.819	-6501.042	-597.4848	-563.6945	-630.2054	-1413.844	183.6482
INFL							
1	7.309232	-2.152765	0.559094	4.394749	0.000000	0.000000	0.000000
4	6.788695	13.83396	0.196851	-0.581213	2.374477	0.563083	-1.501771
8	-4.837075	-13.60721	-1.519955	0.134923	-1.025527	-3.274943	-0.483694
10	-7.000422	-14.44086	-3.489179	-0.633915	-1.156277	-3.472879	-0.449896
GDP							
1	-0.027679	0.799278	0.308161	-0.448116	0.892307	0.000000	0.000000
4	-0.515587	-1.914342	0.069550	0.260598	-0.653030	-0.537801	0.033640
8	-0.245098	0.175075	0.086850	-0.034449	-0.085889	0.119625	0.081328
10	0.492581	0.832243	0.023513	0.125703	0.075351	0.389230	0.044045
WR							
1	2.219437	3.909327	-0.252404	0.287999	0.715397	0.942126	0.000000
4	1.561610	3.041758	1.318843	0.145993	0.092006	0.502564	0.075890
8	0.440518	0.307303	0.253731	0.147866	-0.063473	-0.146788	-0.080472
10	-0.005898	-0.762018	-0.124505	0.093749	-0.127437	-0.312747	-0.094200
CPI							
1	-0.145027	-0.003698	0.038559	-0.067525	-0.014745	0.065043	0.066671
4	0.081657	0.208703	-0.000568	0.018822	0.051075	0.121386	0.013042
8	0.343790	0.649252	0.147346	0.021563	0.066575	0.107663	-0.010284
10	0.209748	0.367175	0.127025	0.010672	0.042112	0.028096	-0.016034

Source: Author's computation

4.2 The Exchange Rate

The variance decomposition suggests that shocks to capital flight as evidenced in Table 2, explained about 8.1 percent of shocks in the real exchange rate in the 1st quarter declining in effects to about 5.3 percent in the 8th quarter, and rising to 9.5 percent in the tenth quarter. This finding is consistent with our a *priori* expectation that exchange rate shocks do significantly affect capital flight. Whenever exchange rate deteriorates that is Naira depreciates against Dollar, people will move their money abroad and store it in dollars. This movement is capital flight.

4.3 External Debt Relief

Shocks to external debt did not initially contribute much to the shocks to capital flight in the first quarter, but rose astronomically in the fourth quarter. However, it fell drastically in the eight quarter and became negative in the tenth quarters. An important finding here is that shocks to external debt in Nigeria in past years which generated external debt burden contributed to shocks in capital flight. But the debt relief granted to Nigeria in recent years eradicated the shocks to capital flight at long lags. This supports our a priori expectation that debt relief has positive implications on capital flight.

4.4 Gross Domestic Output

For GDP, the largest source of shocks was changes in exchange rate, then followed by changes in capital flight, which contributed about 0.02 percent in the first quarter, rising to about 5 percent in the fourth quarter fell to 2.4 percent in the eight quarter and rose to about 5 percent in the 10th quarter. The result demonstrated a negative and significant relationship between capital flight and output growth in Nigeria. The result suggests that capital flight worsen output growth in Nigeria. The contribution of external debt shock to real output violability was about 3 percent in the first quarter falling to 1 percent in the fourth quarter, 1 percent in the eight quarter and about 0 percent in the 10^{th} quarter. The implication of this finding is that external debt shock significantly affects output growth in Nigeria only in the short run. The debt relief of 2005 has changed the scenario. The inflation variable contributed about 45 percent to shocks in output in the first quarter, declined to about 26 percent in fourth quarter, 4 percent in the eight quarter and 13th percent in the 10th quarters. The implication of this finding is that inflation shock does not substantially affect output growth in the long-run in Nigeria. The contribution of corruption to shocks in GDP was zero in the first quarter rose to about 3 percent in the fourth quarter through 8 percent in the eight quarter and declined to about 4 percent in the tenth quarter. This contradicts expectations that corruption tend to lower GDP.

4.5 Inflation

Exchange rate accounts for the largest share of shocks to inflation rate, while corruption shocks explained relatively little. Output changes contributed about 0 percent to changes in commodity price level in the first quarter, rising to 23 percent in the fourth quarter, fell to about 10 percent in the eight quarter and rose marginally to 12 percent in the tenth quarter. Real exchange rate contributed about 20 percent to changes in inflation rate in the first quarter, rising through 130 percent in the fourth quarter to about 140 percent in the tenth quarter. However, changes in wages contributed about 0 percent to changes in commodity price level in the first quarter, rising through 5 percent in the fourth quarter to about 32

percent in the eight quarter and 34 percent in the tenth quarter. Corruption contributed 0 percent to changes in inflation rate in the first quarter, rising through 15 percent in the fourth quarter and fell to about 4 percent in the tenth quarter. These findings confirm that shocks in wage rates and exchange rates are necessarily inflationary in Nigeria.

4.6 Wage Rate

For wage rate, the largest source of shocks was changes in exchange rate then followed by changes in capital flight, which contributed about 20 percent in the first quarter, falling to about 15 percent in the fourth quarter and to 4 percent in the eight quarter and to about 1 percent in the 10th quarter. The real exchange rate contributed about 40 percent to changes in wage rate in the first quarter, falling to 30 percent in the fourth quarter and finally to about 7 percent in the tenth quarter. However, inflation explained as much as 28 percent of changes in wage rate in the first quarter, rising to about 14 percent in the fourth and eight quarter and 1 percent in the tenth quarter.

4.7 Corruption

Shock to corruption did not arise significantly from changes in the variables under investigation except that its own shock contributed to shock in capital flight. The largest source of shocks and perhaps the only significant one was changes in exchange which contributed about 0 percent in the first quarter, rising to about 2 percent in the fourth quarter and to 6 percent in the eight quarter and fell back to about 3 percent in the 10th quarter.

4.8 Capital Flight

Most important for the objectives of this paper are the sources of shock to capital flight. For the capital flight, the largest source of shocks was changes in external debt followed by exchange rate then followed by changes in wage rate, followed by changes in inflation, and finally by changes in corruption perception index.1 unit change in external debt caused 1425.836 unit changes in capital flight in the fourth quarter, declining to 360 units in the eight quarter and to about 334 units in the tenth quarter. 1 unit change in exchange rate caused 1113.9 unit changes in capital flight in the fourth quarter, declining to 145.39 units in the eight quarter and rose to about 318 units in the tenth quarter. 1 unit change in wage rate caused 845 unit changes in capital flight in the fourth quarter, declining to 113 units in the eight quarter, rose marginally to about 116 units in the tenth quarter. 1 unit change in corruption caused 480.78 unit changes in capital flight in the fourth quarter, declining to 146 units in the eight quarter and to about 129 units in the tenth quarter. 1 unit change in inflation rate caused 563 unit changes in capital flight in the fourth quarter, declining drastically to 2 units in the eight quarter rose sharply to about 85 units in the tenth quarter.

5. CONCLUSION

This paper has surveyed the theoretical and empirical literature on capital flight and investigated the determinants of capital flight and its roles in the development process. The results generated from the vector auto regression approach, showed that the trends in capital flight in Nigeria have been volatile. The findings from the statistical exercises in the paper yielded a number of important results:

- The magnitude of capital flight from Nigeria has increased considerably in recent years, with widespread fluctuations and volatility
- The largest source of shocks to capital flight was changes in external debt followed by exchange rate volatility.
- There is a negative relationship between capital flight and output growth and implying that capital flights tend to worsen output growth in Nigeria.
- There is a negative relationship between capital flight and corruption, suggesting that corruption played an important role in the movement of capital out of the country.
- The link between economic growth and capital flight is positive, suggesting some evidence of the crucial role of economic growth in reducing capital flight.
- External debt and capital flight are negatively intertwined, providing support for the debt relief

In the years before 2005, the Nigeria debt crisis brought painful austerity to the country. The amount of resources that were moved out of the country to service the debt was above 30 percent of the national income. This explains the reason why the greatest shock to capital flight came from external debt in the fourth quarter. The debt relief of 2005 minimized the capital flight. This relief was welcome, as it had actually stopped the gigantic movement of capital away from the economy. But there are still problems with the current administration's approach of linking debt relief to conventional stabilization policies supposedly designed to reverse capital flight. However, debt relief must come before, not after. A reversal of flight capital will not return if investors fear that a debt-burdened government might be forced to seize dollar assets.

As we have seen, capital flight limits growth potential, crowds-out investment, and worsens capital formation. Its causes are complex, including poor financial incentives, accelerating inflation, rising taxes, discriminatory treatment, and loan pushing.

Taken together, these results have important implications for policy. First, the huge estimates of capital flight suggest a huge potential for capital flight reversals. Efforts must be made towards the design and implementation of appropriate policy measures that would encourage flight capital to return to the country. Better economic reforms that will encourage the inflow of foreign capital should be made. The reform should thus be based on the need to encourage growth, and reverse the negative distributional effects of capital flight. Specific policies might include repatriation of flight capital to boost the growth initiatives with selective controls on capital outflow, changes in Nigeria tax laws, and a bias toward poor wages. More generally, a new overall strategy that would encourage Nigerians abroad to come back home and invest in the country is required.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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