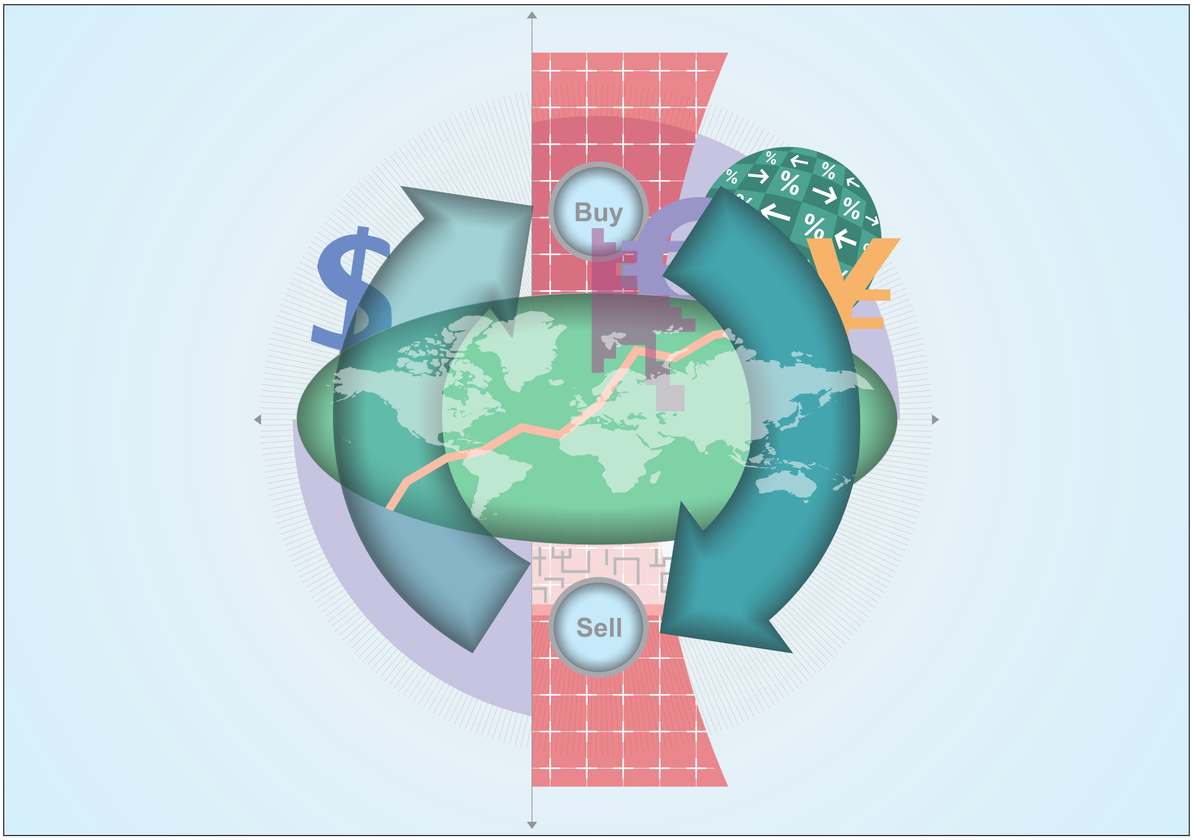

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The Effect of Financial Liberalization on Selected Macroeconomic Variables: Lesson From Nigeria

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Abstract: This study analyzed the effect of financial liberalization on selected macroeconomic variables namely, Gross Domestic Product (GDP), foreign direct investment, financial deepening, savings and inflation rate in Nigeria. To carry out this analysis, we employed three alternate methods the parametric paired sample statistic for t-test and the non parametric Wilcoxon signed rank test to determine whether significant differences exists between pre/post liberalization macroeconomic variables. The third method, the discriminant analysis was meant to determine the direction as well as the magnitude of the discriminant variables. The result shows that while real GDP recorded (highest) positive and significant contribution, national savings and foreign direct investment made negative and significant contribution. Financial deepening and inflation rate did not discriminate significantly between non financial and financial liberalization. In the light of this, coupled with he theoretical evidence of bank crisis emanating from financial liberalization, the recommendation that government embarking on financial liberalization should set up an agency that will follow up action, was made.

Key words: Financial liberalization, financial deepening, saving, GDP, discriminant analysis

INTRODUCTION

Financial liberalization has become an emerging trend in both developed and developing countries. In developing countries, the structural imbalance and economic malaise were severe owing to distortions of regulation coupled with oil price shocks and escalating real interest rate for external debt servicing of the 1970 and 1980s. The only fly in the ointment was to adopt a mix of economic measures under the IMF World Bank supported Structural Adjustment Programmes (SAP) prescribed as comprehensive reform measures designed to achieve both internal and external balance with a minimum cost to the economy. Incidentally the basic thrust of the economic reform embodied in SAP is deregulation, particularly financial deregulation. In the light of this, over thirty developing countries adopted these programmes. Such developing countries include Nigeria, Ghana, Carneroun, Malawi, Botswana, Tanzania, Rwanda, Senegal, Madagascar, Sudan, Zambia, Kenya and Cote Devoir to mention a few. The liberalization of interest rate was a prominent feature of the financial reforms implemented by nearly all these countries. Interest rates were fully deregulated in Indonesia, Philippines and Srilanka in the early 1980. While Nepal freed most key interest rates in 1986, Korea, Malaysia and Thailand relaxed control by more frequent advertisement in rates (Fry, 1995).

Prior to the introduction of Structural Adjustment Programme (SAP) in Nigeria in 1986, the Nigerian financial sector was characterized by rigid exchange and interest rate controls, mandatory sectorial allocation of bank credit and quantitative ceiling in bank credits to the private sector, all of which engendered distortions and inefficiencies that resulted to low direct investment. Funds were inadequate, the Nigerian currency was overvalued and the monetary and credit aggregates moved rather sluggishly that the economy was found engulfed with a general lull. With the introduction of SAP, financial liberalization measures were adopted including interest rate, exchange rate and other deregulations (Ogwuma, 1993; Ojo, 1993). However, in a policy reversal, the government in January 1994 out rightly introduced some measure of regulation into interest rate management owing to wide variations and unnecessarily high rates under the complete deregulation of interest rates. In the light of this, deposit rates were once again set at 12-15% per annum while a ceiling of 21% per annum was fixed for lending. The cap on interest rates introduced in 1994 was retained in 1995 with a little modification for flexibility but was lifted in October 1996 to pursue a flexible interest rate regime (Omole and Falokun, 1999). Consistent with the adoption of the market-based technique of monetary management, interest rate policy remains flexible and responsive to changes in market conditions. However, as an instrument of monetary policy, the Central Bank of Nigeria, CBN (in the year 2000) indirectly influenced the level and direction of change in interest rate movement through its intervention rate on various money market assets, especially the Minimum Rediscount Rate (MRR) as well as the stop rate of the weekly tender for treasury bills. The MRR as the nominal anchor of CBN's interest rate policy continued to be used proactively in line with prevailing economic conditions while the rate of treasury bills is made market related and competitive with comparable money market instruments (CBN, 2006a). The CBN sustained the market-based interest rates regime in 2006. In order to influence the direction of interest rates in line with monetary conditions, the bank's Minimum Rediscount Rate (MRR) was reviewed upwards at the end first half of the year by 100 basis points to 14.0%. However, a new monetary policy implementation framework was introduced in December 2006 to: remove the volatility in inter-bank rates, encourage inter-bank trading and engender a transactions rate that would improve the transmission of monetary policy actions. Consequently, the new anchor interest rate, the CBN's MPR, replaced the MRR. The MPR was fixed at 10.0% with a band of 600 basis points range. The deposit money banks availed themselves of the CBN standing facilities with surplus funds deposited at 7.0% (300 basis points below the MPR). This repositioned the CBN as a lender of last resort (CBN, 2006b).

Several studies have assessed the impact of financial liberalization on savings, investment and growth in the economy. McKinnon (1973) and Shaw (1973) put forth that liberalization leads to a more efficient allocation of resources, higher level of investment and higher economic growth. They argue that higher interest rates brought about by liberalization would stimulate savings, which in turn would lead to a higher level of investment and economic growth. Other studies that see financial liberalization as having positive effect on growth are that of Levine (2001), Bekaert *et al*. (2003) and Bonfiglioli and Meadicino (2004). Theoretical study by Acemoglu *et al*. (2005) and Aghion *et al*. (2005a, b) showed that financial development may relieve risky innovators from credit constraints thereby fostering growth through technological change. While Eichengreen and Leblang (2003) contend that the effect on growth is negative. However, recent researchers and empirical evidences show that though financial liberalization results in higher interest rates and financial deepening, it does not necessarily lead to higher savings and investment. Reinhart and Thokathidis (2001) found that liberalization delivers financial deepening, as measured by the credit and monetary aggregate. In the majority of the countries financial reforms are followed by declines in savings. Muellauer and Murphy (1993) are of the view that as financial reform relaxes credit constraint, the availability of borrowing alternatives increases and this might in the aggregate reduce rather than increase private savings. Ostry and Levy (1995) in their findings maintained that financial development caused by liberalization lowered saving rates in France but reversed the negative association between savings and interest rates into a positive one. Bayoumi (1993) found a similar result for the UK while Jappelli and Pagano (1994) in their 30-country study found another expression of financial development to be highly significant in explaining the evolution of saving. Bennett *et al.* (2001) found a negative significant effect on financial development on the private saving rate. Gallego and Loayza (2002) found that financial development had a positive contribution to the increase in Chile growth rate. Tokat (2005) argued that the effects of the increase in financial fragility have surpassed the marginal benefits of financial liberalization.

Thus, the issue of financial liberalization has remained controversial especially for the developing countries. Schmidt-Hebbel and Serven (2002) contend that financial liberalization is not risk-free and should be carefully implemented to attain its benefits. Excessive rapid financial reforms often lead to unsustainable credit and activity booms which then leads to financial crisis. This risks they maintained increase significantly in the absence of prudential regulation and strong supervision of banks and other liberalized capital market segments.

The close link between financial liberalization and the banking crises is another indicator of increased financial fragility. Asli and Detragiache (1998) examined the banking crises during the period 1980-1995 for a sample of 53 developed and developing countries and found that banking crises are more likely to occur in liberalized financial system. In the process of financial liberalization, banks become vulnerable to external economic shocks if the banking system is not sufficiently developed. In Ranciere *et al.* (2004) and Tornell and Martinez (2004) banking crisis may arise as a by- product of the higher growth generated by financial liberalization in countries with credit market imperfection.

With the structural adjustment programme in 1986, market based reforms were proposed to ensure that true cost of capital would be achieved in Nigeria. However, the initial attempt at financial liberalization yielded poor results. A poorly supervised and inefficient financial sector, weak institutions and poor governance created opportunities for arbitrage, patronage and rent-seeking behaviour. In the light of this, foreign exchange market which was highly controlled and rationed by use of import licenses was liberalized. The central bank adopted a two-tiered structure for the provision of foreign exchange. A first window operated at a fixed exchange rate, to provide foreign currency for government transaction such as debt servicing and financing foreign missions. A second option-second-tier foreign exchange market (SFEM) provided access to foreign exchange to licensed dealers. Bureaux-de-change were also permitted to operate, beginning in 1989 and an informal parallel market also existed for foreign exchange trading (Okogo and Osafo-Kwaako, 2006).

Following financial liberalization and the relaxation of rules for bank establishment in 1987, there was a rapid increase in the number of banks from 41 in 1986 to about 120 by 1992. The banks were buying foreign currency at low official prices and resell in burreaux de change or parallel market to make substantial returns. However, evidence prevailed that though the banks predominantly engaged in short term arbitrage activities, many of the banks had poor balance sheets and made limited lending to the private sector. Weak regulation of financial institutions led to wide spread concern about the rising systematic risk in the Nigerian banking sector in 1990s. In 1998 alone, a total of 26 banks including listed ones were put to liquidation (Okpara, 2006) and by 1993 it was estimated that about half of the licensed banks were distressed (Okogo and Osafo-Kwaako, 2006). The objectives of this study was to analyze the effect of financial liberalization on selected macroeconomic variables namely, Gross Domestic Product (GDP), foreign direct investment, financial deepening, savings and inflation rate in Nigeria.

The aim of this study is therefore to assess the effect of financial liberalization on macroeconomic variables such as real GDP, financial deepening, gross national savings, foreign direct investment and inflation. The result of this study will not only add to the existing literature on the topic but will also aid the policy makers in their policy formulation.

MATERIALS AND METHODS

To investigate the effect of financial liberalization on the Nigerian economy, some macroeconomic variables such as real GDP, financial deepening, gross national savings; foreign direct investment and inflation rate were selected and given pre/post liberalization comparative analysis. The data were sourced from the statistical bulletin of the central bank of Nigeria. The pre liberalization variables covers from the period 1965 to 1986 while the post liberalization variables continued from 1987 to 2008. The tools used for this analysis are the paired t statistic, Wilcoxon signed rank test and the discriminant analysis (Onyeka, 1996; MacOdo, 2006; Nwezeaku, 2006).

The t-statistic and the Wilcoxon signed rank tests are chosen for this evaluation since the study involves matched or paired sampling. The weights before and after liberalization are taken on the individual variables. The pairing reduces a two-sample problem to a single random sample of differences denoted by d_i. Thus, we test the null hypothesis H_o; μ_d = do against the alternative hypothesis H_i: $\mu_d \neq d_o$. For t test, we use a one-sample t-test given by:

$$t = \frac{d - d_o}{S_d/\sqrt{n}} \tag{1}$$

Where:

d = The mean difference between the pairs of weight
d_o = The difference between the pairs of weight
$S_d/\sqrt{n}$ = The standard deviation of d

However, the t-test (Eq. 1) cannot be used for testing the null hypothesis that a population mean has some specified value or the null hypothesis that the difference between two population means is equal to some value unless it can be reasonably assumed that the relevant data are normally distributed and in the case of two populations have equal variances. If any of these assumptions cannot be met, the use of the t-test may not be justified (Onyeka, 1996).

In the light of this, we employ one of the most powerful non-parametric test, the Wilcoxon singed rank test as an alternate method for proving the validity of the former. This test may be more powerful than the t test when t test does not meet all the assumptions. The Wilcoxon signed-rank test is also based on the differences between matched pairs. It considers both the direction and the magnitude of the differences between matched sample pairs. The corresponding z-score for the Wilcoxon sign-rank T statistic is given by:

$$Z = (T - \mu_T)/\sigma_T = \frac{T - n\,(n+1)/4}{\sqrt{n\,(n+1)(2n+1)/24}} \tag{2}$$

Where:
T = The sum of the ranks with the less frequently occurring sign
μ = The mean
σ = The standard deviation
n = The effective sample size

In order to determine which of the macroeconomic variables under study that discriminate most (or that are mostly affected by the liberalization) between non-liberalization and financial liberalization, we has to employ the discriminant analysis technique. The discriminant analysis model classifies the policy period into two mutually exclusive and exhaustive categories-the non-financial liberalization period and the financial liberalization period. The function of the variables X_i that discriminante as much as possible the two groups under investigation will be a linear combination of the explanatory variables such that the explicit presentation of the model becomes.

$$D_i = b_1X_1 + b_2X_2 + b_3X_3 + \dots\dots\dots\dots b_nX_n \quad (3)$$

Where:
D_i = The discriminant variables (liberalized and non liberalized financial periods)
X_i = The explanatory variables namely read GDP, inflation rate, financial deepening, national savings and direct investment
b_i = The parameters to be estimated

Discriminant analysis is a multivariate technique for discriminating among groups (in this case, liberalized and non-liberalized groups) and for classifying a set of observations into these groups. Our classifying procedure is therefore set as follows.

- If there is financial liberalization, classify individual i as belonging to group 1 and assign 1
- If there is no financial liberalization, classify individual i as belonging to group 2 and assign 0

The data for the variables before financial liberalization (1965-1986) and after financial liberalization (1987-2008) are shown in Table 1, respectively.

RESULTS AND DISCUSSION

The results of Eq. 1 and 2 in Table 2 show that real GDP, national savings and foreign direct investment are significantly sensitive to financial liberalization policy. In other words, there is a significant difference between the performance of real GDP, national savings and foreign direct investment before and after the introduction of financial liberalization using both the parametric t-statistic and the non-parametric Wilcoxon signed rank tests.

The results also show that there is no significant difference between the pre- liberalization and post-liberalization rate of inflation and financial deepening in the country. Thus, financial liberalization has no effect on the financial deepening and the rate of inflation.

The result of the discriminant analysis techniques of Eq. 3 employed to verify the variables that impacts most on the economy owing to financial liberalization, is shown in Table 3 that the real GDP recorded (positively) the highest contribution, implying that

Table 1: The selected macroeconomic variables before and after liberalization

Year	Finlib	RGDP	Inflrate	Findeep (M/GDP)	Savings	Directinv
Before financial liberalization (1965-1986)						
1965	0	3146.60	4.00	15.00	141.00	110.40
1967	0	3044.80	9.70	15.40	162.50	110.00
1968	0	2527.30	-3.70	16.40	131.20	79.00
1969	0	3225.50	10.00	18.60	215.40	100.00
1970	0	4219.00	13.80	18.25	336.70	128.60
1971	0	4715.50	16.00	15.29	371.80	142.80
1972	0	4892.80	3.20	16.11	456.90	297.80
1973	0	5310.00	5.40	12.86	582.30	186.30
1974	0	15919.70	13.40	11.78	973.20	181.60
1975	0	27172.00	33.90	16.80	1572.40	253.00
1976	0	29146.50	21.20	19.33	1979.20	212.50
1977	0	31520.30	15.40	21.54	2255.10	245.50
1978	0	29212.40	16.60	21.33	2601.70	134.40
1979	0	29948.00	11.80	22.84	3702.10	184.30
1980	0	31546.80	9.90	28.31	5163.20	-404.10
1981	0	205222.10	20.90	32.65	5796.10	334.70
1982	0	199685.30	7.70	34.42	6338.20	290.00
1983	0	185598.10	23.20	36.47	8082.90	264.30
1984	0	183563.00	39.60	36.22	9391.30	360.40
1985	0	201036.30	5.50	35.07	10550.90	434.10
1986	0	205971.40	5.40	35.56	11487.70	735.80
After financial liberalization (1987-2008)						
1987	1	204806.50	10.20	28.50	15088.70	2452.80
1988	1	219875.60	38.30	30.75	18397.20	1718.20
1989	1	236729.60	40.90	21.32	17813.30	13877.40
1990	1	267550.00	7.50	24.26	23137.10	4686.00
1991	1	265379.10	13.00	27.60	30359.70	6916.10
1992	1	271365.50	44.50	24.08	43438.80	14463.10
1993	1	274833.30	57.20	28.44	60895.90	29675.20
1994	1	275450.60	57.00	29.36	76127.80	22229.20
1995	1	281407.40	72.80	16.32	93327.80	75940.60
1996	1	293745.40	29.30	13.64	115352.30	111295.00
1997	1	302022.50	8.50	15.38	154055.70	110452.70
1998	1	310890.10	10.00	19.29	161931.90	80750.40
1999	1	312183.50	6.60	21.90	241604.70	92792.50
2000	1	329178.70	6.90	22.83	343174.10	115952.20
2001	1	356994.30	18.90	28.08	451963.10	132481.00
2002	1	433303.50	12.90	29.60	556011.70	225224.80
2003	1	477533.00	14.00	28.57	655739.70	258388.60
2004	1	527576.00	15.00	27.38	797517.20	248224.60
2005	1	561931.40	17.90	18.04	1316957.40	654193.10
2006	1	595821.60	8.20	20.33	1739636.90	1779594.80
2007	1	674889.00	5.40	28.12	2693554.30	759380.40
2008	1	674889.00	11.60	38.45	4118172.80	802615.70

Source : Statistical Bulletin of the Central Bank of Nigeria

Table 2: Paired sample test for the performance of financial liberalization in Nigeria

	Paired difference	t-statistic		Wilcoxon signed rank test	
Pairs	Mean	t	Sig.	Z	Sig.
Pair1. RGDPAF-GDPBF	304400	-20.129	0.000	-4.107	0.000
Pair2. InflrateAF-InflrateBF	10.18	-1.912	0.070	-1.477	0.140
Pair3. FindeepAf-FindeepBF	1.93682	-1.037	0.311	-1.315	0.189
Pair4. SavingsAF-SavingsBF	62050	2.837	0.010	-4.107	0.000
Pair5. DirectinvAF-DirectinvBF	251700	2.823	0.010	-4.107	0.000

Table 3: Percentage contribution of individual macro-economic variables to the total discriminant score

Variables	Coefficients	Mean difference	Product	Percentage contribution
RGDP	2.054	304477.00	625395.76	54.70
Inflrate	0.354	10.1864	3.61	0.01
Findeep	-0.866	1.9368	1.68	0.00
Savings	-0.548	620535.7	340053.6	29.70
Direct inv	-0.706	251766.63	177747.2	15.50

Table 4: Summary of canonical discriminant functions

Functions	Values
Eigenvalue	4.707
Canonical correlation	0.908
Wilks' lambda	0.175
Chi-square	68.795
df	5.00
Sig.	0.000

financial liberalization positively increases the growth of GDP. This, in effect is in conformity with the finding of Gallego and Loauza (2002). The next, national saving, is negatively and significantly relating, which is in line with the findings of Bennett *et al*. (2001), Ostry and Levy (1995) and Bayoumi (1993) and others but contradicts that of McKinnon (1973) and Shaw (1973). While foreign direct investment also exerts negative influence. Financial deepening and inflation rate did not discriminate significantly between financial liberalization and non financial liberalization period- a result that is contrary to the finding of Reinhart and Thokatidis (2001).

The diagnostic test shows that the Chi-square of value 68.795 is significant at 5% level of significance thus, the hypothesis that all the discriminant coefficients were equal to zero is rejected (Table 4). The high value of canonical correlation indicates that the variables are correlated with the group and the function is therefore a better one. The implication of these is that the estimated function is suitable enough in discriminating between liberalization and non liberalization of the financial system in Nigeria.

CONCLUSIONS

The effect of financial liberalization has remained controversial world wide. Particularly, its impact on savings rates has attracted a good deal of attention. This study has attempted to probe deeper into the impact of financial liberalization on some macroeconomic variables. On the basis of my theoretical and empirical findings, financial liberalization in Nigeria has led to bank crises and significant negative changes in savings and foreign direct investment. While having a significant positive effect on the growth of gross domestic product, it however, does not make any significant change to financial deepening (measured by the ratio of broad money supply to gross domestic product) and inflation. Though financial liberalization tends to significantly reduce savings and foreign direct investment in Nigeria, increasing savings may not necessarily be the ultimate aim of the policy.

If liberalization should be combined with adequate prudential guidelines and strong supervision of banking and capital markets, improved financial intermediation capable of raising the level of other relevant causal factors will be achieved. This scenario will invariably spur the growth of the economy.

Thus, government embarking on financial liberalization should set in order a sound capital base, prudential guidelines and a strong supervisory agency that will follow up action to ensure compliance.

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