Do Financial and Trade Openness Lead to Financial Sector Development in Nigeria?

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Abstract: With so many countries of the world now open to global capital and trade, this study identifies whether financial and trade openness contribute to the development of Nigeria's financial system by considering both financial depth and access to finance indicators. To achieve this objective, we applied the Simultaneous Openness Hypothesis as our theoretical framework and the Generalized Method of Moments (GMM) as our estimation method. Our findings reveal that opening trade while neglecting capital (vice versa) may be detrimental to the development of Nigeria financial system. In view of this evidence, we recommend that the simultaneous opening of trade and finance is a more guaranteed way of ensuring improved financial development in Nigeria.

Keywords: Financial Openness; Trade Openness; Financial Development; Financial Institutions; Financial Markets.

JEL Classification: F1, F3, G1, G2

Introduction

With the reduction in the number of communist countries, never before the last three decades have so many countries of the world been concurrently open to global trade and finance flow (Lipsey, 2002). As such, the relationship that trade openness and financial openness have with economic growth has been a debate, even in Nigeria (see: Adelowokan and Maku, 2013; Alajekwu *et al.*, 2013). However, the relatively new issue for debate is how trade and financial openness contribute to financial sector development.

On this new issue, Levine (2001) suggests that greater financial openness may strengthen an economy's financial system by giving room for more efficient alloca-

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tion of capital and investment domestically. Stiglitz (2003), however, does not agree with this suggestion as he claims that financial openness is not as welfare enhancing because of distortions like trade or legal barriers. Garita (2009) is of the view that these distortions can reduce the level of trade openness which may lead to funds flowing out as it flows in to the economy because incoming foreign firms may see such barriers as reductive agents to their level of competitive advantage.

In support of the opposition's view, Rajan and Zingales (2003) argue that if financial openness is chosen at the expense of trade openness, large domestic firms would be the ones to enjoy because they have the executive muscle to tap into foreign funds thereby blocking opportunities for small firms. In addition, firms operating in the financial sector would seem to be intimidated by financial openness, claiming it may affect their profit making and redistribute market powers (Baltagi *et al.*, 2007).

Alternately, if trade openness alone is applied, infant/small firms may experience a reduced access to finance while big industrial firms may be availed a low priced credit and abundant loans from the domestic financial system (Rajan and Zingales, 2003). This will end up enhancing the competitive advantage of big firms at the expense of infant/small firms. However, like financial firms, big industrial firms are fearful of losing their domestic market shares to foreign competitors who may introduce substitute products (Hauner and Prati, 2008).

Thus, both financial and industrial firms with sufficient goodwill would reject financial development. That is, as financial firms believe that they would benefit more when there is no financial openness, industrial firms believe that they would benefit more when there is no trade openness. And so, large industrial firms continue to rely on and enjoy the relationship-based arrangement they have with domestic financial firms (Rajan and Zingales, 2003).

To incentivise both financial and industrial firms in accepting financial development, Rajan and Zingales (2003) posit the Simultaneous Openness Hypothesis (SOH). This hypothesis states that a simultaneous openness of trade and finance is the way to a successful development of a financial sector that may provide additional sources of funding to both old/big and new/small firms (Hauner and Prati, 2008).

According to SOH, a simultaneous trade and financial openness may initially reduce the powers of existing firms by yielding external and even new domestic competitors, but SOH will end up compensating them with profits that are more than what they might lose (Baltagi *et al.*, 2007). This should be the case as large industrial firms tap into foreign finance; old collapsing firms would have access to domestic sources of finance by complying with strict disclosure rules and regulations in the financial sector (Rajan and Zingales, 2003). On the part of financial firms, they would have the opportunity to seek for new clients who are willing to adhere to disclosure requirements among the new entrants and infant firms in the industrial sector. Since trade is simultaneously opened, as industrial firms export their products and compete internationally, financial firms are afforded the avenue to explore new financial products

and services that would allow smooth international trading and open new branches in foreign countries so as to satisfactorily meet the expectations of their customers (home and abroad). This process creates a levelled playing field for all categories of industrial firms and financial firms to compete in the product and financial markets respectively, thus leading to improved financial sector (Ibid.).

From evidence, Hauner and Prati (2008), using *de jure* measures of financial and trade openness, found that trade liberalization contributes to financial development but the same was not found for financial openness. Applying both *de facto* and *de jure* measures of financial openness, Baltagi *et al.* (2009) found support for SOH for the determinants of banking sector development. Furthermore, they found that relatively closed economies may benefit from opening up both their trade and capital account and either of them. Considering the impact of financial crisis on financial development, trade and financial openness, Pham (2010) asserts that trade openness directly leads to higher financial development while financial openness is indirect. He discovered that the more open an economy is, the higher the economy's financial sector may suffer from global financial crisis. In the case of sub-Saharan African (SSA) countries, David *et al.* (2014) found that trade openness is more important to obtain a higher financial development than financial openness. Unlike the reviewed studies, we conduct a time series study and not a panel study and we contribute to the literature by applying financial development indicators that measure access to finance in financial institutions and markets (see; Table 1) and not just the popularly used measures of financial depth.

The objective of this study is to test the SOH as well as find answers to which of the two situations is most desirable for financial sector development in Nigeria: that is liberalizing both financial and trade openness or either of them? The rest of this paper is divided into three sections. Section two covers methodology. Section three discusses results, diagnostic tests and comparison of findings while section four concludes the paper.

Methodology

Data

Financial markets have developed considerably in the last two decades in Nigeria (Alajekwu *et al.*, 2013), therefore, unlike other studies in this area, financial indicators used covers the depth and access (Table 1) of both financial institutions and financial markets. There are different measures of financial openness classified as *de jure* and *de facto*. *De jure* measures depict the extent to which legal hurdles impede the free flow of capital (Garita, 2009) and they include capital account and financial current account regulations (see: Quinn and Toyoda, 2008); equity market liberaliza-

tion (see: Bekaert and Harvey, 2005); Chin-Ito index measure of financial openness (see: Chinn and Ito, 2008); etc. On the other hand, *De facto* measures disclose a country's financial integration into the global finance markets (Quinn et al., 2011).

Table 1: Measures of financial development

Categories of Measures	Financial Institutions	Financial Markets
Financial Depth	Credit to private sector to GDP (*CPS*) Bank deposits to GDP (*D*)	Stock market capitalization to GDP (*SMC*) Stocks traded to GDP (*ST*)
Access to finance	Commercial banks' branches per 100,000 adults (*CBB*)	Ratio of domestic to total debt securities (*DDS*)

Source: Authors

Although they may be influenced by political and economic factors, *de facto* depict elements of exogeneity (like international politics, social unrest, etc.) which may not be featured in *de jure* measures (Baltagi et al., 2009). Due to data deficiency on *de jure* measures of financial openness (Eichengreen, 2001) for Nigeria, *de facto* measures is used (Quinn et al., 2011) in this study. The *de facto* measures that may provide this paper the data availability it requires are the Lane and Milesi-Ferreti (2006 and 2007) index and the United Nations Commission on Trade and Development's (UNCTAD) measures. Those of the UNCTAD are the inward flow of Foreign Direct Investment (FDI) to GDP and as a share of the world's FDI flow. However, the Lane and Milesi-Ferreti index is preferred for this paper because it is acclaimed to be "the 'industry standard' among *de facto* variables" (Quinn et al., 2011, p. 517). The index is defined as foreign assets plus foreign liabilities divided by GDP (Tamazian *et al.*, 2009).

In respect of trade openness, as applied by Rajan and Zingales (2003), this paper utilises the basic measure of trade openness under trade volume which is the ratio of export plus import to GDP. The third and last explanatory variable considered is a proxy for the demand of finance and economic prosperity (real GDP per capita). All the variables listed in Table 1, trade openness, real GDP per capita and the data applied to compute the index for financial openness are sourced from the database and annual reports of the Central Bank of Nigeria (CBN).

Model for the Study

The empirical model for the study as motivated by Baltagi *et al*. (2007) is in the form:

$$lnFD_t = \alpha_0 + \alpha_1 lnFD_{t-1} + \alpha_2 lnGDP_{PC_t} + \alpha_3 lnFO_t + \alpha_4 lnTO_t + \mu_t \quad (1)$$

Equation 1 is a dynamic model where *FD* is a measure of financial development; GDP_{PC} is GDP per capita; *FO* is financial openness; *TO* is trade openness and μ is

the error term. The lag of financial development (FD_{t-1}) is considered as an explanatory variable which implies that its previous level drives the current level of financial development.

Since the theoretical foundation of this study is the Simultaneous Openness Hypothesis (SOH), Baltagi *et al*. (2007) state that equation 1 is to test whether trade openness and financial openness contribute to financial development, individually. To test the hypothesis of the simultaneity effect that both trade openness and financial openness have on financial development, we introduce trade and financial openness interactive variable in equation 2 (Ibid.).

$$lnFD_t = \alpha_0 + \alpha_1 lnFD_{t-1} + \alpha_2 lnGDP_{PC_t} + \alpha_3 lnFO_t + \alpha_4 lnTO_t + \alpha_5 (lnFO_t \cdot lnTO_t) + \mu_t \quad (2)$$

We a priori expect all the coefficients to be positive. If α_3 and α_4 are positive in equation 1 then financial development may take place without a simultaneous opening of trade and finance, i.e. either of them would lead to financial development (Baltagi et al 2007). To test the simultaneous effect of opening both trade and capital, we take a partial derivative of equation 2 with respect to financial openness and trade openness:

$$\partial lnFD_t / \partial lnFO_t = \alpha_3 + \alpha_5 lnTO_t \quad (3)$$

$$\partial lnFD_t / \partial lnTO_t = \alpha_4 + \alpha_5 lnFO_t \quad (4)$$

In compliance with SOH, we expect the partial derivatives in equation 3 and 4 to increase as trade openness and financial openness increase respectively. If these take place then the simultaneous opening of trade and capital would lead to financial development. Using a linear regression method may lead to a bias and inconsistent estimation because the models are dynamic. Thus, we employ the Generalized Method of Moments (GMM) as introduced by Hansen (1982) so as to take care of likely problem of endogeneity in the models. Also, our estimations are heteroskedastic and autocorrelation consistent.

Results

In Table 2, we present the descriptive statistics of the study variables which are used to obtain the marginal effects of financial and trade openness on financial development.

Table 2: Summary of statistics

Variable	Mean	Median	Minimum	Maximum	Std. Deviation
CPS	12.95713	11.07757	5.917133	36.89332	6.897033
D	8.810000	7.865449	3.335644	23.24536	4.072625
SMC	13.67438	7.061383	3.348493	63.81124	13.23957
ST	1.172444	0.394624	0.044367	6.911100	1.595232
CBB	4.355004	4.076118	2.853727	6.513401	1.129077
DDS	47.17992	39.28676	16.36831	86.83933	26.21742
GDP_{PC}	699.3741	570.3110	494.2390	1098.000	200.6407
FO	16.25570	13.33947	2.048436	41.17153	11.23255
TO	40.80932	40.74746	11.07268	68.76650	14.85847

Source: Authors

All the variables are defined in Table 1.

Model 1

The estimated results, for equation 1, are presented on Table 3. The coefficients of the lag of all the financial development indicators (FD_{t-1}) are statistically significant with the expected sign. GDP_{PC} has a positively significant relationship with both financial depth and access to finance in financial institutions in Nigeria (*CPS, D* and *CBB*). While GDP_{PC} has an insignificant relationship with access to finance in financial markets *(DDS)*, it has a negatively significant relationship with financial depth in financial markets (*SMC* and *ST*) in Nigeria.

Table 3: Estimated results (model 1)

Model 1						
Regressands	*lnCPS*	*lnD*	*lnSMC*	*lnST*	*lnCBB*	*lnDDS*
Models	1A	1B	1C	1D	1E	1F
$lnFD_{t-1}$	0.434***	0.507***	0.947***	0.799***	0.720***	0.915***
	(0.129)	(0.135)	(0.087)	(0.051)	(0.126)	(0.135)
$lnGDP_{PC}$	0.259**	0.204*	-0.155***	-0.426***	0.098***	0.249
	(0.108)	(0.114)	(0.046)	(0.096)	(0.034)	(0.161)
lnFO	0.226***	0.325***	0.086	0.355***	0.015	-0.184**
	(0.056)	(0.079)	(0.092)	(0.104)	(0.022)	(0.073)
lnTO	-0.256**	-0.312**	0.260***	0.467**	-0.077***	-0.223*
	(0.119)	(0.149)	(0.085)	(0.199)	(0.025)	(0.121)
DIAGNOSTIC TEST						
Adjusted R^2	0.722	0.805	0.896	0.861	0.769	0.63
Durbin-Watson	1.389	2.002	1.895	1.587	1.268	0.948
J-statistic	3.057	0.894	2.026	4.115	3.129	4.127
Prob. J-statistic	[0.691]	[0.826]	[0.567]	[0.661]	[0.679]	[0.388]

Table 3. - Continued

Instrument Rank	9	7	7	10	9	8
Weak Instrument Test:						
Cragg-Donald F-stat	14.36	43.07	17.21	13.23	10.85	11.35
Stock-Yogo(bias)@30%	{5.15}	{5.34}	{5.34}	{5.07}	{5.15}	{5.25}
Stock-Yogo(size)@25%	{9.38}	{8.31}	{8.31}	{9.93}	{9.38}	{8.84}

Source: Authors

* All the variables are defined in Table 1. The models are estimated with GMM using Eviews 9. *** is the sign of the presence of 1% statistical significance while ** and * depicts the presence of 5% and 10% level of statistical significance. The figures that are in ( ) are standard errors, those in [ ] are the probability of J-statistic and those in { } are the critical values of the highest Stock-Yogo relative bias and size level. All these apply to Table 4.

FO has a significant positive relationship with financial depth in financial institutions (*CPS* and *D*) and an insignificant relationship with access to finance in financial institutions (*CBB*). For the measures of financial depth in financial markets, there is no significant relationship between *FO* and *SMC* while *FO* has a significant positive effect on *ST*. *FO* has a significantly negative relation with access to finance in Nigerian financial markets (*DDS*). *TO* has a significant negative relation with both financial depth and access to finance in financial institutions in Nigeria. *TO* also has a significant negative relation with access to finance in financial markets while it has a significant positive relationship with financial depth in financial markets.

The results on Table 3 shows that both *FO* and *TO* have a statistically significant positive effect on, only, *ST*. Thus, *ST* is the only financial development indicator that depicts that trade openness contributes to financial development when financial openness is held constant and financial openness contributes to financial development when trade openness is the same. These results do not support our expectation that financial development may take place in Nigeria without a simultaneous opening of capital and trade.

Model 2

Due to the introduction of the interactive term between financial and trade openness in equation 2, the results presented in Table 4 are somewhat different from those in Table 3. The coefficients of the lag of all the financial development indicators are statistically significant with the expected sign. GDP_{PC} has a significant negative relationship with *SMC* but a positive significant relationship with *ST* under financial depth in financial markets and significant positive effect on *DDS* which measures access to finance in financial markets. GDP_{PC} has a positive significant relationship with both financial depth and access to finance in financial institutions in Nigeria (*CPS, D* and *CBB*).

FO has a significant negative relationship with both financial depth and access to finance in financial institutions in Nigeria. It also has a significant negative relationship with financial depth (*ST*) and access to finance (*DDS*) in financial markets while

FO's coefficient is insignificant under *SMC*. Like *FO*, *TO* has a significant negative relationship with both financial depth and access to finance in financial institutions. *TO* also has a significant negative relationship with *ST* and *DDS* while it has a significant positive effect on *SMC*.

Table 4: Estimated results (model 2)

Model 2						
Regressands	*lnCPS*	*lnD*	*lnSMC*	*lnST*	*lnCBB*	*lnDDS*
Models	2A	2B	2C	2D	2E	2F
$lnFD_{t-1}$	0.430***	0.383***	0.958***	0.610***	0.643***	0.612***
	(0.140)	(0.111)	(0.088)	(0.155)	(0.058)	(0.108)
$lnGDP_{PC}$	0.579***	0.537***	-0.220*	0.900**	0.252***	0.801**
	(0.159)	(0.112)	(0.109)	(0.325)	(0.034)	(0.349)
lnFO	-0.842***	-0.622*	0.346	-2.681**	-0.529***	-1.443
	(0.292)	(0.328)	(0.358)	(0.962)	(0.116)	(0.683)
lnTO	-0.783***	-0.756***	0.387*	-1.968***	-0.319***	-0.898**
	(0.224)	(0.167)	(0.187)	(0.623)	(0.058)	(0.424)
lnFO·lnTO	0.278***	0.223**	-0.079	0.833***	0.152***	0.346**
	(0.081)	(0.088)	(0.092)	(0.262)	(0.026)	(0.146)
DIAGNOSTIC TEST						
Adjusted R^2	0.802	0.824	0.887	0.86	0.744	0.749
Durbin-Watson	1.734	1.938	1.818	1.14	1.248	1.068
J-statistic	5.155	3.737	2.158	3.131	2.319	2.621
Prob. J-statistic	[0.397]	[0.291]	[0.540]	[0.536]	[0.803]	[0.623]
Instrument Rank	10	8	8	9	10	9
Weak Instrument Test:						
Cragg-Donald F-stat	10.68	30.07	10.03	3.138	19.53	6.16
Stock-Yogo(bias)@30%	{5.15}	{5.34}	{5.34}	{5.25}	{5.15}	{5.25}
Stock-Yogo(size)@25%	{9.38}	{8.31}	{8.31}	{8.84}	{9.38}	{8.84}

Source: Authors

The interactive variable (*lnFO·lnTO*), in Table 4, has a significant positive coefficient under all the indicators except under *SMC* where it is insignificant. We move on to compute the marginal effects of financial and trade openness using the partial derivative of our selected financial development indicators with respect to *TO* and *FO* from the results presented in Table 4.

Marginal Effects

The marginal effects of financial openness on financial development indicators are expressed on Table 5 after extracting equation 3 from Model 2 and applying it to the minimum, median, mean and maximum values of trade openness (see Table 2). The

marginal effects of financial openness on financial depth (*CPS* and *D*) and access to finance (*CBB*) in financial institutions are found to statistically significantly increase as the values of trade openness increase. The marginal effects of financial openness on financial depth (*ST*) and access to finance (*DDS*) in financial markets also statistically significantly increase as the values of trade openness increase. However, the marginal effect of financial openness on *SMC* (financial depth in financial markets) is statistically insignificant. These results imply that if capital is further opened, Nigeria would further enjoy higher financial development.

Table 5: The marginal effect of financial openness on financial development

Financial Development Indicator	Minimum	Median	Mean	Maximum
lnCPS	-0.1735	0.1887	0.1891	0.3341
lnD	-0.0858	0.2047	0.2051	0.3215
lnSMC	"0.1560"	"0.0531"	"0.0530"	"0.0118"
lnST	-0.6780	0.4072	0.4085	0.8432
lnCBB	-0.1635	0.0345	0.0348	0.1141
lnDDS	-0.6110	-0.1602	-0.1597	0.0208

Source: Authors

Values in " " are not significant

The marginal effects of trade openness on financial development indicators are expressed on Table 6 after obtaining equation 4 from Model 2 and applying it to the minimum, median, mean and maximum values of financial openness. The marginal effect of trade openness is highest when the values of financial openness are at the highest under financial depth (*CPS* and *D*) and access to finance (*CBB*) in financial institutions. This is the same under financial depth (*ST*) and access to finance (*DDS*) in financial markets while the marginal effect of trade openness on *SMC* is also statistically insignificant. These confirm that further opening of trade in Nigeria would deliver the benefits of further financial development. The increasing marginal effect of financial and trade openness on financial development show that simultaneous opening of finance and trade would contribute to financial development.

Table 6: The marginal effect of trade openness on financial development

Financial Development Indicator	Minimum	Median	Mean	Maximum
lnCPS	-0.5837	-0.0628	-0.0078	0.2505
lnD	-0.5961	-0.1783	-0.1342	0.0731
lnSMC	"0.3304"	"0.1823"	"0.1667"	"0.0933"
lnST	-1.3709	0.1900	0.3548	1.1289
lnCBB	-0.2100	0.0748	0.1048	0.2461
lnDDS	-0.6500	-0.0016	0.0668	0.3883

Source: Authors

Diagnostic Tests

The probability of J-statistic is higher than 10% level of significance on Tables 3 and 4. Thus, we fail to reject the null hypothesis that the over-identifying restrictions of our instrumental variables are valid. Tables 3 and 4 further present the results of the models' respective weak instrument tests. We reject the null hypothesis of weak identification problem for all the models in Table 3 because the Cragg-Donald F-statistic is greater than the Stock-Yogo (relative bias and size) critical values. In Model 2, instruments used are strong for models 2A-2C and 2E while the instruments are weak for models 2D and 2F. Thence, our findings and conclusion are drawn from the models that are free of weak identification problem.

Discussion of Findings

Although not all our results meet the non-negative a priori expectation from the co-efficients, we found that financial development in financial institutions increases as economic growth increases. This finding is supportive of Baltagi *et al*. (2009) and David *et al*. (2014) as they found the same for private credit. Our discovery that financial development in financial markets decreases as economic prosperity increases, according to Baltagi *et al*. (2007), is not out of order. The explanation for this finding may be that as demand for finance arises, businesses in Nigeria were expanding by issuing their outstanding shares to raise funds. For example, most Nigerian banks raised capital by issuing part of their outstanding shares to the public during the last bank recapitalization exercise mandated by the CBN in 2004-2005 which resulted into reduction in stock price.

Like Pham (2010), we found that the relationship financial openness and trade openness have with financial development indicators are heterogeneous. For illustration, stocks traded to GDP is the only financial development indicator that gives evidence that financial development may take place in Nigeria without a simultaneous opening of capital and trade. Other indicators depict zigzag effects. These outcomes support the argument of Rajan and Zingales (2003) that financial development may not take place if finance and trade are not simultaneously opened.

The results of the marginal effects of trade openness and financial openness on financial development provide evidence that sufficiently confirm the Simultaneous Openness Hypothesis (SOH) in the case of Nigeria. We found that the marginal effects of trade openness and financial openness on financial development indicators for financial depth and access to finance in financial institutions are high when the values of financial openness and trade openness are high (respectively) and they are low when the values of financial openness and trade openness are low (respectively). Although they have weak diagnostic tests results, the marginal effects of trade openness and financial openness on financial development indicators for financial

depth and access to finance in financial markets are high when the values of financial openness and trade openness are high (respectively) and they are low when the values of financial openness and trade openness are low (respectively).

The totality of our findings speaks in favour of Baltagi *et al.* (2009) who found SOH for the determinants of banking sector development. However, they contradict Hauner and Prati (2008), Pham (2010) and David *et al.* (2014) who found that trade openness is more important for financial development than financial openness and Baltagi *et al.*'s (2009) suggestion that opening either trade or capital may benefit financial development.

Conclusion

Applying the Simultaneous Openness Hypothesis, this paper explores the contribution of trade and financial openness to the development of Nigeria financial system using not only financial depth indicators but also access to finance indicators. We found that opening capital without trade (vice versa) in Nigeria may not improve the financial system.

In conclusion, policymakers in Nigeria should endeavour to simultaneously open both trade and capital to guarantee future financial development, especially in financial institutions. However, in the process of simultaneously opening trade and capital, we recommend that policymakers may need to tread cautiously so as to minimize likely effect of global crisis on the domestic economy. This study can be extended by determining the control measures which policymakers may use to reduce the effects of global crises on the development of the financial sector in Nigeria in the face of financial and trade openness.

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