Explaining Financial Crises in an African Open Economy

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Abstract

This study investigated the probable sources of crisis in the financial sector of Nigeria, over the period, 1960-2014. Two distinct phases of financial crises in the country were enclosed by the scope of the study. Both the policy and economic environments of the country might have contributed greatly to the scale of the crises experienced in the different periods. An analytical approach embedded in allied studies defined the empirical model. The data employed were subjected to preliminary investigations in order to eliminate the possibility of spurious statistical results. Estimates from a regression model were obtained for both endogenous and exogenous factors. Most of the endogenous factors were found to be remarkably consistent in signs and significance. The influence of most of the exogenous factors and closely linked domestic activities found parallels in business cycles of the country. Greater care in policy design and reduced propensity to borrow externally could significantly moderate the negative influence to the determinants of growth in the system.

Keywords: business fluctuations; open economy macroeconomics; financial markets and the macroeconomy; policy design and consistency; policy coordination.

JEL Codes: E32; E44; E61; F41

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1. Introduction

Financial crises had become a global phenomenon whose prevalence among industrial and developing countries alike had been disconcerting and worrisome as several countries in different regions spent a better part of the past few decades dealing with one form of crisis or another. Currency and banking crises had been especially common occurrences; also, in recent times, there had been several sovereign debts defaults even by developed countries. Laeven and Valencia (2012) identified 147 systemic banking crises, 218 currency crises and 66 sovereign debt crises as having occurred around the globe in the period 1970-2011.

In Nigeria, financial crises had usually been dominated by banking crises though the events of the 1990s had a huge dose of nonbank financial institutions' troubles. The first recorded crisis was in late 1940s/early 1950s when many banks ran into stormy waters, driven principally by undercapitalization and 'bad' management. The crisis effectively ended the era of *laissez faire* banking with the enactment of the Banking Ordinance of 1952 that stipulated conditions for establishing banking business in the country. The ordinance became the precursor to the establishment of a central bank in the country.

The third phase of financial crisis in the country as recorded beginning from around late 2007 had a large dose of interplay of endogenous and exogenous factors including stock market crash, capital outflows and continuous fall in the price of the prime export of the country, crude oil.

For reasons of data availability, this paper provided an analysis of the proximate determinants of financial crises in the country since 1960. For proper anchor, two interrelated questions were asked. Firstly, what were the prominent endogenous and exogenous factors explaining fluctuations in the financial sector? Secondly, how important were these factors? The rest of the paper was organized as follows. Section II gave an insight into the policy and economic environment of the country in the reference period while section III discussed the relevant analytical framework. Section IV presented the

methodology and data employed in the study while section V was concerned with the empirical analysis. Section VI concluded the paper.

2. The Policy and Economic Environments

The agrarian economy that emerged at independence in 1960 had in first half of the decade of 1960s, been devoid of major volatility in growth fundamentals as the commodity export boom of the post-world war II era had petered out. However, the banking industry that boasted of only 8 banks of deposit and 1 merchant bank in 1960 recorded the birth of additional 8 banks of deposit by 1966. An oil boom occurred between 1973 and 1980 transferring large wealth to the country and thus helping to speed up its industrialization process: its manufacturing GDP rose from about 4% in 1971 to about 10% by the turn of the decade. Accordingly, the number of banks in the country grew to 21 with banks of deposit numbering 20.

The country was to experience a severe recession between 1981 and 1986 following the glut in the global oil market. That notwithstanding, additional 9 banks of deposit and 6 merchant banks were established in the period. The post 1986 years represented the era of economic reforms by which the country transformed from a regulated economy to one in which market forces influenced economic decisions considerably.[3] Thus, with the removal of barriers to entry and introduction of competition along price lines, a boom in the financial sector ensued. Between 1987 and 1992, banks of deposit grew in number to 66 and merchant banks, to 54.[4] Apart from the widespread nature of the boom noted in the introductory section, structural change brought in new entrants such as People's Bank, Community banks, Urban Development Bank, Maritime Bank, an export and import bank and a deposit insurer. By 1994, there were 752 registered finance houses, 879 community banks, 252 primary mortgage institutions and 271 people's bank branches in the country (CBN, 1993, 1994). However, political interference subverted prudential

[3] The regime was heralded by the inauguration of an auction market for determination of the exchange rate of the local currency, the naira, in September 1986.

[4] All reform measures aimed at the financial/banking sector and allied growth indices were obtained from Central Bank of Nigeria's *Annual report and statement of accounts* of the relevant years.

criteria in the granting of licenses where retired military officers were directors of many banks. (Lewis and Stern 1997).

Due to its enormous growth, professionalism became a rarity in the sector. Besides, some inconsistencies in the reform programme might have sent wrong signals to market operators thereby generating adverse consequences. For instance, between 1987 and 1992, interest rate policy oscillated between regulated and deregulated regimes and sectoral guidelines were still in place all through that period. Thus, in the face of interest rate risk as well as the stiff competition engendered by the sharp increase in the number of financial institutions, banks were still being directed to lend to priority sectors irrespective of the cost of capital and the marginal rate of return in such sectors.[5]

Banks responded to the somewhat deregulated environment by engaging in sharp practices especially, insider lending and foreign exchange deals. The autonomous foreign exchange market had been abolished in 1989 and Bureau De Change operators had been licensed, effectively increasing the number of authorized foreign exchange dealers. With structural defects in financial arrangements especially, asset –liability maturity mismatch and the persistent misalignment between the auction and parallel markets' exchange rates, many financial institutions, especially banks with privileged access to foreign exchange, found speculative transactions more lucrative than lending to the private sector.[6]

Regulatory reforms of the sector were logical and warranted. The reforms took the form of macroeconomic, structural, organizational, allocative, protective and prudential controls.[7] A particular measure that affected all the subsectors of the system was the increase in the paid up capital of firms. For example, banks of deposit and merchant banks were mandated to increase paid up capital base from ₦20 to ₦50 million and ₦12 to ₦40 million

[5] For a review of the developments in the country's banking sector between the late 1980s and the early 1990s, see for example Ogun (1994).
[6] See Ogun (1994) and Brownbridge (1998).
[7] For details on some of these measures, see for example, Central Bank of Nigeria (1990).

respectively.[8] For the banking industry in particular, a deposit insurer was established, the risk-weighted capital adequacy recommended by the Basle Committee of the Bank for International Settlements (BIS),prudential guidelines from Central Bank of Nigeria (CBN) and standard accounting systems (in reporting of banks' loan portfolios) from the accountancy practice regulatory bodies were brought into force.

In spite of all these, several cases of insolvency in the system were reported. For example, the 1992 annual report of Nigerian Deposit Insurance Corporation (NDIC) revealed that the financial situation of distressed banks of deposit deteriorated immensely in the year as their ratio of classified loans and advances to shareholders' funds decreased sharply from -1,977% in 1991 to -41,605% in 1992. According to the report, this indicated that the shareholders' funds were grossly inadequate to provide any cover for the banks' classified assets. Further, the adjusted shareholder's funds of the banks which was at negative level of about ₦1.9 billion in 1991 deteriorated to a negative position of about ₦4.6 billion in 1992. The report had summed the situation as, "whereas the banks in 1991 required a sum of at least ₦2,354 million as additional capital for their level of operations, the amount of additional capital funds required in 1992 increased to at least ₦6,090 million." The merchant banking segment and finance houses were not spared of the severe liquidity problems with their net worth trading in negative territories. By mid-1993, following a failed transition to civilian rule, political instability had set off a bank run, resulting in temporary closures and failure of some banks. Many finance houses too had to close shop. In 1994, exchange and interest rate controls were reintroduced by new military government.

A somewhat continuous cleaning process of the system commenced around 1994 with the NDIC favouring mergers and acquisitions but outright liquidation in hopeless cases. Four banks were put into liquidation in 1994 and another had its license suspended. In 1995, a further 13 banks were taken over by the CBN and many more distressed banks were subjected to some form of "holding action" imposed by the CBN and NDIC (Brownbridge 1998).Many licenses were subsequently revoked and many banks put into liquidation.

[8] ₦ is the symbol of Nigeria's national currency.

With a civilian government taking over from the military in 1999, financial sector's reform became part of the need for an expanded and comprehensive economic reforms. Around year 2001, there was a call for banks to increase their paid-up capital to ₦1 billion; this was to be increased to ₦2 billion in 2002. As the need to effectively tackle the problem of frequent crisis in the sector remained on the front burner, additional arguments were woven around the need to strengthen the resource base of banks such that they could finance larger productive ventures without necessarily resorting to consortium arrangements. Hence, in 2003, CBN requested all deposit banks to raise their minimum capital base from about US$15 million to US$192 million by the end of 2005 (See CBN 2003). Banks failing to meet the new requirements were expected to merge or else have their licenses revoked. With the banking sector now under universal banking, the implementation of the consolidation exercise triggered various mergers that reduced the number of banks in the country to 25.

Unfortunately, the huge capital base could not effectively safeguard the sector from distress as it faced threats from at least two directions. Firstly, the fact that the country was part of a network of nations under its open economy policies which implied rapid transmission of shocks to the economies of its trading partners. Secondly, the monocultural export dependency of the country further increased its vulnerability to external shocks. Thus, when the global meltdown of 2007-2009 combined with the continuous fall in the export price of crude oil, the illusion of an enhanced capital base evaporated as the banking sector in particular and the financial system in general became devastated by crisis.

The macro economy had slipped into recession from the oil price development and the attendant continuous drop in foreign reserves of the country.[9] With over US$15 billion (of local currency) withdrawn from circulation; the exchange rate depreciating steeply from ₦80/$ in 2007 to ₦146/$ in 2009; the stock market index collapsing by almost 70% from 66,371 in March 2008 to

[9] Oil price fell continuously from a peak of about US$147 per barrel in 2007 to about $30 in 2015 while foreign reserves dropped from about $80 billion in 2007 to about $24 billion in June 2016.

22,349 in January 2009 with an associated market capitalization journey from about ₦12.13 billion to about ₦4.88 billion, the recession showed up as a form of apathy to bank loans on the part of non-bank public as well as an inability to service and repay existing loans.[10] Accordingly, incidence of loan defaults rose as non-performing loans in the system jumped to about 20.7% in 2009 while the public's apathy to bank loans combined with banks' own reluctance to lend (given the asymmetric information problem that accompanied the stock market crash) to create an unusual excess liquidity problem in the system.[11] And, as banks' exposure in the stock market was in the region of about ₦1 billion, their capital base became eroded accentuating the problem of fragility in the system. A joint CBN and NDIC audit was conducted in 2002 (CBN/NDIC 2002) to reduce the uncertainty that pervaded the financial sector. The audit focused on capital adequacy, corporate governance and liquidity parameters and was conducted in two batches. Out of the 24 banks audited, only 14 passed on all parameters. One bank was found wanting on two issues while the remaining 9 banks were judged to be in grave conditions.

In order to stabilize the system and return confidence to the markets and investors, the CBN injected ₦620 billion into the nine banks that had issues with liquidity and capital adequacy and replaced the executive management in eight of the banks. It gave two banks a deadline of June 2010 to recapitalize. The intervention also necessitated the establishment of the Asset Management Company of Nigeria (AMCON) which acquired the banks' toxic assets and supplied liquidity to the system so as to avoid bank runs and systemic failures. By 2011, the CBN through AMCON assumed total control of three banks, injected needed capital and reorganized their management. As at the July2016, the total toxic assets under the AMCON rescue operation of the three banks was about ₦3 trillion.[12]

[10] The figures quoted were from CBN Statistics Database.

[11] References could be made to (1) during the period under consideration, rather than lend to the public, banks in the country preferred to keep their money on deposit with the apex bank for as low as 2% interest rate (2) most of the banks were paying about 1% rate on time deposits while many of them were actually refusing to accept deposits on term basis and (3) some banks began charging maintenance fees for saving account facility.

[12] Information provided by the Research Department of Central Bank.

3. Analytical Framework

Most of the available theoretical models of financial crises appeared to be centered on banking crisis as would be occasioned by balance of payments crises caused by weak economic fundamentals (see for example, Kouri 1976; Salant and Henderson 1978; Tularam and Subramanian 2013)or currency crisis usually associated with the collapse of exchange rate regimes (see e.g. Flood and Garber 1984; Tularam and Subramanian, 2013); existence of multiple equilibrium(see for example, Willman, 1987); the influence of financial factors such as the balance sheets of banks within the context of asymmetric information problem (see for example, Akerlof and Romer 1994; Claessens and Kose 2013); strictly predictive models (for example, Kaminsky and Reinhart 1999; Goldstein, Kaminsky and Reinhart 2000) or excessive risk taking associated with the existence of bail-outs and deposit insurance (see for example, Radecki 1990).

Two distinct theories had been identified as explaining the origin of banking panics (Allen *et al.* 2009). The first maintained that panics were undesirable events caused by random deposit withdrawals unrelated to changes in the real economy. The maturity transformation role of banks made them susceptible to sudden demands for liquidity. These multiple-equilibrium models affirmed that bank runs were often accurately predictable. On one hand, agents had uncertain consumption needs in an environment where long term investments were costly to liquidate. If depositors believed that others would withdraw, then, all agents found it rational to do likewise then a panic occurred. On another, everybody believed no panic would occur and agents withdrew their funds according to their consumption needs, demand could be met in this case without costly liquidation of assets. The shortcoming of this theory was in only explaining the possible mode of occurrence of a crisis but not accounting for the causal factor.

The second saw banking crises as a natural outgrowth of business cycles. Recessions would reduce the worth of banks' assets, raising the possibility of banks being unable to meet their obligations. Depositors anticipated financial difficulties when they received information of an impending downturn and

tried to withdraw their deposits, triggering a crisis in the process as banks could not satisfy all customers at once. In this case, crises were not random events but depositors' response to negative information about unfolding economic conditions. The sequential service constraint (first-come-first-served rule) was the essential mechanism causing the possibility of a panic in these theories.

In many emerging markets, banking crisis were triggered by external developments such as capital outflows, rising global interest rates and falling commodity prices, which led to an increase in non-performing loans (Claessens and Kose 2013). Macroeconomic fundamentals as traditional sources of financial and banking crises included(1) general uncertainty, (2) asset price bubbles, (3) terms of trade shocks, (4) monetary policy errors, (5) recession phase of business cycles,(6) exchange rate collapses, and,(7) inflation volatility. Mishkin (1996) corroborated this view by using the asymmetric information theory to explain financial crises and concluding that, these successive factors raised the probability of bank insolvency Most banking panics were often initiated by a crisis of confidence in the banking sector (Mishkin 1996). Rise in uncertainty in financial markets due to a recession, an important individual financial or non-financial institution failure, a real shock to the economy or political instability made it harder for lenders to perform their intermediation role in such high risk environments. Information asymmetry often snowballed into bank panics and systemic failure. Further, the characteristics of developing economies could actually increase the likelihood of a banking crisis (Mishkin 1996). Being primary good producers with undiversified export base made them vulnerable to the vagaries of international commodities markets; deteriorating terms of trade often produce rapid weakening of banks' balance sheets; exchange rate risks from unanticipated depreciation/devaluation increased liabilities denominated in foreign currency.

Banking crises were often linked to problems in asset markets - stock and real estate markets. (Claessens and Kose 2013). When asset markets were in turmoil, it generated a corresponding negative effect on banks' balance sheets, securities lost value and the incidence of non-performing loans rose because non-financial firms' net worth were reduced. Problems of adverse selection

and moral hazards tended to rise. Even if banks did not fail, there was significant reduction in capital which led to decline in lending and contraction in economic activity. These problems were much evident in the recent global crisis triggered by credit contraction in U.S subprime mortgage markets.

According to Calomiris and Gorton (1991), these factors had not however been empirically or historically proven to be the sole cause or sufficient conditions for banking crises. Supporting, Caprio and Klingebiel (1996) in their historical review of prominent cases of bank insolvencies found that microeconomic factors were more prevalent. By Calomiris (2009), the existence of poorly designed microeconomic banking rules in the company of any of these macroeconomic factors made banking crises a certainty.

A historical analysis of banking crises revealed that panics and waves of failure did not always coincide; were not random events; the inevitable result of human nature; the liquidity transforming structure of bank balance sheets; and, did not typically accompany business cycles or monetary policy errors. The microeconomic structural forms of banking system rules established by governments were seen as the key additional necessary condition that raised the likelihood of banking distress (Calomiris 2009).

As defined by Calomiris (2009), risk-inviting rules are those rules that governed the location, powers, and operations of each bank, including: government subsidies; special rights granted to favoured banking system participants; the incentive consequences of those subsidies and rights were seen as factors that increased the tendency for banking crises. Explicitly, these microeconomic rules were the structural characteristics of a country's banking system or incentive distortions that prevailed therein such as: financial liberalization; government safety net (deposit insurance or public guarantee); poor supervision and regulation, lending to state enterprises, political interference, politically motivated lending, deficient risk management, weak judicial system, corruption and fraud were commonly cited factors which encouraged more imprudent risk taking on the part of bankers.

By Fischer *et al.* (1997), financial liberalization changed the macroeconomic, legal and regulatory framework under which banks operated. Financial

parameters used by economic agents in making financing decisions were usually changed by the shift from financial repression to market determined policies. An absence of a proper regulatory and supervisory structure before liberalization, would fail to effectively constrain risk taking behavior and the lending boom that typically accompanied this process. Empirical results showed that moral hazard and risk taking by bank managers and owners rose following liberalization, hence, increasing the probability of banking crisis. For instance, in 1994, Venezuela experienced a major banking crisis after financial liberalization which represented huge losses to the government in terms of the magnitude of their bailout package - 13% of GNP (see Sundararajan 1996).

Regulation with macro-prudential supervision was designed to reduce the risk taking behavior of financial institutions and to enforce rules made by the governing monitoring authority in order to ensure financial stability. Public intervention measures such as bailout guarantees, capital support and purchase of non-performing loans and so forth were important in forestalling systemic bank failures, though they often had distortionary effects (Claessens and Kose 2013). Deposit Insurance aided in reducing depositors' apprehensions which could lead to sudden withdrawals of liquidity or capital (Calomiris and Gorton 1991); and, lender of last resort facilities were necessary in providing liquidity to banks in periods of financial distress.

Ironically, banks took on too many risks because they relied on government protection in the event of failure or on the tendency of government to pursue accommodative monetary and fiscal policies following crises. Government safety nets also led to poor market discipline, it removed depositor's incentives to monitor or discipline banks when they were taking such excessive risks because they expected they would not suffer any loss if a bank failed; they also increased the risk of fraud and embezzlement, thereby producing systemic vulnerabilities (Claessens and Kose 2013; Calomiris 2009).

A bank supervisory agency with inadequate expertise and resources would be unable to effectively monitor and evaluate: appropriate management expertise, efficiency of internal risk management procedures, adherence to proper accounting standards, compliance with disclosure requirements and capital

sufficiency in order to check banks proclivities towards risk taking. Without accountability, transparency and autonomy from political influence, these agencies would engage in regulatory forbearance (that is, delay in enforcing regulations or closing insolvent banks) partly due to conflicting interests, by hiding the full extent of banking problems, preventing the prompt implementation of corrective measures that could avert a full-fledged banking crisis (Mishkin 1996).

The form of economic policy prevalent in the financial sector, especially if financially repressive, had adverse impacts on banking activities and could initiate crises. Government directives such as lending to particular sectors at preferential interest rates, extension of bank branches to certain areas without accounting for profitability considerations, non-market based government deficit funding, lending to state sponsored enterprises at submarket interest rates, and connected lending to politicians could build up systemic risks in the banking system (Latter 1997).

A weak institutional infrastructure in terms of the legal and judicial framework prominent in most developing countries hindered the efficient functioning of financial markets. Financial intermediation was severely affected when property rights were unclear and difficult to enforce. Weak legal systems made it difficult to extricate an economy from financial turmoil because of the cumbersome bankruptcy procedures usually involved in resolution of conflicting claims. (Mishkin 1996; Latter 1997).

The insights provided by the foregoing studies informed the choice of the variables in the empirical specification below. Particular attention was also paid to Eichengreen and Portes (1986) in which financial crises were viewed in terms of a disturbance to financial markets, associated typically with falling asset prices and insolvency among debtors and intermediaries, which ramifies through the financial system, disrupting the market's capacity to allocate capital within the economy; in an international financial crisis, disturbances spill over national borders, disrupting the market's capacity to allocate capital internationally. Also noted was the understanding in Claessens and Kose (2013) of their multifaceted nature; they could have domestic or external origins, and could stem from private or public sectors; they came in different

shapes and sizes, evolved over time into different forms, and could rapidly spread across borders.

The empirical specification of the model analyzed therefore took the form:

$$FSNW = f\begin{pmatrix} M2, MPR, RIR, PMP, RER, SMC, INF, CF, IDSH, FRIR, FDY, \\ FRM, OP, TOT, EXDY\ EDSX, PFS \end{pmatrix} \quad (1)$$

Where, FSNW was financial sector's net worth; M2 was broad money supply; MPR was monetary policy rate; RIR was real interest rate; PMP was parallel market exchange rate premium; RER was real exchange rate; SMC was stock market capitalization; INF was domestic inflation; CF was capital flight; IDSH was internal debt service – broad monetary base ratio; FRIR was foreign (advanced) countries real interest rate; FDY was fiscal deficit ratio; FRM was ratio of foreign reserves to imports; OP was crude oil price; TOT was terms of trade; EXDY was external debt ratio; EDSX was ratio of external debt service to export; PFS was profit of the financial sector. The respective partials were as shown in Table 1In the model, FRIR, EXDY, EDSX, MPR, FRM, TOT and OP were exogenous variables.

Table 1: A Priori Expectations

Variable	Expected Sign	Variable	Expected Sign	Variable	Expected Sign
M2	+	MPR	-	RIR	+
PMP	+	RER	+	SMC	+
INF	+	CF	-	IDSH	+
FRIR	-	FDY	-	FRM	+
OP	+	TOT	+	EXDY	-
EDSX	-	PFS	+		

Source: Deduction from the analytical framework.

Financial sector's net worth was total assets minus total liabilities of the financial sector and captured the growth trend in the sector. Foreign (advanced countries) real interest rate was a proxy for shocks to the economies of the country's major trade partners, that is, exogenous shocks. External debt ratio measured the annual claim of external debt on available national resources,

that is, a measure of external debt burden. EDSX was a measure of the claim of external debt service obligations on export proceeds of the country, that is, a measure of national liquidity. Internal debt service – broad monetary base ratio measured the fraction of total new monetary base devoted to servicing internal debt annually. Monetary policy rate was the discount rate and represented a measure of monetary policy errors. Foreign reserves – imports ratio reflected the number of months the foreign reserve level of the country could finance its imports that is, import cover.

Broad money was also a measure of national liquidity. Fiscal deficit ratio was an additional measure of policy errors. Terms of trade and oil price were measures of exogenous disturbances. Inflation was the measure of effect of price level increases on financial assets' prices, net worth and profits in the financial system. Real interest rate and real exchange rate were proxies for the effect of financial liberalization (microeconomic rules) on cost of capital. Capital flight was a measure of corruption and dissatisfaction of investors with domestic economic policies and political developments. Stock market capitalization was the measure of the effect of asset price bubbles. Profit of the financial sector was a proxy for factors such as managerial capability, corruption and fraudulent practices. Parallel market exchange rate premium was a proxy for the effect of corruption and sharp practices in the system.

The log equivalent of equation (1) was of the form:

$$\begin{aligned}\Delta fsnw = {} & \alpha_0 + \alpha_1 m2 + \alpha_2 mpr + \alpha_3 rir + \alpha_4 pmp + \alpha_5 rer + \alpha_6 smc \\ & + \alpha_7 INF + \alpha_8 cf + \alpha_9 idsh + \alpha_{10} frir + \alpha_{11} fdy \\ & + \alpha_{12} frm + \alpha_{13} op + \alpha_{14} tot + \alpha_{15} exdy + \alpha_{16} edsx \\ & + \alpha_{17} pfs + \mu_t \qquad (\mathbf{2})\end{aligned}$$

Variable INF denoting domestic inflation was not entered in log because it was generated as percentage change in consumer price index (CPI), not log difference of CPI when it will automatically be in log.

4. Methodology and Data

An ordinary least squares regression analysis was undertaken. The analysis was confined to the short run for two major reasons. First, in modern times, at least since the great depression, no crisis - economic or financial, had been allowed to work itself out fully; in order to short circuit the relevant cycle, governments usually intervened in various forms - quantitative easing, stimulus package or toxic asset purchase or through their deposit insurers – deposit assumption, pay-out on insurance, merger and acquisition, outright liquidation and so forth. Hence, no such crisis followed its own dynamics to the long run. Secondly, if hypothetically we envisaged a financial crisis model in which national income was specified among others, a long run driver, given the real possibility that financial crisis could be a cause of income cycle, the issue of long run became rather difficult to comprehend. The foregoing rendered any long run analysis in the context of financial/banking crisis ambiguous.

To eliminate the possibility of spurious regression estimates, preliminary investigation of data property was conducted. Thus, a unit root test was carried out with its outcome guiding the final specification of the data series. The data employed in the analysis were annual series covering the period 1960-2014 and were obtained from various issues of the Statistical Bulletin published by the Central Bank of Nigeria.

5. The Empirical Analysis

Preliminary data analysis took the form of a unit root test that was conducted according to Augmented Dickey Fuller (ADF) and Phillips Perron tests' procedures. The outcome was Table 2.

On the Table 2, the order of integration of the different series were decided on the basis of joint decision of the two test procedures. Thus, at a benchmark of 5%, only foreign reserves - import ratio (frm) was integrated at level; all others were of I(1) status. However, at 10% benchmark, only inflation and

internal debt service – broad monetary base ratio (idsh) were added to the list of series integrated at level while others were I(1).

Table 2: Unit root tests

Variable	Test Procedures				Remark
	ADF		PP		
	Level	1st Difference	Level	1st Difference	
fsnw	-2.95(0.15)	-6.71(0.00)	-2.98(0.14)	.6.68(0.00)	I(1)
m2	-3.27(0.08)	-4.40(0.00)	-2.70(0.24)	-4.09(0.01)	I(1); I(0) at 10% for ADF
mpr	-1.78(0.69)	-8.13(0.00)	-1.73(0.72)	-8.21(0.00)	I(1)
rir	-3.31(0.07)	-6.85(0.00)	-3.16(0.10)	-16.80(0.00)	I(1); I(0) at 10% for ADF
rer	-2.77(0.21)	-5.49(0.00)	-2.32(0.41)	-5.48(0.00)	I(1)
smc	-0.92(0.94)	-5.29(0.00)	-1.09(0.92)	-5.29(0.00)	I(1)
INF	-3.35(0.06)	-7.46(0.00)	-3.18(0.09)	-17.12(0.00)	I(1); I(0) at 10%
cf	-2.55(0.30)	-9.23(0.00)	-2.52(0.31)	-9.07(0.00)	I(1)
idsh	-3.21(0.09)	-10.35(0.00)	-3.19(0.09)	-10.74(0.00)	I(1); I(0) at 10%
frir	-3.10(0.11)	-6.85(0.00)	-3.10(0.11)	-8.09(0.00)	I(1)
fdy	-3.12(0.11)	-5.72(0.00)	-3.23(0.08)	-10.60(0.00)	I(1); I(0) at 10% for PP
frm	-3.76(0.02)	-	-3.79(0.02)	-	I(0)
op	-1.67(0.75)	-6.79(0.00)	-1.84(0.67)	-6.79(0.00)	I(1)
tot	-1.96(0.60)	-6.16(0.00)	-2.13(0.51)	-6.06(0.00)	I(1)
exdy	-1.47(0.82)	-6.40(0.00)	-1.58(0.78)	-6.38(0.00)	I(1)
edsx	-1.67(0.74)	-7.60(0.00)	-1.68(0.74)	-7.60(0.00)	I(1)

Source: Computed.

Table 3 presents the parsimonious model.[13] For reason of near singular matrix generating perfect collinearity of regressors, three variables, monetary policy rate, terms of trade and nominal exchange rate had to be deleted from the over-parameterized model.[14] Also, for reason of data unavailability, profit of financial system did not make the final model.

[13] The over-parameterized model could be obtained from the authors.
[14] The data used in the study and their sources are available from the authors upon request.

Table 3: Parsimonious Model

Dependent Variable: Δfsnw
Method: Least Squares
Sample (adjusted): 1964 2014
Included observations: 49 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Δfsnw(-1)	-0.51	0.12	-4.21	0.00
Δfsnw(-2)	-0.37	0.09	-4.15	0.00
idsh(-1)	-0.06	0.04	-1.48	0.15
idsh(-2)	0.14	0.03	3.60	0.00
Δm2	1.25	0.23	5.43	0.00
Δm2(-1)	-1.47	0.29	-5.08	0.00
Δm2(-2)	-0.61	0.20	-2.92	0.00
Δedsx(-1)	0.11	0.03	3.54	0.00
Δedsx(-2)	-0.06	0.04	-1.53	0.14
Δexdy	-0.27	0.04	-6.68	0.00
Δexdy(-1)	-0.41	0.04	-8.31	0.00
Δexdy(-2)	-0.16	0.05	-3.08	0.00
Δfdy(-1)	4.15	1.15	3.59	0.00
Δfdy(-2)	-2.56	0.98	-2.61	0.01
Δfrir(-1)	0.56	0.24	2.32	0.03
frm	0.29	0.04	6.51	0.00
frm(-1)	-0.14	0.04	-3.54	0.00
Δop	0.43	0.12	3.55	0.00
Δop(-1)	-0.32	0.10	-3.00	0.00
Δrer(-1)	0.71	0.11	6.09	0.00
Δrer(-2)	0.19	0.12	1.61	0.12
Δpmp	-0.07	0.05	-1.19	0.24
Δpmp(-2)	0.19	0.07	2.61	0.01
Δrir	0.52	0.22	2.35	0.03
Δrir(-1)	0.95	0.17	5.30	0.00
Δrir(-2)	-0.53	0.14	-3.83	0.00
Δsmc	-0.89	0.13	-6.47	0.00
Δsmc(-1)	-0.27	0.11	-2.43	0.02
Δsmc(-2)	-0.35	0.12	-2.76	0.01
Δcf	-0.11	0.03	-3.04	0.00
INF	0.02	0.00	8.71	0.00
C	0.82	0.12	6.43	0.00
R-squared	0.96			
Adjusted R-squared	0.89			
F-statistic	13.63			
Prob(F-statistic)	0.00			

		Diagnostic Tests	
Test		LM Statistics	F-Version
Normality		1.64(0.43)	N.A.
Serial Correlation: BG[15]	10.31(0.00)	F(2, 15) = 2.00(0.16)	
Heteroskedasticity: BPG[16]	26.73(0.68)	F(31, 17) = 0.65(0.84)	
Ramsey RESET (2)	0.54(0.76)	F(2, 15) = 0.08(0.92)	
Recursive Residuals	Generally stable[17].		

Source: Computed.

Two explanatory variables, lags of the dependent variable and foreign real interest rate bore the wrong signs. Of the rest, money supply (M2), real interest rate (RIR), fiscal deficit ratio (FDY), import cover (FRM) and oil price (OP) though significant, came up with mixed signs. The remainders were remarkably consistent in signs and significance.[18] Thus, internal debt service, external debt ratio, parallel market exchange rate premium, real exchange rate, real interest rate, stock market capitalization, capital flight and inflation combined to explain the growth of the country's financial system. Whereas, external debt ratio, stock market capitalization and capital flight tended to exert negative influence on FSNW, the others (that is, internal debt service, parallel market exchange rate premium, real exchange rate, real interest rate and inflation) contributed positively to its growth in the period under consideration. This implies that factors that negatively impacted on the positive contributors could have induced crisis in the financial sector by way of reduced net worth. Similar outcome would also obtain with factors that induced growth in the negative contributors. With two negative factors (external debt ratio and capital flight) being partly exogenous, the role of exogenous factors in financial crises in the country appeared quite established.

The vicissitudes in the effects of some explanatory factors appeared to have parallels in business cycles of the country. The fact that money supply, import

[15] Breusch-Godfrey Test.
[16] Breusch-Pagan-Godfrey Test.
[17] This implies that the recursive residuals generally lie between +/- 2 standard deviations; the instances of model instability identified with some years disappeared when 5% was made the highest benchmark for the unit root test. Details could be obtained from the authors.
[18] The series were mostly significant at 1% with a few at 5%.

cover and oil price had fluctuating impacts on growth in the financial system most likely suggested the possibility of an exogenous driver at work. However, given that the reactions of endogenous variables to exogenous disturbances also generally depended on the magnitude of the shocks, the duration of depression in some endogenous activities might be far greater than the expansion of the preceding boom. This perhaps supplied the reason why on the average, stock market capitalization and capital flight produced a depressive effect on growth of the financial system.

Overall, the model appeared a good fit with the explanatory variables accounting for over 89% of the movements in financial system's net worth in the period 1960 to 2014. The diagnostic tests suggested a generally well behaved model even as the test for serial correlation appeared to be mixed.

6. Conclusion

The proximate determinants of financial sector growth in Nigeria were ascertained and evaluated for relative and collective importance in this study. Both endogenous and exogenous variables were discovered to have operated in concert in explaining crisis in the financial system. One issue that stood out in the analysis was the fact that practically all the influential endogenous factors were within the ambit of policy control. This raised the likelihood that policy inadequacy and possibly, somersaults, might have been important causal factors of financial crises in the country.

Exogenous disturbances might technically be outside the control of a country, external debt should not fall into this category. Hence, the external debt policy of the country as well as its debt contracting propensity might require attention in the areas of sustainability and the attendant issue of burden that had been shown to penalize financial sector's growth. Complementary policies would be expected within the broad context of management of business cycles in the country. And indeed, further research into the subject of financial crises in the country could benefit from the adoption of a cycle's approach.

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