

THE NIGERIAN BANKING CRISIS: WHAT ROLE DID THE MACROECONOMY PLAY?

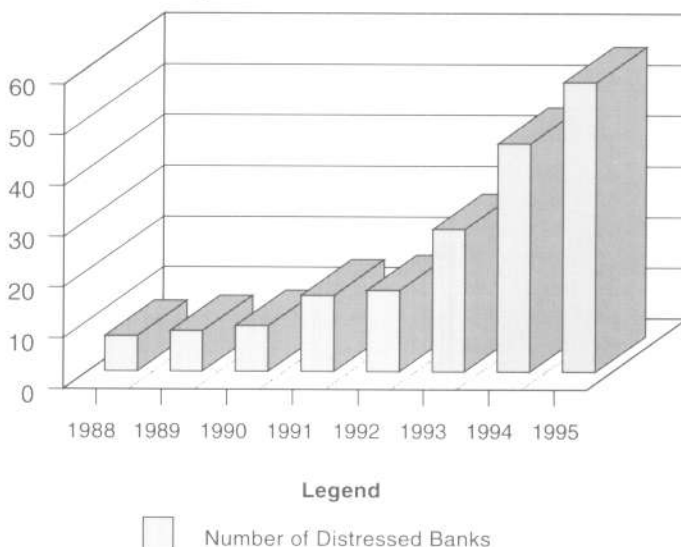
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1. Introduction

Widespread banking crisis has been a feature of the 1980s and 1990s in several developing, developed and economies in transition¹. The proliferation and severity of

Chart 1: Nigeria: Growth of Distressed Banks



this crisis have generated considerable concern for academics, policy-makers and international agencies. This is because such crisis disrupt the flow of credit to households and enterprises, reducing investment and consumption and possibly forcing viable firms into bankruptcy (Demirguc-Kunt and Detragiache, 1997). Besides, banking crises could undermine the workings of the payment's system and by diminishing confidence in domestic financial institutions provoke a fall in domestic

¹ see Table A1

savings and large scale capital outflow.

A chief objective of policy has therefore been to prevent the occurrence of banking crises because of these disruptive consequences. Unfortunately, as evident from Chart 1, the number of banks experiencing distress in Nigeria has increased progressively since 1988 rising from seven in that year to 57 in 1995. Thus, as a first step toward stemming banking crises, there is the need to understand the underlying factors behind their surge.

The Nigerian banking industry responded favourably at first to the economy-wide institutional and policy reforms enunciated in the Structural Adjustment Programme, recording unprecedented numerical growth and exponential profit performance. By 1989, however, the banking industry was experiencing one of the worst crises ever reflected in an increasing number of distress cases. Although distress in the banking industry or its variants² predated this period, two important policy impulses in 1988 and 1989 were to expose its scale and intensity. These are respectively the Central Bank of Nigeria (CBN) directive to banks to lodge naira backing for foreign exchange application and the directive that public sector deposits should be transferred to the CBN. Accordingly, the fragile liquidity positions of some banks were unmasked as a result of these directives. This turned out to be very widespread with the invocation of the Prudential Guidelines.

The core conjecture we seek to validate or refute in this paper is that the Nigerian banking crisis was preceded by weak and deteriorating macroeconomic fundamentals. The paper will therefore provide insights into the extent to which the crisis was predictable and by extension could have been avoided. The principal objective of the paper therefore is to ascertain the linkage between macroeconomic performance and banking crisis in Nigeria. The main intention is to identify features of the macroeconomic environment that tend to breed banking sector fragility and ultimately lead to systemic banking crises. To accomplish this research task, this paper will evaluate trends in relevant macroeconomic variables in the period preceding the banking crisis and estimate the discrete time-hazard model specified

² Incidences of distress or more appropriately, failure in the Nigerian banking industry dates back to the 1930s when the first bank failure was recorded. Indeed, between 1930 and 1958 when the Central Bank was established, over 21 bank failures were recorded. The failures were attributed largely to mismanagement of the banks, lack of adequate capital and inexperienced personnel.

to assess the probability of a crisis. The rest of the paper is organized as follows: Section 2 reviews the theoretical and empirical literature on banking crisis, Section 3 outlines the analytical framework and model, Section 4 presents the results of the empirical analysis while Section 5 elaborates the policy recommendations and concludes.

2. Theoretical and Empirical Review

Several theories of banking crises have emerged in the past few decades. One such theory is the *random withdrawal* or seasonal-based theory. Associated with the pioneering effort of Diamonds and Dybvig (1983), the central thesis of this theory is that banking panics are the outcome of unexpected withdrawals by bank depositors. The fundamental assumption of this model is elaborated by them as follows:

- * agents have uncertain needs for consumption;
- * banks exist to insure that consumption occurs in concert with the realization of agents' consumption preferences;
- * there is a sequential service constraint (i.e., first come, first served constraint);
- * banks cannot honour all its liabilities at par if all agents present them for redemption.

Given the foregoing premises, the authors anchor the possibility of a bank panic on the occurrence of a set of self-fulfilling beliefs (i.e., the belief by some depositors that other depositors are withdrawing their funds even in the absence of an initial deterioration of the bank's balance sheet) and this may be fueled by "a random earnings report, a commonly observed run at some bank, a negative government forecast, etc."

The Random Withdrawal hypothesis has attracted severe criticism, especially in relation to the validity of the sequential service constraint and ambiguity in respect of the belief system which are the two pillars on which the theory rests. Thus Demirguc-Kunt and Detragiache (1997) while providing econometric evidence on the positive association between banking crises and a deteriorated macroeconomic environment (such as low GDP growth, high real interest rates, and high inflation) observed that banking crises "do not appear to be solely driven by self-fulfilling expectations as in

Diamond and Dybvig (1983)."

In recent times the *asymmetric information* hypothesis has found application in banking and financial matters. Specifically, a theory of banking and financial crises has been developed around this hypothesis. According to the asymmetric information or credit-business cycle theory of financial crises, such crises constitute a nonlinear disruption to financial markets in which adverse selection and moral hazard problems become much worse, so that financial markets are unable to efficiently channel funds to those who have the most productive investment opportunities. Inevitably, there are panics as depositors, who are largely uninformed about bank asset portfolio values and being inundated by negative news about the economy, revise their perceived risk of bank debt. Asymmetric information arises from the fact that depositors find it difficult to value their banks and evaluate their management and activities. When there is adverse news about the banking sector, depositors are therefore ill-equipped to determine the banks that are affected. This will set off a panic as withdrawals are made from all banks. Specific signals that might trigger such withdrawals include an increase in some indicator of recession or a decline in the net worth of a class of bank borrowers (Gupta, 1998) and a deterioration in the quality of a bank's asset portfolio (Demirguc-Kunt and Detragiache, 1997).

The *liquidity or monetary* theory of banking crisis contends that crises are likely to occur during periods of liquidity shortage. When there is a decline in money stock due, for instance, to a contraction in the agricultural and business cycles, commercial banks may be forced into a liquidation of their assets. According to this view, runs on banks and the inability to expand the stock of money sufficiently to compensate for the drop in bank reserves may precipitate a crisis.

Similarly, shocks that adversely affect the economic performance of bank borrowers are positively correlated with systemic banking crises. Further, for given shocks, banking systems that are less capitalized are more vulnerable. Along the line of the foregoing arguments, several authors have established direct association between economic shocks such as terms of trade deterioration, declines in asset prices and cyclical output downturns and episodes of banking sector problems (Gorton, 1988; Caprio and Klingebiel, 1995; Lindgren *et al.*, 1996; Kaminsky and Reinhart, 1996). There is also the *bubble* theory of banking crisis which predicts that stock market crashes precede and induce banking panics and recession.

Increases in short-term interest rates that compel banks to raise the interest rate paid to depositors constitute an important source of banking sector problems. This is

because the rate of return on assets cannot be adjusted quickly enough to compensate for the short term increase in liabilities occasioned by the increase in interest rates since the asset side of banks balance sheets comprise loans of longer maturities with fixed interest rates.

The borrowing and lending profile of banks are potentially another source of banking crisis. When banks borrow predominantly in foreign currency while lending in domestic currency, there is a mismatch in the domestic and foreign rates of return which may impact adversely on bank profitability, especially if there is an unexpected depreciation of the domestic currency. Although many countries limit open foreign exchange operations by commercial banks, evidence exists to show that such regulations are flouted or circumvented (Garber, 1996). Indeed, foreign currency debt was instrumental to the onset of banking problems in Mexico in 1995, in the Nordic countries in the early 1990s, and in Turkey in 1994 (Mishkin, 1996).

Banking crisis can also result from fraud, mismanagement and outright looting. Indeed bank managers may allow their personal idiosyncrasies and greed to becloud their professional judgement. In many cases, funds may deliberately be invested in projects that are doomed to fail but from which they can improve their personal fortunes. According to Akerlof and Romer (1993), looting behaviour was at the core of the savings and loans crisis in the U.S. and of the Chilean banking crisis of the late 1970s. The possibility of fraud is enhanced when the legal system is weak and tolerant of financial abuses.

On the strength of an empirical study based on the asymmetric information model, Mishkin (1996) has outlined the sequence of events that will prompt a banking run. In his view, a banking run is a consequence of weak balance sheets which, in turn, may have been provoked by excessive risk taking or negative shocks that deteriorate the balance sheets of nonfinancial institutes and make it less likely for bank loans to be repaid. It may also be due to a deterioration in the financial health of the banks which may arise from depreciation of the domestic currency when a high proportion of the liabilities are denominated in foreign currency. The negative shocks identified by the author include increases in interest rates, stock market crashes, unanticipated decline in inflation, unanticipated devaluation and terms of trade shocks.

The particular sequence in which this crisis occurred in the case of the United States is a sharp rise in interest rates, a stock market crash and increased uncertainty following the start of a recession, and failure of major financial and nonfinancial firms. This resulted in worsening business conditions and uncertainty about banks' health

and subsequent withdrawals of funds by depositors. The bank panics and resulting loss in liquidity pushed interest rates further up and led to a decline in stock prices. As a policy prescription, the paper advocates expansionary monetary policy and/or lending to banks in industrial countries to help them recover from financial crisis but adds the proviso that this approach may be counter productive for developing countries. In particular, it could exacerbate inflation and induce further depreciation of the domestic currency. As alternative, the author prescribes a strong bank regulatory and supervisory system to reduce excessive risk taking, proper accounting standards and disclosure requirements in developing countries.

Sundararajan and Balino (1991) have also explored the linkage among macroeconomic conditions, financial sector reforms and banking crisis for Argentina (1980-82), Chile (1981-83), Malaysia (1985-86), Phillippines (1983-86), Spain (1978-83), Thailand (1984-86) and Uruguay (1982-85). The paper revealed that, for most of the countries studied, banking crisis was preceded by a period of rapid economic growth. Besides, the crisis was accompanied by either a steep reduction or sharp deterioration in output growth. Apart from a fall in real investment ratios, the crisis period was also marked by external shocks, balance of payments difficulties and sharp adjustments in exchange rates and interest rates. Further, the crisis was accentuated by growth in central bank credit which deepened the balance of payments problems and by large devaluations which also aggravated the crisis by making it difficult for debtors with dollar-denominated loans to meet their commitments and also by incurring losses on banks with large foreign exchange exposures. However, inflation decelerated in the run up to the crisis while property and share values declined. For most of these countries, money multipliers fell, central bank credit to the banks and other financial institutions rose sharply and its share in reserve money rose.

Caprio and Klingebiel (1996) analyzed the causes and effects of banking crises using data covering about eighty episodes of bank insolvency. Their results show that macroeconomic factors such as credit growth, volatility in output, inflation and terms of trade shocks precipitated banking crisis in several of the countries studied. The paper proceeded to suggest four criteria for evaluating the success of policies implemented to deal with bank insolvency. This is (i) financial deepening measured by a rising ratio of M2 to GDP; (ii) a positive moderate growth rate of real credit; (iii) very high real deposit rates which are neither positive nor negative; (iv) absence of recurrent problems in the banking system after the restructuring exercise. Based on

an assessment of each of the sixty-four insolvency cases on the strength of these criteria, the paper concluded that very few of them recorded clear successes in dealing with the crises (two from developing countries) while twenty-nine restructuring exercises show mixed results. The remaining twenty-nine exercises either are unsuccessful or cannot be resolved.

Other empirical investigations include Gonzalez-Hermosilo and Pazarbasioglu (1996) who used econometrics model on Mexican data for 1991-95 to predict bank failures, and Kaminsky and Reinhard (1996) who examined the behaviour of macroeconomic variables in the months before and after a banking crisis for 20 countries. Using a methodology developed for predicting the turning points of the business cycles, Kaminsky and Reinhard (1996) attempted to identify variables that act as "early warning signals" for crisis.

The review above has highlighted the relationship between macroeconomic fundamentals and banking crisis for several countries. Although some studies have explored the nature and causes of financial distress in Nigeria (see, for example, Sobodu and Akiode, 1996), these studies are essentially microeconomic in the sense that they focus on the operations of individual or groups of banks. To our knowledge, therefore, no study has been conducted for Nigeria specifically focusing on the connections between banking crisis and the economy at large. In particular, there is a dearth of Nigerian evidence on the possible causal patterns between the behaviour of macroeconomic variables and the outbreak of banking crisis.

3. Analytical Framework and the Model

3.1 Conceptual Connections

The first task in this study is to characterize the evolution of macroeconomic and financial variables around the time of the crisis. The aim is to ascertain the extent to which these variables were giving early warning "signals" of impending trouble. The specific indicators to be evaluated include those associated with *financial liberalization* such as the M2 multiplier, the ratio of domestic credit to nominal GDP, the real interest rate on deposits, and the ratio of lending-to-deposit interest rates. Other financial indicators include: "excess" real M1 balances, commercial bank

deposits, and the ratio of M2 divided by foreign exchange reserves.

The indicators linked to the *current account* include the percentage deviation of the real exchange rate from trend, as a measure of misalignment, the value of exports and imports and the terms of trade (TOT). The indicators associated with the *capital account* are: foreign exchange reserves and the domestic-foreign real interest rate differential on deposits (monthly rates in percentage points). The indicator of the *real sector* is industrial production. Finally, the *fiscal* variable is the overall budget deficit as a percent of GDP. Table 1 below shows the hypothesized theoretical relationship between this indicators and banking crisis.

A discussion of the role of some of these variables is in order. The broadening of national output widens the tax base, reduces volatility of production and current account position through diversification of markets and export earnings. From a risk diversification strategy point of view, high protection policies expose the nation to higher risks in the long run since resources are likely to be concentrated in inefficient import substituting industries. The development of export oriented industries is risk-reducing in the long run because the larger pool of foreign exchange can sustain a higher level of external financing. The East Asian countries rewarded export earners by allocating them access to foreign exchange to acquire imported technology and equipment, thus encouraging firms to remain competitive at the international level. On the other hand, many developing countries violated the basic financing rule of using external borrowing only to finance assets that earn foreign exchange (Fischer, 1991). Consequently, they were subject to severe foreign exchange constraints in times of worsening terms of trade (Sheng and Cho, 1993). The implications of this for their already precarious financial structures is clear.

Table 1: *Theoretical Relationships between Macroeconomic Indicators and Banking Crisis*

Indicator	Theoretical Relationship
M2 multiplier, Credit/GDP, "Excess M1" and M2/Reserves	Banking crisis have been linked to rapid growth (boom-bust) in credit and monetary aggregates, partly a liberalization story (see McKinnon and Pill, 1996) and partly as in Excess M1 signals a Krugman (1979) story. For the motivation on M2/reserves see Calvo and Mendoza (1996).
Exports, output, TOT, Equity returns and Real Exchange Rate	Recessions and burst of asset price bubbles precede financial crises (Calomiris and Gorton, 1991). Real Exchange rate overvaluations and a weak external sector adds to the vulnerability of the banking sector, since a loss of competitiveness and external markets could lead to recession, business failures, and a decline in the quality of loans. Thus large negative shocks to exports, the terms of trade, the real exchange rate are associated with signals.
Real interest rates, domestic-foreign interest spread, lending/deposit interest rate ratio	Financial deregulation is associated with high interest rates (which could reflect increased risk-taking). A liquidity crunch will also hurt banks. Lending/deposit ratio can also capture a decline in loan quality.
Bank deposits, foreign exchange reserves	Capital flight and a run against the domestic banks may precede banking crisis (see Goldfajn and Valdes, 1995)
Imports	Theory is ambiguous as to the correlation between import growth and banking crisis. Rapid import growth could be a sign of a buoyant economy, it could also be a sign of overvaluation.
Fiscal balance/GDP	Loose fiscal policy, financed by credit from the central bank could trigger banking crisis (see Krugman, 1979).

Source: Kaminsky and Reinhard (1996)

As indicated elsewhere, banking sector crises are commonly triggered during periods of high inflation or shortly after implementing a stabilization programme (World Bank, 1993). The hallmark of this period is the escalation of the real interest rates which complicates the debt servicing capabilities of the enterprise sector. Moreover, inflation distorts relative prices, turns the real interest rates negative when they are controlled, or add high risk premium to the interest rates when they are liberalized. As a result, it shifts activities towards speculation in non-tradeables, shortening investment horizons and causing financial disintermediation. High inflation also tends to create exchange rate instability, leading to overshooting or undershooting of exchange rate if not carefully managed. These market volatilities can decapitalize firms rapidly, pushing them towards distressed borrowing, deter long term investments and reduce domestic production that itself leads to higher inflation (Sheng and Cho, 1993).

Budget deficits are usually concomitant with high inflation. The problem with budget deficits is that it raises "regulatory risks" that is, the predilection for government to finance its expenditure through heavier taxation or inflation tax, or both. Once the sustainability of government expenditure is in doubt, tax avoidance behaviour increases. Where the government has been lax on its own financial discipline, it can hardly impose financial discipline on the private sector as the latter has greater opportunities for speculation and moral hazard behaviour. Therefore tax reforms, expenditure control and achieving price stability are important steps to secure financial stability and the robust growth of the financial sector. Financial discipline is the anchor of financial sector stability (Sheng and Cho, 1993).

Indeed, the basic rules for maintaining financial stability has been summarized by Sheng and Cho (1993:10) as follows: (a) establish fiscal discipline and price stability; (b) encourage assets diversification through industrialization and outward-orientation; (c) avoid large public sector fiscal imbalances, including excessive domestic and external borrowing and develop financial instruments and institutions to cushion shocks; (d) establish institutional and administrative capacity to assess and contain systemic risks; and (e) when the above conditions are not adequately met, retain some policy measures to handle the risk.

A shift to positive real interest rates most likely as a result of macroeconomic stability and lower inflation rates, will, by increasing the demand for cash income, enable banks to expand, to reduce the proportion of bad loans and to increase their cash income. The positive real interest rates, by rationing the demand for loans, also

encourage financial discipline among borrowers (Thorpe, 1993).

There has been considerable debate on the relationship between the pace of interest rate deregulation and the spate of financial distress. World Bank (1993) argues that when interest rate deregulation is not well managed, interest rates might rise to exorbitant heights in real terms threatening the net worth of borrowers and ultimately the soundness of the financial system. Therefore *"deregulating interest rates completely in a country just entering a recession, or with a large percentage of shaky banks can never be advocated. Nor would an open entry policy for banking ever be recommended, especially not for a country with little or no bank supervision capacity"* (World Bank, 1993). Thus, the Bank maintains that before complete deregulation of interest rates the following criteria must be satisfied:

- ☐ macroeconomic conditions are reasonably stable;
- ☐ the financial condition of banks and their borrowers is sound;
- ☐ at least a minimal base of financial skills have been attained;
- ☐ some checks and balances are in place to limit collusive behaviour among banks in the determination of interest rates.

In respect of credit, efficient banks will try to diversify their loan portfolio by lending to new good customers and limiting their lending to old borrowers that have accumulated arrears with the banks and account for most of the banks' non performing loans. As the private sector develops, banks should be encouraged to lend to the potentially profitable private sector and therefore should target a larger proportion of their loans to them than to State-owned enterprises (Thorpe, 1993:29-30).

Concerning the lending rate, Thorpe (1993:31) contends that efficient banks should charge a lending rate to their prime customers more or less in line with the alternative cost of finance, that is the international lending rate. This will enable efficient domestic banks to attract low-risk customers.

3. 2 The Model

For the purposes of this study, we will employ a discrete-time hazard model *à la* Demircug-Kunt and Detragiache (1997) to estimate the probability of a financial crisis.

Thus we define a dependent variable that takes the value 1 if there is a crisis and zero if there is no crisis. The emphasis is on the hazard rate, i.e. the probability that a crisis will occur at a particular time, since it is impossible to predict a crisis with absolute certainty. The hazard rate is hypothetically a function of a vector of n explanatory variables $X(t)$. The choice of explanatory variables will be discussed momentarily. Let $P(t)$ denote a dummy variable that takes the value of one when a banking crisis occurs in time t and a value of zero otherwise. β is a vector of n unknown coefficients and $F[\beta=X(t)]$ is the cumulative probability distribution function evaluated at $\beta=X(t)$.

Then, the log-likelihood function of the model is:

$$\log L = \sum_t^n P(t) \log [F(\beta'X(t))] + (1 - P(t)) \log [1 - F(\beta'X(t))]$$

Specifically, the estimated equation is of the following generic form:

$$X_t = a_0 + b_1 \text{cp_gdp} + b_2 \text{fb_gdp} + b_3 \text{grpcgdp} + b_4 \text{infl} + b_5 \text{m2_res} \\ + b_6 \Delta \text{tot} + b_7 \text{rir} + b_8 \Delta \text{rer} + b_9 \Delta \text{infl}$$

where X_t	=	a dichotomous or binary variable which takes the value 1 when there is banking crisis and 0 otherwise.
cp_gdp	=	the ratio of credit to the private sector to GDP.
fb_gdp	=	fiscal deficits as a ratio of Gross Domestic Product (GDP).
grpcgdp	=	growth rate of per capita GDP.
infl	=	inflation rate.
m2_res	=	the ratio of broad money (M2) to foreign exchange reserves.
Δtot	=	change in the terms of trade.
rir	=	real interest rate.
Δrer	=	change in the real exchange rate.
Δinfl	=	change in inflation rate.
a_0	=	constant term.
$b_1 \dots b_9$	=	coefficients of the explanatory variable.

In modelling the hazard rate, we use the logistic functional form which implies a hazard function that first increases and declines. And in choosing our explanatory

variables, we are guided by economic theory. To capture the effects of adverse macroeconomic shocks that hurt banks by increasing the share of non-performing loans, we use as regressors the rate of growth of per capita real GDP, the terms of trade, and the real short-term interest rate. The real interest rate is one surrogate for financial liberalization since liberalization tends to be accompanied by high real rates (Galbis, 1993). Besides, financial liberalization increases banking sector fragility because it creates opportunities for excessive risk taking and fraud. However, Pill and Pradham (1995) contended that a more appropriate variable for gauging the impact of financial liberalization is the ratio of credit to the private sector to GDP. This variable will be used as regressor in our equations.

Another explanatory variable that will be introduced is inflation because it is likely to be correlated with a high nominal interest rate and because it provides a gauge of the extent of economic mismanagement which impacts negatively on economic performance and by extension, the banking system. Further, the change in the rate of inflation will be introduced as a regressor to capture the effect of stabilization of inflation which could induce a reduction in the size of the banking system and which, in turn, could come about from a banking crisis. Moreover, the rate of depreciation of the exchange rate will reveal the extent to which banking crises are driven by excessive foreign exchange risk exposure either in the banking system itself or among bank borrowers. The ratio of M2 to foreign exchange reserves will illuminate the association between banking sector problems and sudden capital outflows.

Where fiscal deficits are large and domestic financial markets rudimentary, government finances deficits by borrowing from the banking system. This will make the banking sector susceptible to crisis. The government deficit as a percentage of GDP is therefore introduced to capture the financing needs of the central government.

4. Empirical Analysis

4.1. *Trend in Relevant Macroeconomic Variables*

The aim of this section is to analyse trends in selected macroeconomic variables and determine the extent to which they provided warning signals of impending banking crisis. These variables also help to gauge the vulnerability of the economy on the eve of the crisis, and assess whether the crisis could be forecasted by anomalous

economic developments. The first variable to assess is inflation rate from 1970 to 1997. It is evident from that inflation rate provided an important leading indicator of an approaching crisis as the inflation rate jumped from 5.4 per cent in 1986 to 41 per cent in 1989, two years before the onset of the crisis. This buttresses the view that bank distresses are frequently triggered during periods of high inflation.

In the case of the fiscal balance-GDP ratio, consistent with expectation, this ratio was persistently negative in the years leading to the crisis, peaking at 12 per cent of GDP in 1986. In respect of trends in the ratio of credit to the private sector to GDP, to avoid banking crisis, this ratio is expected to grow; but the ratio of credit to the private sector to GDP declined consistently in the years leading up to the crisis. Specifically, this ratio fell from 24 percent in 1986 to 13 per cent in 1989.

Thus, credit to the private sector was a useful early warning indicator of banking crisis as was the total banking sector assets-to-GDP ratio. The latter fell precipitously from a peak of 55 per cent in 1986 to a trough of 32 per cent in 1990. In respect of the real interest rate, it rose dramatically in the years preceding the crisis as a result of the wholesale embrace of the principle of liberalization. This result substantiates World Bank (1993) that complete deregulations of interest rate is deleterious to soundness of the financial system.

The growth rate of real per-capita GDP registered a decline between 1989 and 1990 signalling a crisis, while the industrial production-GDP ratio has been on a free fall from the early 1980s to 1989, again providing a robust indication of an impending banking crisis. The results so far tend to suggest that the Nigerian banking crisis has a series of weak economic fundamentals at its core, as it is evident that multiple economic problems were simultaneously building.

4.2 The Logistic Regression Results

Table 2 presents results from the estimation of the logistic regression model. These results represent the best fits from the numerous experimentations carried out. Thus, some of the variables reported in the theoretical discussions may have been dropped from the final version of the regression relationships shown in this table.

Our regression results reject the conjecture that larger exposure of the banking sector to private sector borrowers is a proximate cause of banking crisis. The negative signs on the (cp_gdp) coefficient, except in equation (2), suggest the contrary. If anything, it is the greater public sector borrowing that exposes the banking sector to

the probability of banking crisis. This is evidenced from the negative but surprisingly insignificant association between fiscal deficits as a ratio to GDP (fb_gdp) and banking crisis.

The growth rate of the real per-capita GDP ($grpcgdp$) is negatively correlated with the probability of a banking crisis and insignificant albeit at the 10 per cent level. This confirms that activities in the productive (real) sector of the economy have a bearing on the financial sector. Similarly, change in the terms of trade (Δtot) has a negative and significant association with the probability of a banking crisis. Evidently, a decline in the terms of trade exacerbates banking sector problems.

The real interest rate (rir) and inflation ($infl$) have their hypothesized signs and are significant at the 5 per cent level. This is a validation of the fact that the process of financial liberalization may have contributed to banking sector fragility through the induced high real interest rates and the attendant moral hazard problem. By the same logic, the implied macroeconomic management mirrored by the inflation coefficient may have hurt banking sector soundness in a significant way.

The real exchange rate (rer) has the expected negative, although insignificant impact on the probability of a banking crisis, indicating that the rate of depreciation is adversarial to banking sector soundness.

Finally, the ratio of broad money to foreign exchange reserves ($m2_res$), which mirrors the extent to which banking sector problems are attributable to sudden capital inflows, and the rate of change of inflation ($\Delta infl$), which gauges the extent to which stabilization of inflation compels a banking crisis, are correctly signed but insignificant at the 5 per cent level.

Table 2: Logistic Regression Results

Equation Variable	(1)	(2)	(3)	(4)
constant	-5.52 (-1.79)	-3.12 (-2.00)	-0.25 (-1.65)	-0.28 (-1.53)
cp_gdp	-1.72 (-0.12)	5.18 (0.55)	-2.40 (-2.61)	-1.40 (-0.75)
fb_gdp	-0.11 (-0.67)	-0.10 (-0.10)	-0.08 (-0.40)	-0.16 (-0.65)
grpcgdp	7.85 (1.93)	4.27 (1.86)	0.49 (1.74)	0.60 (1.76)
infl	0.11 (2.32)	0.07 (2.62)	0.06 (5.30)	0.06 (4.39)
m2_res	-	-1.52 (-1.32)	-	-0.17 (-0.73)
Δ tot	-	-	-0.0001 (-2.01)	-0.0001 (-1.72)
rir	-	-	0.06 (4.55)	0.06 (3.23)
Δ rer	-	-	-0.21 (-1.04)	-0.24 (-1.02)
Δ infl	-	-	-	-0.03 (-0.16)

5. Policy Recommendations and Conclusion

Macroeconomic disequilibria are typically the harbingers of generalized banking crises, although the depth and severity of such crises are strongly influenced by a range of institutional and regulatory factors outside the scope of this study. The gestation period before banking distress or crises is characterized by the building up of macroeconomic inconsistencies, which lead to some kind of resolution that induces a shock to the system such as capital outflows, devaluation, recession, and so on. The creeping macroeconomic problems may relate to flawed exchange rate policy, domestic credit and fiscal policy. For instance, loose fiscal policy manifesting in huge fiscal deficits coupled with a pegged exchange rate will undermine the credibility of the exchange rate anchor and work disastrous consequences on the financial sector.

Similarly, such blend of policies provoke both high and variable real interest rates and high variability in the real exchange rate. These two effects are injurious to the asset side of the bank's balance sheet. High interest rate induce a large share of nonperforming assets and prompt bankers to roll over bad loans ("evergreening"). The change in relative prices generated by changes in the real exchange rate also diminishes the quality of the financial sector's asset portfolio.

Against the background of the foregoing, this study investigates the link between macroeconomic variables and banking crisis in Nigeria. The aim is to determine the extent to which macroeconomic dysfunctions acted as precursor to the crisis. On the strength of the findings in the previous section, the following policy proposals are advanced.

Dramatic and astronomical jumps in the general price level is inimical to the development of a healthy banking sector. The origin of recent inflation in Nigeria can be traced to the policy nuances of the prevailing economic orthodoxy. For emphasis, the new policy directions include the depreciation of the exchange rate, deregulation of interest rates, commercialization and privatization of public utilities, withdrawal of subsidy on petroleum products, etc. There is no doubt that the price escalating potential of these policies can be enormous. This, however, does not constitute a case for their jettisoning, nor does it vitiate the compelling theoretical arguments that informed their institution. On the contrary, what is required is a gradual, phased-out and sequenced implementation of these policies to circumvent sharp and prolonged acceleration in prices.

Concurrently, the real side of the economy must not be discountenanced in the

course of implementing these policies. Hence, adequate checks to ensure that output growth is not jeopardized should be instituted. Furthermore, the numerous factors constraining the growth of output, such as infrastructural deficiencies, policy inconsistencies and weak consumer demand, will need to be comprehensively appraised and addressed.

The negative relationship between terms of trade deterioration and banking sector fragility is instructive. It underscores the need to restructure the country's productive and export bases so as to insulate it from the vicissitudes of the highly unstable and volatile international economic environment. In particular, efforts to diversify the economy from a mono-product to a multi-product one will need to be intensified.

The precipitate depreciation of the exchange rate has also been found to breed banking sector problems, signalling the need to firm-up the local currency. This, however, need not be accomplished by administrative fiat. Rather, through the vigorous promotion of export-oriented manufacturing and allied sector activities that will increase the quantum of foreign exchange generated domestically, the exchange rate should progressively appreciate.

The adverse association between the real interest rate escalation and bank is fraught with lessons. The problem really was not with the interest rate deregulation policy itself, but that the liberalization process was so poorly managed that it induced excessive real rates and undermined the net worth of borrowers and the health of the financial system. This carries an important policy implication. The process of financial sector liberalization should proceed piece-meal from moderate to complete deregulation with adequate checks to ensure that the financial conditions of both the banks and the borrowers remain sound. This underlines the need for a virile bank superintendency.

ANNEXURE
Table A1: Banking Crisis Episodes

Country	Banking Crisis Date
Colombia	1982-85
Finland	1991-94
Guyana	1993-95
Indonesia	1992-94
India	1991-94
Israel	1983-84
Italy	1990-94
Jordan	1989-90
Japan	1992-94
Kenya	1993
Sri Lanka	1989-93
Mexico	1982, 1994
Mali	1987-89
Malaysia	1985-88
Nigeria	1991-94
Norway	1987-93
Nepal	1988-94
Philippines	1981-87
Papua New Guinea	1989-94
Portugal	1986-89
Senegal	1983-88
Sweden	1990-93
Turkey	1991, 1994
Tanzania	1988-94
United States	1981-92
Uganda	1990-94
Uruguay	1981-85
Venezuela	1993-94

Source: Deminguc-Kunt and Detragiache (1997)

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Abstract

The Nigerian Banking Industry responded favourably at first to the economy-wide institutional and policy reforms enunciated in the Structural Adjustment Programme, recording unprecedented numerical growth and exponential profit performance. By 1989, however, the industry was experiencing one of the worst crisis ever, reflected in an increasing number of distress cases. To be sure, the number of distressed banks which stood at 9 in 1990 rose steadily to 16 in 1992. By 1993, 38 banks were distressed. The number leapt to 55 in 1994 and 60 in 1995.

This paper examines the distress phenomenon in the Nigerian Banking Industry, specifically focusing on the role played by the macroeconomy in triggering and perpetuating the crisis. The empirical analysis is in two parts. The first part analyses trends in relevant macroeconomic variables to determine the extent to which anomalous macroeconomic developments provided early warning signals of an impending danger. The second part uses a logistic regression model to isolate the specific macroeconomic variables that played significant roles in occasioning the crisis. The results are quite revealing: persistent deficit financing increases the probability of a banking crisis in Nigeria, strong per capita real GDP growth reduces the chances of a banking crisis occurring, accelerating inflation and negative real interest rates exacerbate Nigerian banking sector fragility and precipitous and unmanaged depreciation of the exchange rate impinges negatively on banking sector soundness. The paper recommends, among others, the institution of policies to stem the astronomical jump in price that often attend the implementation of adjustment policies. This could be in form of provoking robust output growth which calls for a comprehensive appraisal and remedy of constraints posed by infrastructure, inconsistent policies and weak effective demand.