

A MODEL ON EARLY WARNING SIGNAL FOR BANKS IN NIGERIA

- 1.0 Regulators have always relied on off-site monitoring systems, or early warning models, to supplement the ratings derived from periodic on-site examinations and to provide up-to-date assessments of the financial status of individual banks. In NDIC, the current early warning system (EWS) uses bank ratings (ratios) based on returns submitted by banks through eFASS. While this is a useful supervisory tool, it however has a few issues, including the following:
- i. The current eFASS EWS is based on financial ratios. However, it has been generally recognised that financial ratios and peer group analysis are not sufficient on their own to identify the complex nature of risks undertaken by banks, particularly large banks. They are rather seen as a valuable complements to bank examinations or other models. For example, the US Federal Reserve uses financial ratios as a complement to its statistical models in its efforts at predicting bank failure.
 - ii. Fixed and invariant weights assigned to each of the ratios can also prove to be a limitation. They are usually determined on the basis of examiner's experience. Once assigned they may remain fixed and may fail to adjust for temporal shifts. For example, systemic changes of the banking system as a whole are not accounted for in the outputs. Thus, if an entire peer group deteriorates, the percentile scores of individual banks within that peer group may not change, even though the banks have become riskier.
 - iii. Financial ratio analysis is extensively and almost exclusively based on the data reported under regulatory reporting. This analysis can be regarded as a good measure of failure to the extent of the integrity of the data supplied by the banks to the regulators.
 - iv. The current approach to predicting problem banks is not sufficiently forward looking and does not allow stress testing or incorporation of plausible scenarios. This is because the supervisory bank ratings are not forward looking or not specifically designed as an early warning indicator of problems in banks.
- 2.0 The Research Department of NDIC carried out a research project to overcome the above stated shortcomings by identifying and developing approaches for the Corporation that best discriminate between problem and non-problem deposit money banks in Nigeria through EWS of bank failure prediction. The output of the approaches is the probabilities of failure that can be used as early warnings and as signals that banks with high and increasing failure probabilities should be analysed in more detail and, if necessary, that remedial policy or pre-emptive action should be taken. The development of NDIC's EWS was based on statistical, econometric and

artificial intelligence techniques that utilize both regulatory information and market data as input to produce estimates of bank failure.

3.0 In summary, the newly developed EWS has the following features:

- i. is forward looking and can capture both highly probable failures as well as unanticipated ones, such as rapid deterioration of some CAMEL category 3 banks (those with 'satisfactory' ratings).
- ii. enables stress testing based on plausible scenarios
- iii. is dynamic and incorporates the changing nature of the industry and the economy instead of always assuming fixed and time-invariant ratios or variable weights
- iv. considers the view of the market either through data directly or as an input into the model since the activities of a bank are reflected in its share prices and the price comes into being due to the activities of market players where the participants are heterogeneous, well-informed and diversified.
- v. is capable of limiting Type I errors (misclassification of distressed banks as healthy)
- vi. is capable of generating results that is free of excessive reliance of bank returns