Guiding Principles
on
Strengthening Early Warning Systems and Banking Crisis Management in Central Banks

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Preface

The crisis resolution framework is a set of legal rules that enhance the supervisory authority's ability to take measures and initiate procedures towards weak financial institutions upon the deterioration of its financial position. That is to ensure avoiding any interruption in banking services as well as any impact on financial stability through avoiding any impact on financial stability, without exposing taxpayers to loss while protecting systemically important functions.[1]

Building early warning systems and predicting crises occurrence is critical, as it helps to predict the possibilities of a bank's failure, thus reducing the possibility of banking crises in general and consequently reducing the costs of addressing the effects thereof. Therefore, the regulatory authorities are ascribing importance to building early warning systems, aiming to analyse the framework and process of identifying the challenges that the bank may face, in addition to choose the method and timing of intervention. Prior experiences have proven the importance of having a prudential framework for dealing with banks facing challenges at an early stage, as one of the most important challenges facing the supervisory authorities of banks is to maintaining effective supervision at the micro and macro levels to enhancing financial stability. Therefore, dealing with banking crises begins with predicting the crisis. Thus, it is necessary to adopt the development of macroprudential supervision through identifying, monitoring, and reducing risks to the financial system.

[1] Source: Financial stability board (2014); "Key Attributes of Effective Resolution Regimes for Financial Institutions" issued by the Financial Stability Board.

After the global financial crisis in late 2007, the supervisory authorities ascribed great importance to crisis management aiming to analyse the framework and process of identifying the challenges that banks may face, in addition to the method and timing of intervention. Whereas prior experiences are evidence of the importance of having a clear legal and prudential framework to deal with banks facing challenges in the early stages. Several supervisory authorities have also been developing a comprehensive crisis management framework and deposit insurance system consisting of:

1. Prudential measures to mitigate the possibility of crises, represented in early warning systems and micro and macro prudential procedures, which are among the work of both the banking supervision and financial stability departments in central banks.
2. Corrective actions to deal with banks facing challenges or vulnerability.
3. Crisis management measures, including the lender of last resort and resolution techniques, to deal with banks that are becoming non-viable.
4. Mitigation measures for crises effects, such as insuring deposits.

Although developing a good crisis management framework is essential, effective implementation is more important. This includes developing a comprehensive governance framework for crisis management with defined roles and responsibilities, as well as qualified and trained technical cadres to assess the micro and macro banking sector risks. Whereas identifying the existence of the problem with the bank and introducing a solution to that problem is key to enhance the bank's safety, and to achieve stability in the financial system since banks are the main component of the financial system. Therefore, if any bank (especially of

systemic importance) falters, it will greatly affect the economy in general and consequently impact financial stability.

In light of the above, and in sought of the Arab Monetary Fund to keep its member countries abreast with the fields of economic, financial and monetary reforms aimed at enhancing financial stability in the Arab region, and based on the discussions at the meetings of the Working Group on Financial Stability in the Arab Countries and the Arab Committee on Banking Supervision (ACBS), and in consultation with central banks and Arab monetary institutions, the following guiding principles were issued on **Strengthening Early Warning Systems and Banking Crisis Management in Central Banks**, noting that the application thereof is subject to the state of each Central Banks separately, the objectives contained in its articles of association and the governing financial system in each country.

Guiding Principles on
Strengthening Early Warning Systems and Banking Crisis Management in Central Banks

First: Definition of weak bank

Principle (1):

The importance of adopting a specific definition of a weak bank and setting quantitative and qualitative indicators to measure the extent of weakness, so that if the indicator exceeds a certain threshold, and the central bank[2] has exhausted all corrective measures to prevent the continuation of its fundamentally declining indicators, the bank will become non-viable, and therefore it will move from the scope of banking supervision to the scope of banking crisis management.

Principle (2):

Weak banks are characterized by several indicators that can be relied upon when defining it, such as: Weak operational efficiency, insufficient financial resources, lack of coordination between asset maturities and deposits, low capital adequacy, low liquidity, low asset quality, weak governance system, weak internal supervision and control systems, the high cost of funds, a defect in the financing structure, and weak cyber and information security.

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[2] In these principles, central banks are considered the Resolution Authority, as is the case in many countries. Institutional arrangements and the structure of banking crisis management varies between countries according to the applicable regulation, whereas it is possible that the central bank, an independent supervisory authority, the deposit insurance institution, or multiple supervisory bodies are the banking crises resolution authority. kindly refer to the following papers: "Key Attributes of Effective Resolution Regimes for Financial Institutions" issued by the Financial Stability Board (2014), and "Institutional arrangements for bank resolution" issued by the Financial Stability Institute (2021).

Principle (3):

A downward trend in key indicators (such as the capital adequacy level) or an upward trend (such as the ratio of non-performing credit facilities to total credit facilities) of the bank may indicate an increase in its risks. Also, the accelerated growth in risk-weighted assets without being matched by growth in the capital base leads to increased risk.

Principle (4):

When identifying indicators of a weak bank, it is appropriate to recognize the presence of internal factors such as excessive risk tolerance, and external factors such as the economic environment and systemic risks, that may contribute to the exacerbation of challenges for a weak bank.

Principle (5):

It is key to provide various information sources and communication channels that can help diagnose a weak bank, so that they can be utilized to build an accurate understanding of the bank's business, and as a means of identifying the bank's existing difficulties or challenges that may arise. These channels include offsite and onsite supervision, macroprudential supervision, communication with the Commercial Bank’s management, external auditors, other regulatory authorities, and market information.

Principle (6):

Before classifying a weak bank, it is important that the Central Bank continuously communicate with the bank’s management to discuss and follow up on many important issues, including the efforts exerted by the bank to correct and address previously identified vulnerabilities through on-site and off-site supervision,

periodic meetings with the Senior Executive Administration members and the Bank's Board of Directors.

Principle (7):

It is possible to collect additional information about the financial position of the bank, such as: Market data, external credit ratings, other market participants' information, and stock market, as additional indicators of the bank's financial position. Provided that information sources are handled with great care and prudence, as such information may be misleading or has unreliable sources.

Second: Development of Early Warning Systems

Principle (8):

Providing infrastructure for early warning systems is essential to predict the banks' performance, for example: Qualified and trained human cadres, necessary reports and information, appropriate statistical programs, and a comprehensive and accurate database that includes a historical time series.

Principle (9):

It is recommended to use of micro-indicators based on the (CAMELS) rating system, Financial Soundness Indicators (FSIs), Aggregated Micro Prudential Indicators (AMPI), market indicators, macroeconomic indicators, and systemic risks.

Principle (10):

It is essential to apply and develop stress tests as a tool for risk management and forecasting banks' performance, as this tool provides the Central Bank with a clear vision about the status of liquidity, solvency, and capital enhancement plans, and

enables the Central Bank to intervene early by taking appropriate actions for the recovery and resolution plans[3].

Principle (11):

It is recommended to use a Heat Map tool aiming to identify and monitor strengths and vulnerabilities in the banking sector, in which a colour gradient is used to indicate the strength or weakness of the financial indicators used for each bank.

Principle (12):

The Heat Map tool enables time series analysis of banks' financial indicators, in addition to analysing and comparing the value of an index for a particular bank during a period with the values of this indicator for other banks during the same period (cross sectional analysis), here it is necessary to consider the following:

- Using the standard score (Z-Score) to calculate each bank's index value and compare it with the historical trend of the bank and/or the banks of its group[4].

[3]For more information, please refer to the Guiding Principles on "Developing Stress Testing Methodologies to Assess Financial Sector Risks" (Arab Monetary Fund, 2021), and the Guideline on "Micro and Macro Stress Tests" (Rami Obaid et al., Arab Monetary Fund, 2021), published on the Arab Monetary Fund website: www.amf.org.ae

[4] The following standard score formula may be used $Z_{i,t} = (X_{it}-\mu_t)/\sigma_t$, where: X_{it} is: The financial ratio of each of the five evaluation components of the bank (i) in the year (t), and μ_t is: The average financial ratio of all banks in the same group in the year (t), and σ_t is: The standard deviation of the financial ratio of all banks within the same group in the year (t). After calculating the standard score, an aggregate indicator is calculated for the bank, whereas all its indicators are aggregated to obtain an aggregate score as follows:
(Bank X Z-Score) = (Capital Z-Score) - (Asset Quality Z-Score) - (Management Z-Score) + (Profitability Z-Score) + (Liquidity Z-Score)

- Classification of banks into similar and consistent groups. To enhance the comparison accuracy, banks can be classified according to: The banks' systemic importance through the methodology used in Domestic
- Systemically Important Banks (D-SIBs). Banks may also be classified according to: Bank size (the size of its assets), bank type (commercial or Islamic), and bank license (local or foreign).

Principle (13):

Design, use and develop standard models for the process of predicting banks' conditions, based on a scientific and reliable methodologies that enables the prediction of the banks that may face high risks, provided that the models include variables related to the individual indicators of the bank, banking industry indicators, monetary policy indicators, and the whole economy indicators.

Principle (14):

The Logistic Regression Model,[5] for instance, may be used for the purposes of studying the variables that have historically contributed to the occurrence of bankruptcies in banks, bearing in mind the necessity of conducting the necessary diagnostic tests that enhance the credibility and reliability of the standard results.

Principle (15):

Developing a financial stability indicator to assess the systemic risks to which the banking system may be exposed, if it is based on an objective scientific

[5] Obeid, R. (2021). "Bank Failure Prediction in the Arab Region Using Logistic Regression Model", AMF.

methodology, and includes at least: Banking indicators, capital market indicators, economic indicators, and the private credit GDP gap indicator[6].

Principle (16):

Preparing and developing standard indicators for the asset markets (stocks and real estate), and comparing them annually with the inflation rate, aiming to evaluate the stocks and real estate price bubbles[7].

Principle (17):

Utilizing other statistical methods to build early warning systems or choose variables to measure credit risk, operational risk, and market risk as follows:

- Credit Risk: Standardized Approach in accordance with the Basel III requirements, and the expected credit loss (ECL) model used in IFRS 9.
- Operational Risks: The Basic Indicator Approach, the Standard Method, the Alternative Standardized Approach, and the Advanced Measurement Approach, all of which are used in accordance with the requirements of Basel III.
- Market Risks: Value at Risk (VaR) and the Standardized Method according to Basel III requirements.

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[6] For more information, please refer to the chapter "Financial Stability Indicators: Methodologies and Objectives" in the 2021 Report of Financial Stability in Arab Countries, published on the Arab Monetary Fund website.

[7] For more information on how to develop these indicators and the methods used in building real estate and stock indicators, please refer to the following studies "Early Warning Systems and Banking Crises Prediction" (Rami Obaid, 2019), and "The Banking Crisis Resolution System and Deposit Insurance System: Roles and Objectives" (Abdul Rahim Al Nasiry and Rami Obaid, the financial stability task force in the Arab region, 2020), published on the Arab Monetary Fund website.

It should also pay attention to measure other risks, such as: liquidity risk, bank specific risks, systemic risks, economic risks and others.

Third: Recovery Plans and Corrective Actions

Principle (18):

The bank should provide the Central Bank with the recovery plan approved by Bank's Board of Directors. The central bank evaluates the plan, approves it as appropriate, and monitors implementation.

Principle (19):

Develop appropriate corrective actions according to a clear time frame by the Banking Supervision Department and through the recovery plans of the Commercial Bank, to address the weaknesses of the weak bank.

Principle (20):

Develop an appropriate governance framework for the recovery plan that defines the responsibilities of the regulatory units in the bank, the Executive Management, and the Board of Directors. The recovery plan shall be supervised and approved by the Board of Directors, whereas the Executive Management shall prepare, develop, update, and review the plan periodically or when necessary.

Principle (21):

Designate the Risk Management Director as the responsible officer for the recovery plan and the Liaison Officer between the Bank and the Central Bank and inform the Central Bank of the Risk Management Director contact information and replacement and notify the Central Bank in the event of replacing any of them.

Principle (22):

Develop detailed information about the options that can be resorted to if the bank encounters additional challenges and the expected impact of each option on the bank's financial indicators, normal operations, reputation, and credit rating.

Principle (23):

To include, in the recovery plan, any negative consequences or effects that may result from the use of each option within the recovery plan, or any challenges arising from the application thereof, and how to deal with any legal obstacles and/or challenges associated with implementing the supervisory requirements that may arise when applying the options and how to deal with them, and assess the credibility of the available options within the recovery plan, as well as evaluate the effectiveness of the options towards critical events that the bank may face or resulting from the existence of systemic risks.

Principle (24):

The Central Bank shall take intervene and stringent corrective measures in the event the bank's financial strength indicators continued to deteriorate, or the discovery of material weaknesses in the framework of off-site supervision or on-site inspection rounds.

Principle (25):

The nature of the corrective measures taken should be commensurate with the nature and severity of the challenges faced by the bank, so that supervision is intensified according to the size of the challenges, and priority is given to the most serious weaknesses.

Principle (26):

It is important for the Central Bank to take appropriate measures to enforce the recovery plan and monitor the bank's compliance with corrective measures, and for the Commercial Bank to provide the Central Bank with reports showing the progress of the action plan on an ongoing basis.

Principle (27):

Develop quantitative and qualitative indicators to evaluate the extent of the acceptable gradual improvement in the bank's general financial position. For example, the gradual improvement in the credit portfolio quality and the default rate reaching a specific level in a specific time, may push the Central Bank to suffice with intensive supervision or reports of internal and/or external auditors.

Principle (28):

Instructions to be established by the Central Bank as a Lender of Last Resort, including the terms and requirements for the provision of emergency liquidity in the event of the Central Bank assessment of the commercial bank deems it experiencing temporary financial distress.

Fourth: Non-viable Bank Classification

Principle (29):

If all corrective measures have been exhausted and the recovery plan is ineffective, and the Central Bank is convinced that the bank is non-viable due to the failure of the corrective measures and recovery plans. the procedures for transferring the bank from the scope of normal banking supervision to the scope of the banking crisis management system shall be implemented.

Principle (30):

Setting indicators to classify a weak bank as a non-viable bank. The capital adequacy criterion is a standard indicator for assessing a weak bank. In the event of a continuous substantial decline of this ratio to the point it reaches certain limits, and all available options have been exhausted to raise the ratio to acceptable levels, whether through corrective measures or recovery plans, the bank can then be classified as non-viable.

Principle (31):

Ascribing importance to the impact of the weak bank continuity of operations on financial stability. In the event of finding negative indicators that may reflect on financial stability, it is necessary to speed up the classification of the bank as non-viable.

Fifth: Strengthening the Bank Deposit Insurance System

Principle (32):

The establishment of the Deposit Insurance Institution as a legal personality with financial and administrative independence is a cornerstone of the banking crisis management system[8]. Whereas a deposit insurance system that takes into account the privacy of business models of the Islamic banks[9] should be considered.

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[8]Please refer to the Core Principles for Effective Deposit Insurance Systems issued by the International Association of Deposit Insurance Institutions (IADI) in 2014 under the title: "Core Principles for Effective Deposit Insurance Systems".

[9]Please refer to the principles issued by the International Association of Deposit Insurance Institutions (IADI) in 2021 under the title: "Core Principles for Effective Islamic Deposit Insurance Systems (CPIDIS)".

Principle (33):

Legislate a law for the Deposit Insurance Institution that includes at least: The legal framework, the roles and objectives of establishing the institution, the conditions for forming the Board of Directors and the Executive Management, the competencies and authority of the Board and its Executive Management, financial institutions subject to the deposit insurance system, the definition of the types of deposits subject to compensation, capital size, deposit coverage ceilings upon liquidation of the bank, deposit insurance institution funding sources, annual subscription fees, management of the institution’s accounts, investment policy, consideration of banking confidentiality, and the basis for dealing with deposits of conventional and Islamic banks.

Principle (34):

The objectives of the Deposit Insurance Institution shall be to protect depositors, enhance confidence in the banking sector, and contribute to enhancing financial stability.

Principle (35):

Clarifying the roles and responsibilities of the Central Bank and the Deposit Insurance Institution regarding the aspects related to compensating depositors and liquidating any bank.

Principle (36):

Determining the supervisory powers of the Deposit Insurance Institution with regard to reviewing the banks' final accounts and carrying out the tasks of joint on-site inspections with the Central Bank.

Sixth: Conducting A Least Cost Analysis to Choosing a banking resolution technique

Principle (37):

The least cost analysis is carried out in the resolution techniques based on the cost to the Deposit Insurance Institution (or the competent resolution authority in the absence of a Deposit Insurance Institution), where all the costs of the solution are considered before differentiating between the resolution techniques as per the following example:

- Loss of assets resulting from the process of valuing them.
- Valuation committee fees, legal fees and any costs related to the valuation process.
- Shareholders' equity (items included in calculating Tier 1 Capital in accordance with Basel III requirements).
- Tier 2 Capital as per Basel III requirements.
- Capital buffers.
- The markup or the value of the amount to be paid by the buyer's bank in exchange for the franchise value related to the customers of the bank offered for sale.
- The ratio of insured deposits to total deposits.
- Any other direct or indirect costs.

Principle (38):

The time factor and the immediate intervention of the Central Bank in the early stages of the bank's failure is an important element in limiting the negative impact on financial stability and alleviating the risks of financial contagion in the banking system, in addition to reducing costs.

Principle (39):

The presence of a banking crisis management or financial stability committee within the Central Bank, and an effective governance framework for the same committee within the organizational structure of the central bank, to ensure the speedy implementation of resolution techniques without delay. It is appropriate for the committee to include representatives from the Ministry of Finance, the Deposit Insurance Institution, the Securities Commission, and any relevant official parties[10].

Principle (40):

In the event of a crisis in a particular bank, the Crisis Management Committee may form a temporary technical team with extensive experience to do the following, or assigning one of the experts in the Executive managements to manage the weak bank, according to the vision of the Central Bank:

- Conducting the least cost analysis and submitting the necessary recommendations as soon as possible.

[10]Taking into account footnote number (2).

- Valuate the direct and indirect assets and liabilities of the bank.
- Assess of cases filed against the Bank, tax obligations and any other potential liabilities.
- Studying the need to form a committee to manage the bank, before or after conducting the assessment.

Principle (41):

The team referred to in principle number (40) include experts with banking experience, or a specialized advisory body may be delegated to assess the bank's situation.

Seventh: Banking Resolution Techniques

Principle (42):

The option of liquidating the commercial bank is resorted to as a last option within the resolution techniques of crisis, after exhausting and studying all the resolution techniques, particularly the Domestic Systemically Important Banks (DSIBs).

Principle (43):

If the least cost analysis results showed that the cost of selling the bank is less than the cost of liquidation, purchase and assumptions[11] techniques are used,

[11]Purchase and assumptions mean that a licensed bank purchases some or all of the assets of a non-viable bank and assumes some or all of its liabilities. This method requires the withdrawal of the non-viable bank's license by the Central Bank.

provided that the non-viable bank purchases are conducted according to the following priorities[12]:

1. Whole Bank P&A.
2. P&A with "Put" Option.
3. P&A with Asset Pools.
4. Partial P&A.

Principle (44):

Based on the least cost analysis, the Central Bank (as the resolution authority) may, in accordance with its regulatory framework, bail-in option, or merge the weak bank with another operating bank or establish a bridge bank for a temporary period, so that the bridge bank is managed by the Central Bank or the Deposit Insurance Institution, and the objective of its establishment is allowing the Central Bank the necessary time to evaluate the bank in a better manner, and to obtain suitable offers from other banks or investors.

Eighth: General Provisions

Principle (45):

The provision of written strategies for public relations and setting requirements for public disclosures when dealing with a weak bank, and at all stages of banking crisis management.

[12]For more details on purchase and assumptions techniques, please refer to the following study "The Banking Crisis Resolution System and Deposit Insurance System: Roles and Objectives" (Abdul Rahim Al Nasiry and Rami Obeid, the financial stability task force in the Arab region, 2020), published on the Arab Monetary Fund website.

Principle (46):

In all cases, take measures to enhance the continuity of financial services of systemic importance and the functions of payment, clearing and settlement.

Principle (47):

Signing memoranda of understanding between the Central Bank in the mother country and the countries hosting cross-border banking groups, aiming for effective cooperation in resolving any crisis related to that group, and making clear arrangements to resolve the crisis.

Principle (48):

Preparing a "Comprehensive Guide to Banking Crises Management" by the central bank that includes all the special requirements for establishing effective systems for early warning and banking crises management.