STRESS TESTS AND THEIR IMPACT ON THE QUALITY OF BANKING ASSETS

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Abstract
Aims demonstrate role of stress test (ST) scenarios in limiting the deterioration of the quality of banking assets of Iraqi private banks, and to identify asset quality indicators and predictive scenarios to face the risks of asset quality deterioration. In order to do so, a sample of three Islamic banks was chosen (the International Islamic Bank, the Mashreq Islamic Bank, the Islamic Trust Bank), and the research was launched in order to achieve its objectives by following the inductive approach, the descriptive approach, and the analytical approach by studying the theoretical framework of (ST) scenarios. , and indicators of the quality of assets in the research sample banks and the most important ratios measured, which were represented by six ratios: (total financing granted to capital and sound reserves, balances debited abroad to capital and sound reserves, non-performing loans to total financing, provision for loans to total financing granted, insurances receivables to total pledged credit, investments to total assets).
The research reached a set of conclusions, the most important of which are: (ST) scenarios are considered an early warning tool to determine the extent of banks' ability to overcome deviations by predicting crises and measuring the impact of these tests on asset quality indicators.
In conclusion, the research presented a set of recommendations, the most important of which are: The research sample banks must commit to applying stress tests as an essential and complementary part of banking risk management, and that these tests must be governed by written and approved policies and procedures, and document the results, taking into account the results of these tests, and develop corrective procedures and contingency plans to confront the decline and deterioration of quality. Its assets.

Key Word: (ST), Quality of Banking Assets.

1.Introduction

The practice of financial and banking institutions in their work surrounds them with many risks, and the future financial risks associated with lending are one of them, as well as the risks of investments, risks of the credit portfolio, real estate, and risks outside the balance sheet. Leaving the activities and work of these banking institutions without a process of monitoring and management will lead to many problems, including the failure of these institutions to perform their work. And its loss of its customers, in addition to cases of deterioration and a decline in its performance evaluation, and then its occurrence in financial crises that threaten its position and reputation before the public of customers, given that asset quality indicators

affect the banking industry in Iraq and that the deterioration of assets leads to the bankruptcy of the bank and confronting the deterioration of asset quality has become a challenge, a measure was taken. Research for the purpose of determining the possibility of predicting a decline in banking asset quality indicators through stress testing scenarios.

2. Research Methodology

2-1 : Scientific Methodology

The problem of deteriorating asset quality is one of the complex problems facing Iraqi banks in general. Low levels of asset quality lead to problems of default and low returns, while falling asset quality ratios below the standard ratios specified by the supervisory authorities leads to banks being exposed to a crisis represented by a high level of future financial risks associated with lending as well as portfolio investments, credit, real estate, and off-balance sheet risks. Based on above, research problem can be formulated as follows:

- **How can (ST) scenarios as a risk management tool help in assessing the risks of deterioration in the quality of banking assets that the bank may be exposed to in the future?**

2-2 : Importance of Research

- Highlighting an important cognitive aspect in banking and one of the most important risk management tools based on future assumptions, which is (ST).
- Clarifying the concepts of banking asset quality and its indicators.
- Using test results to develop and develop emergency plans to confront various risks and activate the use of risk mitigation tools.

2-3 : Research hypothesis

In order to, achieve its objectives, the research is based on basic premise that applying (ST) scenarios enables banks to know the risks to which they may be exposed, and also contributes to assessing their ability to confront a decline in asset quality indicators).

2-4 : Research objectives

The research sought to achieve a set of goals summarized as follows:

- Emphasizing the importance of conducting (ST) in Iraqi banks.
- Early diagnosis of weaknesses through analyzing asset quality indicators for banks before shocks and studying and analyzing post-shock asset quality indicators for the banks in the research sample.
- Analyzing the quality of assets according to the most common financial ratios.

2-5 :Research methodology

The follow inductive approach, descriptive approach, analytical approach for purpose of achieving research objectives testing hypotheses, which includes reviewing most important ideas related to concept importance of (ST) scenarios , procedures must be taken in light of results, in addition to basic concepts about quality of banking assets and their indicators.

Bottom-up pressure tests were used, multiple scenario analysis was used. Multivariate

scenarios with different proportions were assumed , were designed for purpose of study, by studying independent variable (ST) role in dependent variable (quality of banking assets).

2-6 : Limits of research

- **Time limits:** Time Period for Research Was Set at One Year (2022) For All Banks through Analysis of Financial Statements, Based on Annual Financial Reports of Islamic Banks Sampled for Research.
- **Spatial boundaries:** (ST) were applied three Islamic banks: (International Bank, Mashreq Bank, and Trust Bank).To conducts a study of applied aspect of research, sample was chosen due to availability of financial data and annual reports for year (2022).

2-7 : Financial methods and standards

IT, focused on using a set of indicators related to subject of study, they were addressed in theoretical framework in order to reach their results in practical framework for purpose of explaining role of (ST) and their impact on the quality of banking assets. The analysis indicators adopted for application purposes will be presented briefly, as shown in table. Following:

Table (1) quality of banking assets indicators , ratios in Islamic banks in research sample.

Indicators	Lineage	Equations
Quality of assets	Total financing granted to capital and sound reserves	(Total financing granted ÷ capital and sound reserves) x 100
	External debt balances to capital and sound reserves	(balances receivable abroad ÷ capital and sound reserves) x 100
	Non-performing financing to total financing	(Distressed debts ÷ Total cash credit) x 100
	Loan allocation to the total financing granted	(Provision for loans, cash and pledges ÷ Total financing, cash and pledges) x 100
	Insurances received to the total pledged credit	(Insurances received against pledged obligations ÷ total pledged credit) x 100
	Investments to total assets	(Investments ÷ Total Assets) x 100

Source: Researchers Based On Several Sources,and Source: Dang, Uyen. " The Camel Rating System In Banking Supervision A Case Study", Arcada University of Applied Sciences International Business -2011:20

Table (2) multiple-variable (ST) scenarios and hypothesis ratios.

Scenario	Low intensity	Average intensity	High intensity
High non-return producing debt	50%	100%	200%
The bank is subjected to a fine or loss of a case filed against it (loss of capital)	10%	20%	30%
Withdrawal of investment deposits	10%	20%	30%
Confiscation of letters of guarantee (conversion of pledge into cash credit)	10%	25%	50%
Loss of debit balances abroad	25%	50%	75%
Loss of part of investments	25%	50%	75%

Source: Based On Pressure Test Instructions Issued By Central Bank Of Iraq.

3. Theoretical framework:

3-1 : Concept (ST)

As a result of the large number of risks, crises to which banks are exposed, what the global banking markets are witnessing and the multiple financial crises surrounding the global economy have raised questions among researchers regarding the possibility of the regulatory and supervisory systems of banks to reduce banking risks, which have become an integral part of banking work, especially with the intensification of competition and the increasing size of Banking transactions, and it was necessary to find a way to evaluate their ability to confront these risks and crises. The Basel III Committee also focused on a package of standards that put banks in a permanent reserve position in the face of exceptional shocks. Perhaps the most prominent of these standards is the use of stress testing techniques, which is one of the precautionary control tools to measure the ability Banks are able to confront banking risks and crises more efficiently and effectively.

3-2-2: concept definition of (ST) banking

(ST) are an established tool regulatory authorities and one of the modern banking risk management tools because of their importance for assessing the flexibility of individual banks and the banking sector as a whole. They play a decisive role in measurement and monitoring, provide analysis of banking operations, highlight deviations (Chorafas, 2007:45), and constitute exercises. Forward-looking analysis aims to evaluate the impact of severe and reasonable negative assumptions (scenarios). The importance of these tests has increased recently in light of the global financial and economic crises because of their great effectiveness in alerting regulatory authorities and bank management to the impact of unexpected negative events associated with many risks and providing these departments with indicators of the size of capital required to confront losses resulting from financial shocks (Andrew & Jakob 2011). :1). These tests were initially developed with a focus on individual banks. Furthermore, stress tests can help provide early warning and attempt to predict future financial events. and

evaluating financial stability in order to reduce and identify excessive exposure to risks (Quagliariello, 2009:22). What is meant by (ST) "The bank used various techniques to evaluate its ability to confront exposures under difficult business conditions and conditions, by measuring the impact of these exposures on the bank's set of financial indicators, and in particular the impact on the extent of capital adequacy and profitability" (BCBS, 2009:1).

Basel Committee also defined stress tests in its third decisions as an important risk management tool used by banks as part of their internal risk management, as it alerts bank management of unexpected negative results for a group of risks, and also provides them with the amount of capital necessary to absorb losses in the event of an occurrence Major shocks. (BCBS, 2017:5)

3-2-3: The most important risks that are dealt with in pressure tests

Risk has become a concept linked to banking activity, as banks are exposed, according to the nature of their activity, to numerous and complex risks to the point that the basic characteristic that has come to govern banks' activity at the present time is the extent of their ability to adapt to these risks and not avoid them (Al-Ugaili, 2017: 43). One of the most basic steps in the stress testing process is identifying the main risk elements that must be subjected to the test, as the bank must determine a list of these elements that represent the following risks:

- **Credit risk:** Credit risk is defined as the financial loss that the bank (lender) may be exposed to due to the inability of customers (borrowers) to pay or their unwillingness to fulfill their obligations. Credit risk comes in most cases from the inability to pay or repay. (Al-Duri and Al-Anbaki, 2020: 36), also known as: the risks represented by the other party's inability to fulfill its contractual obligations on time. (Gregory, 2010: 2). Credit risk is considered one of the most important and oldest risks to which banks are exposed. Credit risk represents the risk of losing the principal amount of the loan and any potential return on it resulting from the borrowers' failure to repay the loans in whole or in part in accordance with the agreed upon repayment terms. Therefore, credit risks affect the bank (Jaafar, Badrouni, 2019:22).
- **Credit concentration risks:** These are the risks that arise as a result of unequal distribution of credit, or concentration in business sectors or geographical areas, which have the potential to cause significant losses that threaten the continuity of banking and financial institutions. (Ismail, 2021:11)
- **Liquidity risk:** It is the bank's inability to pay its short-term obligations on their due date. (Merwe, 2015:6), which results from the lack of availability of the required liquidity due to the incompatibility in maturity dates between assets and liabilities, as well as when liquidity levels decline in the market under difficult circumstances and this affects the bank's sources of funding. Liquidity risk is also determined by how accurately management estimates its liquidity needs.
- **Market risks:** Market risks express the state of uncertainty about the future market value of assets. (Naolo, 2022: 6) Market risk reflects sensitivity to negative and adverse changes in interest rates, exchange rates, and asset prices (stocks, commodities, real estate, currencies, etc.) and the impact of these changes on portfolios and markets, causing losses in profits or capital.
- **Operational risk:** Operational risk has been defined by the Basel Committee on Banking Supervision (BCBS) as "the risk of loss resulting from the inadequacy or failure of internal

processes, people and systems or from external events." (Arab Monetary Fund, 2020: 121), and operational risks can result from several factors (internal and external), such as internal or external embezzlement, failure of systems and personnel, risks of electronic banking and its security breaches, forgery, unintentional errors resulting from negligence or lack of experience, document and documentation errors. In addition to the risks associated with providing specific services and products. (Hawat, 2013: 34)

3-2-4:Types of (ST) and scenarios

There is no specific method or model for **(ST)** that can be applied to all financial systems, but they differ depending on the nature of the economy and the extent of development and complexity of the financial system in a country. **(ST)** can be classified into two main types: (Stress Testing Instructions, 9:2018)

3-2-5: Sensitivity Scenarios Allergy tests

Sensitivity tests are used to measure extent of impact of movements in risk factors (individually) on financial position of bank, as relationships and interactions between various risk factors are not taken into account. These tests aim to determine degree of sensitivity of the financial position. bank has a single factor approach to risks evaluates bank's ability to confront. (Stress Testing Instructions, 5: 2018). Sensitivity analysis tests include credit risk, concentration risk, liquidity risk, market risk, and operational risk.

3-3 : Tests based on a hypothetical analysis of a group of scenarios (Scenario Analyses):

Also called multivariable scenario tests, these tests evaluate the impact of several variables several risks on bank's financial position (scenario analysis). These tests are more complex than sensitivity tests, as several unusual changes are made to several variables at same time, and assumptions can be made on a historical basis based on hypothetical events can It happened and did not happen in past. These tests evaluate impact of scenarios whose probability of occurring may be low, but their impact on bank, if they occur, will be large.

3-4 : Measures to be taken in light of results of pressure tests

There is a set of measures must be taken by banks in light of results of (ST) scenarios, which are as follows: (Al-Shammari, 2013: 48):

- Enhancing capital adequacy in order to hedge and confront worse possibilities.
- Strictness in financing granting processes adherence to sound credit granting standards for purpose of avoiding default and reducing credit risks.
- Amending banking services pricing policies approved by bank and diversifying into banking services.
- Building additional allocations to enhance the bank's financial ability to confront crises and losses.

3-5 : Quality of banking assets

The quality of assets is of particular importance in the evaluation system because it is the basic part of the bank's activity that leads its operations towards achieving revenues, and it is a general source of concern for the regulatory authorities, as any deterioration that may occur in the quality of banking assets resulting from mismanagement of the adopted lending system leads to the occurrence of... An imbalance in the financial position in the future. (Nayef, 2023: 567)

Asset quality indicators: Asset quality indicators give the level of future financial risks associated with lending, as well as portfolio investments, real estate, and off-balance sheet risks. Asset quality is considered particularly important in the evaluation system because it is an important part of the activity of the bank that manages its operations, and the assets inside banks' balance sheets explain how to use... Funds collected from various sources (Yuksel, et.al, 2015:3). However, the bank's acquisition of high-quality assets will lead to achieving more profits and improving the assessment of liquidity and capital because, in general, the degree of reliability of capital adequacy ratios depends on the degree of reliability of indicators of the quality and type of assets, and the risks of insolvency in financial institutions mostly come From the quality of assets and the difficulty of managing them, hence the importance of monitoring indicators that indicate the quality of assets. (Dincer,et.al, 2018) (Abbas,et.al,2019:25)

To analyze the asset quality index, a set of ratios will be used:

- **Total financing granted to capital and sound reserves**: The total financing granted to capital and sound reserves refers to the total amount that was granted from pledge credit and cash credit, and this amount represents the total value of the resources and funds that were allocated for financing. The loan-to-equity ratio reflects the degree of financial leverage of the bank, as the ratio expresses the size of both loans and equity in the total financial structure of the bank, and is calculated by dividing the total loans by the net shareholders' equity. A higher ratio means less protection for shareholders and creditors and vice versa.
- **Balances debited abroad to capital and sound reserves**: Balances debited abroad are considered completely liquid balances, but some of these balances are represented by frozen deposits in the form of cover, such as letters of guarantee or documentary credits (Awad: 2015, 105). Receivables abroad refer to the money owed to the bank by customers abroad, and also refer to the group of accounts to which the bank has the right because it provided a specific service or product.
- **Non-performing loans to total loans (NPL):** It is an assessment of the condition of the bank's assets and the adequacy of credit risk management. This means that non-performing loans (NPL) are an indicator of the presence of a problem in the bank, which if not resolved will have a negative impact on the bank's solvency (Prabowo etal., 2021:149).

  That is, customers' failure to pay the debts owed to them. No matter how carefully the bank studies the creditworthiness of its customers, this will not prevent some customers from failing to fulfill their obligations owed to them, but this failure must be at a minimum such that the percentage of defaulted debts does not exceed (5%). Of the total bank loans, when this percentage is exceeded, this is considered an indicator of inefficient banking performance, and thus the non-performing loans index is considered an important guide in monitoring banking crises (Davies & Karim, 2008:93).
- **Loan allocation to total financing granted:** The loan allocation plays an important role in the stability of banks in order to cover the losses resulting from lending (Ozili & Outa, 2017:14), as this ratio shows the bank's readiness to confront loan losses by creating provisions, and represents the debt allocation Doubtful collections in banks, which are calculated according to the guidelines and instructions of the Central Bank of Iraq (Al-Dhahabawi and Faraj, 1067:2022). The lower the loan provision ratio indicates the

efficiency of the bank and the strength of its procedures in recovering its money from borrowers (Ashour, 2021:227). .

- **Insurances received to the total pledged credit**: This indicator is used to measure the level of insurances received in relation to the total pledged credit that was provided. This percentage reflects the percentage of the value of insurance collected from the insured in relation to the total value of the pledged credit.
- **Investments to total assets**: This indicator is used to measure the size of investments owned in relation to the total assets of banks. It reflects the percentage of the value of the investments owned in relation to the total book value of the assets owned by the bank. If the investment ratio is high, this means that the bank has invested a large percentage of its total assets. This is usually considered a sign of investment and growth.

4. The practical framework for (ST) and quality of banking assets

Financial analysis plays an important role in evaluating the conditions and safety of banking institutions and highlights defects in the performance of their activities, and then future scenarios can be developed in light of that. It is worth noting that the researchers chose a number of indicators of the quality of banking assets in proportion to the data available in the budget items and the explanations in the annual reports of the banks in the study sample. The horizontal analysis method will be used, through comparison to the year (2022), and based on that, financial indicators will be used. Which was mentioned previously.

4-1 :Study and analyze indicators of (quality of banking assets)before shocks

Table (3) Financial analysis of asset quality indicators for Islamic banks, research sample (2022)

The ratio	Standard ratios	Islamic International	Islamic trust	Islamic Levant
Total financing granted to capital and sound reserves	800≤	%157	99%	68%
Balances debited abroad to capital and sound reserves	≤20	%2	%9	%3
Non-performing financing to total financing	≤ 5%	1%	7%	2%
Loan allocation to the total financing granted	ـــــ	%2	%4	%2
Insurances received to the total pledged credit	ـــ	%37	%29	%38
Investments to total assets	ـــ	%15	%11	%8

Source: Prepared by the researchers based on the annual reports of the banks in the research sample for the year 2022.

A- Total financing granted (total credit) to capital and sound reserves

From the table above, it is clear that the International Islamic Bank achieves the highest percentage (157%), followed by Al-Thiqa Bank (99%). This indicates that the aforementioned banks adhere to the standard ratio and the controls for granting credit, in order to enhance

customers' confidence in the bank and enhance its financial procedures in maximizing... Bank value. While the lowest percentage of total capital financing from the share of Mashreq Islamic Bank was (68%), which is a good percentage despite its decline compared to the other banks in the research sample.

B- Balances debited abroad to capital and sound reserves

From Table (3), it is clear that the Islamic Trust Bank is more dependent on external financing, at a rate of (9%), while we note that the International Islamic Bank is the least dependent of the banks in the research sample on external financing, at a rate of (2%).

T- Non-performing financing to total financing

From the above table (3), it is noted that Al-Thiqa Islamic Bank obtained the highest percentage, which is (7%). This indicates that this bank, the most Islamic bank in the study sample, is exposed to a state of default by its customers in paying their obligations, and it has exceeded the standard percentage (5%), which is necessary for it. Commitment to sound controls in the credit granting process, while the International Islamic Bank achieved a rate of (1%), which is the lowest rate among the banks in the study sample, and the Levant Arab Bank also achieved a rate of (2%). This indicates the efficiency of credit management and adherence to sound controls in the credit granting process.

D- Loan allocation to the total financing granted

From the table above, it is clear that the Islamic Trust Bank enjoys the highest percentage, which reached (4%). This reflects the high percentage of non-performing loans, which makes it more exposed than other Islamic banks in the research sample to the risks of financial hardship, while the International Bank and the Islamic Mashreq Bank achieved the same percentage, which is (2%). This indicates a decrease in the credit risks of the banks.

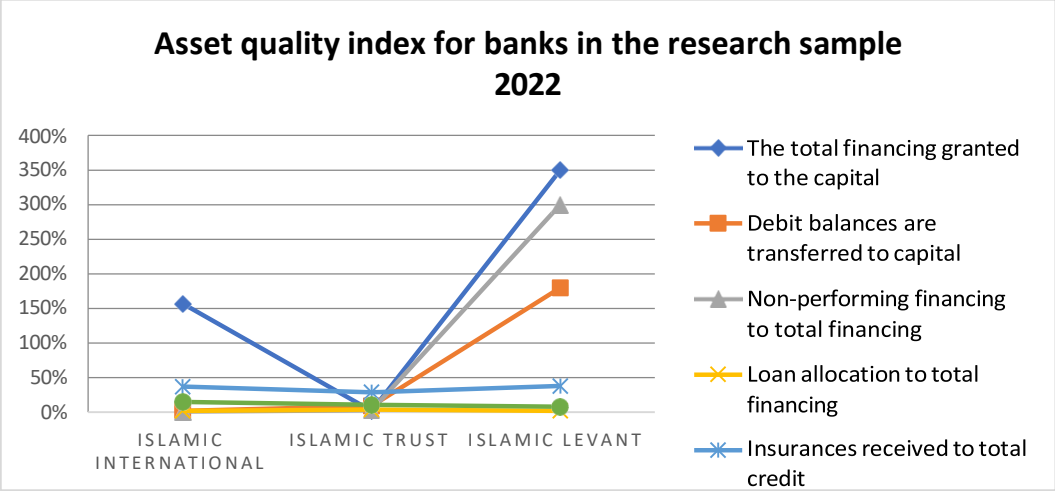
C- Insurances received to the total pledged credit

Table (3) indicates that the Mashreq Islamic Bank achieved the highest percentage (38%) among the Islamic banks in the research sample, followed by the International Islamic Bank (37%), while Al-Thiqa Islamic Bank (29%) achieved the lowest percentage among these banks.

H- Investments to total assets

This indicator is used to measure the size of investments held in relation to the total assets of banks. If the percentage of investments is high, this means that the bank has invested a large percentage of its total assets. If the investment ratio is low, this reflects that the bank is keeping a larger percentage of assets in the form of cash or short-term investments instead of investing at a high percentage. This may be related to conservative and precautionary attitudes or a specific vision for risk management. From Table (3), it is clear that the International Bank achieved the highest percentage among banks, and this percentage reached (15%), while the Islamic Trust Bank achieved the lowest percentage, which was (11%).

Figure (1) asset quality indicators for the banks sampled in study.



Source: Prepared by the researchers based on the EXCEL program

4-2 :Study and analyze indicators of (banking asset quality) after shocks

Multi-variable stress tests were applied to Iraqi banks, sample of study for year (2022), several scenarios were chosen. In study, impact of these scenarios on indicators of the quality of banking assets will be analyzed.

Explain that mentioned scenarios are assumptions (shocks) translated into ratios that assumed for the purposes of the research, these ratios were applied to the Islamic banks, study sample, on their financial statements in order to know the strength and ability of the banks to confront these potential shocks, crises.

After applying, completing banking stress tests for scenarios with multiple variables, after applying financial ratios (post-shock), these ratios will be analyzed and clarified according to each indicator and according to the table for each of the banks in study sample, which are as follows

4-3 :The International Islamic Bank

Indicators	Lineage	Standar ratio	Before the shock	After the shock		
				Low intensity (first scenario)	Moderate intensity (second scenario)	High intensity (Third scenario)
Asset quality	Ratio of total financing granted (cash and pledge) / bank capital and sound reserves	800≤	157%	175%	198%	227%
	Ratio of balances debited abroad/bank capital and sound reserves	≤20	2%	1%	1%	1%
	Ratio of non-performing financing to total cash financing	≤ 5%	1%	8%	15%	26%

	Loan provision/total financing (cash and pledge)	**___**	**2%**	**6%**	**12%**	**22%**
	Percentage of insurances and receipts received against pledged obligations/total pledged credit	**__**	**37%**	**41%**	**50%**	**74%**
	Investments/total assets ratio	**__**	**15%**	**12%**	**8%**	**4%**

Table (4) Financial analysis of the asset quality indicators of the International Islamic Bank shock)

Source: Prepared by researchers based on bank's annual reports, research sample for year 2022.

- **The first scenario (low intensity):**

The results of financial analysis in table above for study indicators related to The International Islamic Bank after the application of low-severity shock showed that bank responded to the shock in somewhat limited proportions, and that there were changes in the level of the ratios, except for (ratio Non-performing financing to total financing) i.e. an increase in non-performing loans from (1%) to (8%) after the shock, and the rest of the ratios indicate that the bank has high asset quality and is able to overcome this shock.

- **The second scenario (moderate severity):**

results of financial analysis in Table (4) of study indicators related to The International Islamic Bank after application of moderate-severity shock showed that bank responded to shock in somewhat limited proportions, there were changes in level of ratios of asset quality indicators before after shock except for (the ratio of total financing granted (cash and pledged) / the bank's capital and sound reserves) which received the largest change, rising from (157%). To (198%). This increase is not a positive increase, as it results from a decrease in the denominator of the ratio of capital and sound reserves, as well as an increase in the losing cash credit resulting from the scenario of confiscating pledged credit, but the current ratio after the shock did not exceed the standard ratio approved by the Central Bank of Iraq (800%). It was also observed that the ratio of non-performing financing to total financing increased from (1%) to (15%) after the shock, as it exceeded the standard ratio (5%). This indicates that the bank was exposed to a decline in the quality of assets after a moderately severe shock.

The third scenario (high severity):

The results of asset quality indicators after the high-severity shock showed a difference in ratios, as in (the ratio of non-performing financing to total financing), that is, an increase in non-performing loans from (1%) to (26%) after the shock, where the ratio exceeded The standard (5%), as well as a negative increase in the loan provision/total financing ratio (cash and pledged) from (2%) before the shock to (22%). This increase is not a positive increase, as it results from an increase in the losing cash credit resulting from the scenario of confiscating pledged credit and the rise in debt. Non-performing loans resulting from the scenario of an increase in non-performing loans, as well as an increase in the ratio (insurances and receipts received in exchange for pledged obligations / total pledged financing) from (37%) to (74%). This increase is not positive, as it results from a decrease in the denominator of the ratio after

applying the scenario of confiscating pledged credit and its transformation. To a losing cash credit, also (the ratio of investments/total assets) suffered a severe decline from (15%) to (4%) after the shock. This change in ratios indicates that the bank is exposed to a decline in the quality of assets after a high-severity shock.

4-4 Al-Thiqa Islamic Bank

Table (5) Financial analysis of asset quality indicators for Al-Thiqa Islamic Bank shock)

Indicators	Lineage	Standard ratio	Before the shock	After the shock		
				Low intensity (first scenario)	Moderate intensity (second scenario)	High intensity (Third scenario)
Asset quality	Ratio of total financing granted (cash and pledge) / bank capital and sound reserves	800≤	99%	119%	150%	203%
	Ratio of balances debited abroad/bank capital and sound reserves	≤20	9%	8%	7%	4%
	Ratio of non-performing financing to total cash financing	≤ 5%	7%	35%	55%	70%
	Loan provision/total financing (cash and pledge)	___	4%	12%	25%	47%
	Percentage of insurances and receipts received against pledged obligations/total pledged credit	__	29%	32%	38%	58%
	Investments/total assets ratio	__	11%	8%	6%	3%

Source: Prepared by the researcher based on the annual reports of the banks sampled for the year2022.

1- The first scenario (low severity): The results of the analysis of banking stress tests for the multiple-variable scenarios in the table above for asset quality indicators after applying the first low-severity shock scenario showed that this bank responded to the shock in somewhat limited proportions, and the analysis showed a significant increase (for the ratio of non-performing financing to... Total financing) i.e. an increase in non-performing loans from (7%) to (35%) after the shock, and it was also observed that (the ratio of the loan provision to the total cash and pledged financing) increased from (4%) before the shock to (12%) after the shock and this increase is not A positive increase is the result of an increase in lost cash credit resulting from the scenario of forfeiture of pledged credit and an increase in non-performing financing resulting from a scenario of an increase in non-performing loans. This indicates the bank's exposure to a decline in the quality of assets after a low-severity shock.

2- The second scenario (medium severity): The results of the analysis showed an increase in (the ratio of non-performing financing to total financing), that is, an increase in non-performing

loans from (7%) to (55%) after the shock, as it exceeded the standard ratio (5%), and this indicates the bank's exposure For a decline in asset quality after a moderate-severe shock.

3- The third scenario (high severity): The results of the asset quality indicators after the high-severity shock showed an increase (the ratio of non-performing financing to total financing), that is, an increase in non-performing loans from (7%) to (70%) after the shock, as it exceeded the standard ratio (5%). As well as a negative increase in the loan provision/total financing ratio (cash and pledged) from (4%) before the shock to (47%). This increase is not a positive increase, as it results from an increase in the losing cash credit resulting from the pledged credit confiscation scenario and an increase in bad debts resulting from the scenario. An increase in non-performing loans, as well as an increase in the ratio (insurances and receipts received in exchange for pledged obligations/total pledged financing) from (29) to (58). This increase is not positive, as it results from a decrease in the denominator of the ratio after applying the scenario of confiscating pledged credit and its transformation into a losing cash credit, as well as (The ratio of investments/total assets) declined severely from (11%) to (3%) after the shock. This change in ratios indicates that the bank is exposed to a decline in the quality of assets after a high-severity shock.

4-5. Mashreq Islamic Bank

Table (6) financial analysis of asset quality indicators for Mashreq Islamic Bank shock)

Indicators	Lineage	Standard ratio	Before the shock	After the shock		
				Low intensity (first scenario)	Moderate intensity (second scenario)	High intensity (Third scenario)
Asset quality	Ratio of total financing granted (cash and pledge) / bank capital and sound reserves	800≤	68%	78%	93%	114%
	Ratio of balances debited abroad/bank capital and sound reserves	≤20	3%	2%	2%	1%
	Ratio of non-performing financing to total cash financing	≤ 5%	%1	%7	%13	23%
	Loan provision/total financing (cash and pledge)	___	2%	6%	11%	20%
	Percentage of insurances and receipts received against pledged obligations/total pledged credit	__	38%	42%	51%	76%
	Investments/total assets ratio	__	8%	6%	4%	2%

Source: Prepared by the researcher based on the annual reports of the banks sampled for the year2022.

scenario (low severity): The results of the analysis of banking stress tests for the multiple-variable scenarios in the table above for asset quality indicators after applying the first low-

severity shock scenario showed that this bank responded to the shock in somewhat limited proportions, and the analysis showed a slight difference in the proportions, except for (ratio Non-performing financing to total financing) i.e. an increase in non-performing loans from (1%) to (7%) after the shock, and the rest of the ratios indicate that the bank has high asset quality and is able to overcome a low-severity shock.

scenario (moderate severity): The results of the analysis of asset quality indicators after the moderate-severe shock showed a slight difference in the ratios, except for (the ratio of total financing granted (cash and pledged) / the bank's capital and sound reserves) which received the largest change, rising from (68%). To (93%), and this increase is not a positive increase, as it results from a decrease in the denominator of the ratio of capital and sound reserves, as well as an increase in the losing cash credit resulting from the scenario of confiscating pledged credit, but the current ratio after the shock did not exceed the standard ratio approved by the Central Bank of Iraq (800%). It was also observed that the ratio of non-performing financing to total financing increased from (1%) to (13%) after the shock, as it exceeded the standard ratio (5%), and the rest of the ratios indicate that the bank has a high quality of assets and is able to exceed The shock is of moderate severity.

scenario (high severity): The results of the analysis after the high-severity shock showed an increase (the ratio of non-performing financing to total financing) from (1%) to (23%) after the shock, where it exceeded the standard ratio (5%), as well as a negative increase in the provision ratio. Loans/total financing (cash and pledges) from (2%) before the shock to (20%). This increase is not a positive increase, as it results from the increase in lost cash credit resulting from the pledged credit confiscation scenario and the increase in troubled debts resulting from the scenario of increase in troubled loans, as well as an increase The ratio of (insurances and receipts received in exchange for pledged obligations/total pledged financing) from (38%) to (76%). This increase is not positive, as it results from a decrease in the denominator of the ratio after applying the scenario of confiscating pledged credit and its transformation into a losing cash credit, as well as (the ratio of investments/ Total assets declined severely from (8%) to (2%) after the shock. This change in ratios indicates that the bank is exposed to a decline in the quality of assets after a high-severity shock.

5. Conclusions and recommendations

5-1: Conclusions:

- (ST) scenarios are considered an early warning tool to determine the extent of banks' ability to overcome deviations by predicting crises and measuring the impact of these tests on asset quality indicators.
- The (low-medium) intensity shock did not affect the International Islamic Bank, but it did not exceed the high-intensity shock, and this is what was shown by the results of the analysis of indicators of the quality of banking assets after the shocks. This indicates the bank's ability to overcome risks at certain levels and cannot overcome higher shocks.
- The (low-medium) intensity shock did not affect Mashreq Islamic Bank, but it did not exceed the high-intensity shock, and this is what was shown by the results of the analysis of indicators of the quality of banking assets after the shocks. This indicates the bank's ability to overcome risks at certain levels and cannot overcome higher shocks.

- Al-Thiqa Islamic Bank was affected by all levels of stress test shocks (low - medium - high) in severity. This is what was shown by the results of the analysis after the shocks, as they showed a decline in the quality of banking assets and exceeding the standard ratios after the shocks.

5-2 Recommendations:

- Banks in research sample must commit applying (ST) as an essential and complementary part of banking risk management, and these tests must be governed by written and approved policies and procedures, document the results, taking into account the results of these tests, and develop corrective procedures and contingency plans to confront the decline and deterioration of the quality of their assets.
- It is imperative for bank administrations to adopt various methods to strengthen risk management systems and formulate special strategies that enable them to adopt early warning systems for financial and banking crises using the most important indicators.
- Banks must diversify the credit portfolio and adhere to sound credit granting policies and standards to avoid defaults, as well as adhere to the standard ratios specified by supervisory authorities.
- Continuous follow-up by the bank's management of the percentage of non-performing loans and intensifying follow-up and collection efforts so as to enable it to reduce the significant increase that occurred in the size of the provision for doubtful debts. Thus, the bank has contributed to reducing the burdens added to banking operations expenses and thus raising the value of the return (profit). achieved by the bank.
- Banks must review their investment mechanisms, methods and tools used and compare them with other banks and try to expand and grow to achieve investment returns on the assets they own.

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