

Analysis of credit risk, liquidity and profitability of the Trade Bank of Iraq for the period (2012-2021)

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Abstract. Recently, the global recurrent and diverse crises have increased, and the risks have increased significantly, including the credit risks to the banking sector, and thus the bank has incurred large losses that have an impact on liquidity and profitability. Credit risks may lead to bank's bankruptcy or failure. This research attempts to find the relationship between credit risk, liquidity and profitability together. The data for the Commercial Bank of Iraq were used for a period of ten years. One of the most important objectives of the research is the bank credit, which has a major role in the process of economic development and direct economic activity towards development projects and investment of its accumulated deposits and provide interest for these deposits, and it was concluded that the bank should diversify its investments and increase the granting of loans in foreign currency. Financial restructuring and re-pricing of its shares and the trend in speculation in global markets, and to have investments in the shares of solid international companies to achieve financial flows within it for its balance sheet.

Keywords. credit risk; liquidity; profitability.

1. Introduction

The banking sector is one of the most important economic sectors in our time, as it is considered the tool that enables the state to implement its financial and monetary policy, in addition to its great role in the provision and development of various services that contribute to the promotion of economic, financial and commercial activity. Banks are the intermediaries between depositors who form the money supply side, and between borrowers who form the demand side of these funds (Zarqan, 2010; Daher& Fallah, 2017).

The banking sector is exposed to many risks and crises that may lead to instability. Perhaps the most important of these risks is credit risk, which is one of the most important reasons that led to the failure of banks and then the occurrence of banking crises in developing and developed countries (Zahir & Muhammad, 2018b). Bank credit is one of the most important banking activities that reflect the results of its operations on the financial accounts of banks in profit and loss. The process of granting credit is accompanied by the risk of non-payment (credit risk), which occurs as a result of borrowers' failure to pay their liabilities to the bank, represented by loans, which will incur financial losses that will in turn affect liquidity and profitability (Youssef, 2019).

Liquidity is also of particular importance in banking, as it is the main means of securing the cash flows needed to finance the various needs and meet the withdrawals of depositors on the one hand, and on the other hand, enabling the administration to engage in investment areas without the need to borrow at high costs (Al-Daami et al., 2021). Achieving profits is one of the main objectives pursued by commercial banks. It is a source of confidence for all depositors and lenders of banks and is therefore

an important indicator of their efficiency in the use of their resources. Through these profits, banks work to support their financial position, enhance their solvency and ownership rights, and this enables them to face and overcome risks and ensure their continuity and survival in work (Abu Karsh, 2005; Al-Amar & Ismael, 2018; Abbasa, 2020). Risk and profitability are two interrelated concepts, one of which cannot be explained without identifying the other, so banks rely on the evaluation of their performance on return measures and risk measures. The objectives of the bank's operation are to maximize revenues and minimize costs, so the bank's management works to increase profitability in different ways (Shakhum & Hafai, 2021). Credit is the largest investment of assets and the largest source of income for banks. If the loan fails, the banks' ability to provide new loans will be limited, which is reflected in the bank's lack of liquidity (Hassan & Kazem, 2006; Paul et al., 2013).

The increase in credit risk can lead to an increase in liquidity risk, as the increased likelihood of customer default and the accumulation of non-performing loans causes a decrease in the bank's revenues, and the decrease in the volume of liquidity available to it to carry out its operational operations and pay its short-term liabilities, including increasing its exposure to liquidity risk, and liquidity risk affects credit risk (Al-Fariji, 2005; Helu, 2020; Reda & Jawad, 2021), as the increase in liquidity as a result of the increase in the volume of deposit with banks, especially in the event of high interest rates increases the volume of interest to be paid to depositors by the bank (Almekhlafi et al., 2016). In order to achieve a high profit margin, the bank must invest its high liquidity at high interest rates. Therefore, the bank resorts to granting credit to high-risk borrowers to achieve high profits, which increases the bank's exposure to credit risk (Nagy, 2015; Al-Amar & Ismael, 2018). Profitability is also related to an inverse relationship with liquidity, as the employment or investment of any of the bank's deposits will be at the expense of the bank's lack of liquidity. Therefore, successful management has the task of achieving the compatibility between the profitability sought by the bank and the liquidity that it must retain to an appropriate extent (Hallunovi, 2022), as the bank's management must achieve a sufficient amount of liquidity of available assets as well as appropriate returns from the instruments that are employed in investments, especially lending, which is the most profitable investment tool in commercial banks (Al-Araji & Abadi, 2014; Abbas et al., 2021; Al-Masoodi et al., 2020), in addition, it has low liquidity compared to other types of investments in which the liquidity of assets is relatively large and with low profitability compared to the profitability and liquidity of bank loans, because the general principle in this regard confirms that the lower the liquidity of the asset, the higher its profitability and vice versa (Abbas et al., 2019; Kalle & Naili, 2021). By reviewing many studies, we find that commercial banks are exposed to banking crises caused by increased financial and economic risks in addition to political instability (Aisha, 2015; Wadi & Dhaireb, 2021). These risks result from financing various banking operations. Among these risks are credit risks resulting from the borrower's inability or inability to pay the principal or interest of the borrowed amount at the agreed date, which must be identified, measured and addressed. In light of the above, the research problem can be formulated through the following questions:

- Do commercial banks rely on appropriate credit risk metrics?
- Does credit risk affect the liquidity of commercial banks?
- Does Credit Risk Affect the Profitability of Commercial Banks?
- Can appropriate mechanisms be found to reduce these risks?

One of the most important objectives of our current study is to analyze the credit risks faced by commercial banks and know the type and size of these risks by using a number of indicators to measure them, as well as measuring liquidity and profitability, knowing the impact of credit risks on both liquidity and profitability, and making appropriate conclusions for the current study. Knowing the

reasons for the occurrence of these risks, which is still the biggest concern of the banks' departments, and how to reduce these risks because of the negative effects they have on the liquidity and profitability of the bank, which may cause the bankruptcy of banks and loss of confidence by customers towards the bank (Al-Noweran, 2019).

2. Credit Risk Concept

The banking sector is one of the most important sectors that contribute effectively to the movement of economic activity and is an important link in the development of the financial system in any country of the world (Dalloul, 2014). Bank credit is one of the most important banking activities with good profits, but at the same time it is one of the activities that increase credit risk compared to other activities. These risks arise because of the change in economic conditions and the lower the liquidity of banks, the higher the risks (Bouzid, 2017).

Credit risk is defined as the risk resulting from the non-payment of all or part of the accrued interest or principal or both, whether for investments in securities or loans, on time in accordance with the agreements and contracts concluded (Al-Maliki & Said, 2013; Wahdan, 2017). These risks are the most common types of risks faced by banks, which are affected by the bank's revenues and capital resulting from the customer's failure to meet its obligations in a timely manner. These risks represent about 60% of the total risks (Al-Maliki & Said, 2013). Credit risks are one of the most important risks faced by commercial banks in addition to other risks, such as liquidity risks (Ali & Abdulhassan Abbas, 2015; Daher, 2021), interest rate risks, exchange rate risks, operating risks and market risks, with an increase in banking activity in general and credit risk in particular (Ahlam, 2016), and the increase in competition between banks in light of globalization has increased credit risks, which made the efficiency of credit risk management and control a cornerstone for the continuity of banks (Jihad, 2012; Al-Mamlouk, 2104).

Credit risk is achieved due to two types of factors: external factors represented by a change in economic conditions, which may be in the form of a recession or economic depression. Or an unexpected collapse in the capital markets, in addition to sudden and inverse changes in market movement. Internal factors are weak credit management or investment in the bank due to insufficient experience and know-how, lack of credit policies commensurate with the current circumstances, weak pricing policies, and weak procedures for monitoring and controlling credit risks (Al-Sheikhly, 2012; Jalabiya, 2014; Al-Amin& Al-Siddiq, 2021)

2.1 Types of credit risk

As explained by (Idan & Khalaf, 2020):

- 1. Customer risks:** These risks are related to the customer's personality, solvency and ability to manage his activity, that is, the basic elements that represent his creditworthiness (Ahmadyan, 2018; Idan& Khalaf, 2020).
- 2. Risks associated with the sector to which the customer belongs:** These risks are related to the nature of the activity in which the customer works, as it is known that each economic sector has a specific degree of risk that varies according to the operational, productive, competitive and economic conditions of the units for this sector (Said & Said, 2016; Qasimi, 2018; Rashm & Daghim, 2018).
- 3. Collection risk: collectability** in the event of default is unpredictable and depends on the quality of the default and many factors such as the collateral used by the borrower, and the quality of those collateral. Failure of all customers to pay at the same time due to the risk of credit concentration will

expose the bank to very high risks. Banks protect themselves against these risks by diversifying their credit portfolio, which makes defaults highly unlikely (Al-Ta'ae, 2013; Al-Mamlouk, 2104).

4. **Liquidity risk:** It is the risk that the bank faces with customers or the increase in unexpected demand for cash, and the bank may face temporary liquidity problems that cause the bank to borrow from other banks or financial institutions or may resort to borrowing from the central bank. The resort to the central bank has a negative impact on two sides. The first is the high loan costs, which are high interest rates, and the second side has an impact on the bank's position and reputation in the market (Zaher, 2014; Idan & Khalaf, 2020)
5. **Credit Concentration Risks:** Any concentration in the loan portfolio due to the concentration of the bank's dealings with one customer, a specific group of customers or as a result of its interest in specific economic sectors, industry or regions, and that the bank's inaccuracy in updating the customer's creditworthiness, that is, the customer's ability to pay his liabilities due to the low efficiency of employees and the inaccuracy of the data and information that is provided to the bank (Nagy, 2015; Idan & Khalaf, 2020; Uddin, 2022).
6. **Default risk:** It is one of the most important credit risks in investment decisions. Investment decisions in general, whether investments in kind or financial investments, are characterized by the investor's inability to determine the expected return of that investment with certainty due to the inability to take note of the future, which makes the investment surrounded by a degree of risk. Credit risk arises when the bank cannot assess the customer's ability to meet his obligations by repaying the principal and interest of the loan (Abu Abdo, 2004; Idan & Khalaf, 2020; Mohammad, 2022)
7. **Risks associated with the bank's mistakes:** These risks are related to the efficiency of the credit department in the bank in following up the credit provided to the customer and verifying that the customer has fulfilled the terms agreed upon in the credit granting agreement. These errors are the bank's failure to book the customer's deposits, which it placed as collateral for credit facilities, and the customer's withdrawal of these deposits (Jamila, 2015; Al-Jubouri, 2015).

3. Liquidity Concept

Liquidity in its absolute meaning means cash, but liquidity in its technical meaning means the ability of assets to convert to cash quickly and without losses or less losses. The goal of holding liquid assets is to face short liabilities that are currently due for performance or a short period of time of one or two months. Liquidity is a relative concept that expresses the relationship between cash and assets that are easy to convert to cash quickly and without losses, and between the liabilities required to be fulfilled (Qassem, 2019; Abbas et al., 2021). As for the concept of bank liquidity or liquidity in the banking sector, it does not differ in substance from the general concept of liquidity in any financial institution as much as the specificity of banking work based on the liquidity element (Kazem & Hassan, 2021), it can be defined as a measure of the bank's ability to easily find the liquidity it needs to meet its liabilities, and liquidity can be obtained from its possession of direct cash in currency or by account with the Central Bank (AbdulHameed & Nazzal, 2020).

Banking liquidity was defined as "the ability to form sufficient money to finance lending opportunities and face the withdrawal of deposits at a reasonable cost within a reasonable time frame" (Bouri & Abd, 2022). It can be said that banking liquidity is the ability to convert some of the assets in the bank into cash without loss and that the amount of liquidity in the bank is reasonable, as well as the

bank's ability to meet its liabilities through its liquid assets and in quantities that allow it to carry out its activity in a manner that achieves the required profit (Taher & Muhammad, 2022).

Of course, liquid assets differ in their degree of liquidity, that is, in the possibility of being converted into cash without losses, or with losses when they are converted as a result of such disposal. On the other hand, the fact that depositors withdraw their deposits with increasing credit demands makes liquidity in commercial banks a sensitive and serious issue. While any creditor can be required to have a repayment deadline, it becomes dangerous if the bank asks depositors to wait until funds are made (Alzorqan, 2014), so the bank's lack of liquidity may lead to the bank's bankruptcy if it is poorly managed (Kazem & Hassan, 2021). Liquidity has three basic dimensions: time: i.e., the speed at which an asset is converted into cash; risk: the potential for the asset's value to decline; or the potential for the source or product to be neglected; cost: the financial or other sacrifices, as a result of a particular change (Zahir & Habib, 2021).

Liquidity is one of the most important tasks of the bank's management, as the bank's management must measure and meet the liquidity needs, as the bank's liquidity needs must be measured and may be a risk if the bank has a large number of liquidity sources with low profits for the purpose of providing the necessary liquidity. On the other hand, the low level of liquidity in the bank may expose it to significant financial problems that may lead to its failure (Al-Karoy, 2020). In light of the above, it is clear that liquidity in the banking sense is the extent to which the bank can achieve its development and investment goals by providing sufficient financial liquidity to finance various projects and at the same time have the ability to meet the need of its depositors from sudden withdrawals (Paul et al., 2013). Therefore, the bank needs high efficiency in liquidity management by achieving the process of liquid funds and semi-liquid funds and the extent to which the bank can borrow from banks is balanced between the size of other banks when liquidity is needed (Al-Agha, 2011; Abdul-Ridha, 2019).

The most important objectives of banking liquidity can be concentrated in a set of points that lie in the following (Al-Khair Allah & Hammadi, 2013; Al-Marsoumi, 2017):

The high liquidity gives the Commercial Bank the ability to finance its financial and real investments with the freedom to choose between the appropriate items, pay expenses and continue its banking operations, benefit from obtaining a cash discount when the bank pays its debts early, in addition to building a good credit reputation for the bank with creditors, individual dealers, the Central Bank and other banks by paying its liabilities on time, which enables it to obtain other loans in larger quantities from these parties when needed and on concessional terms. High liquidity also enables the bank to face unexpected deviations in cash flows and meet liabilities according to their type, as well as increasing the bank's ability to expand and grow. Finally, the availability of liquidity to the bank makes it take advantage of fluctuations in prices and the exploitation of opportunities when any unusual decline in the prices of shares and bonds dealt with by the commercial bank in the achievement of additional returns.

The need for bank liquidity is a continuous and urgent need. Banks must be always ready to meet customer requests, whether related to withdrawing their deposits from the bank or borrowing from it. The importance of liquidity is manifested by enhancing the strength and position of the bank in the financial market through its ability to meet all its obligations on time and without any delay (Lašt, 2017; X. Chen, 2022; Garcia & Meurer, 2022; Sasongko & Pulungan, 2023; Simkhada, 2023), the bank seeks to gain the trust of its depositors and borrowers by being convinced of the bank's ability to meet their requests at any time, the bank avoided liquidating some of its fixed assets and the consequent losses, avoiding paying a higher cost of funds, especially in times of crisis, and avoiding resorting to borrowing from the central bank (Alshatti, 2015; T.-H. Chen et al., 2022).

4. Profitability Concept

Commercial banks aim to maximize their profitability like any business establishment whose owners aim to maximize their wealth and increase the market value of their shares. Profitability is one of the most important goals pursued by commercial banks. The profitability of a commercial bank is essential to its survival and continuity, and it is a source of confidence for all depositors and lenders creditors of the bank (Qasimi, 2018).

Profitability can be defined as (the ability to invest money to achieve returns from its use) (Zahir & Muhammad, 2018b), the economic concept of profit is the amount of change in the net value of an economic unit over a certain period of time. Profitability is essential to the survival and continuity of institutions and the goal of investors and an indicator that accuses creditors when dealing with the institution, which is also an important tool to measure the efficiency of management in the use of resources in its possession (Hamad & Naji, 2017), and in accounting terms, profitability is defined as increasing total revenues over total costs during a certain period of time (Al-Nuaimi & Al-Houri, 2021). The bank's profitability is an indicator of the efficiency of the bank's management through the ability of the bank's management to manage operational operations (Zahir & Muhammad, 2018a), so the ability of the bank's management in its operational and financial performance to achieve the required return (Mia et al., 2023). It is an indicator of the bank's competitive position in the banking markets and in the quality of its management (Al-Eitan et al., 2022), so banks are interested in the most important objectives, which is to reach profitability as the basis through which they maintain their position in the market and achieve competition and stability, which is also an important performance to measure the efficiency of management in the use of available resources in order to achieve the best possible return for their owners (Rokhmat et al., 2023).

Banking profitability is defined as "the relationship between the profits achieved by banks and the investments that contributed to achieving these profits. Profitability is considered a goal for banks and a measure to judge the efficiency of management in its use of its resources." (Al-Amin & Al-Siddiq, 2021). The terms profitability and profitability are used interchangeably, but in reality, there is a difference between the two (Cho et al., 2023). Profitability is an absolute term, while profitability is a relative concept (Gazi et al., 2022; Rastogi et al., 2022; Lustiana et al., 2023). However, they are closely linked and overlapping between them, with distinct roles in business (Islam, 2023). Profitability refers to the total income obtained by the bank during a certain period of time, while profitability refers to the bank's operating efficiency, that is, the ability to obtain a sufficient return from the capital of the business process (Zahir & Habib, 2021; Wahyuni et al., 2023).

The bank's profitability is affected by a number of external factors, including internal and external factors that all banks operating in the sector are exposed to, which cannot be controlled, while internal factors are controllable, which the management must control by adopting policies and procedures that will have a positive impact on profitability. The most important of these factors affecting profitability (ownership right, liabilities, volume, liquidity, cash flows, investments, deposits) (Isayas, 2022; Engida, 2023; Kanapiyanova et al., 2023).

5. Methodology of the Study

5.1 Research Hypotheses

The hypothesis of the research is to analyze the practical side through the use of financial indicators related to credit risk, liquidity and profitability. Then a simple statistical analysis is performed to find the arithmetic mean, median, and standard deviation. Knowing which indicators are the most important relative. Which one has a high standard deviation?

5.2 Research community and sample

The Trade Bank of Iraq (TBI) was chosen as a sample for the study because it is one of the most important commercial banks in Iraq and has many internal and external banking transactions, in addition to that it is among the banks contracted with the government to grant the salaries of employees working in different sectors and therefore it is one of the most banks granting loans to employees as well as traders, and the period from 2012-2021 was taken within the time limits of research of 10 years, which is a sufficient period to see what the bank was exposed to from credit risks. This period was characterized by economic fluctuations of recession and economic recovery, which makes it a good period to know the bank's ability to face credit risks.

5.3 Metrics used in research

The table shows the measures used in the research:

Table (1) shows the standards used in the research

variable type	metrics used	Source
credit risk CR (Independent variable)	CR 1 = Total Loans / Total Assets	(Ahmadyan, 2018; Aisha, 2015; (AL-Mamlouk, 2104; (Said & Said, 2016)
	CR 2 = Non-performing loans / Total loans	
	CR 3 = Loan Losses / Total Loans	
	CR 4 = Loan Loss Reserve / Total Loans	
	CR 5 = Total Loans / Total Deposits	
	CR 6 = The ratio of nonperforming assets to total loans and leases	
	CR 7 = net charge-offs of loans / total loans and leases	
	CR 8= the annual provision for loan losses / total loans and leases or to equity capital	
	CR 9 = Th allowance for loan losses / total loans and leases or to equity capital	
	CR 10 = nonperforming loans /nonperforming loans and equity capital	
	CR 11 = foreign currency loans / the total loans	
Liquidity L Independent variable:	L1= cash / total assets	(Qassem Ali Omran, 2019; AbdulHameed & Nazzal, 2020; Al-Noweran, 2019)
	L2= cash + short-term investment / total assets	
	L3= (cash on hand + cash at the central bank + balances with other banks) / total deposits	
	L4= (Cash at the Central Bank) / Total Deposits	
	L5= (primary reserves + secondary reserves) / total deposits	
	L6= current assets-current liabilities	
	L7 = current assets / current liabilities	
	L8= (cash + negotiable securities + receivables) / current liabilities	
	L9= cash / current liabilities	
	L10= current assets / average daily operating expenses	
	L11= net cash flow from operating activities / cash outflow from investing and financing activities	
	L12= interest on debt / net cash flow from operating activities	
	L13= cash flow from operating activities / current liabilities	

Profitability P (dependent2)	L14 = net cash flow from operating activities / total liabilities	
	L15 = net cash flow / long-term debt	
	P1 = revenue / total assets	(Abbas et al,
	P2 = revenue/total equity	2019; Abbas et
	P3 = earnings before interest and tax / working capital	al, 2018; Said
	P4 = price per share / earnings per share	& Said, 2016)
	P5 = market price per share / book value per share	
	P6 = total equity / traded shares	

The table is prepared by the researchers

6. credit risk analysis results

From Table (2), we note the results reached regarding the credit risk indicators of the Trade Bank for a period of ten years.

Table (2) Credit Risk Indicators of Trade Bank of Iraq (TBI)

Ratios	2012	2013	2014	2015	2016
CR1	0.79	1.18	1.59	6.83	6.90
CR2	3.98	2.96	2.71	3.42	2.47
CR3	39.71	25.00	10.12	2.88	2.73
CR4	242.39	154.22	85.35	3.15	4.10
CR5	2.06	4.09	5.91	31.31	24.12
CR6	0.67	0.78	0.55	0.13	0.12
CR7	1.31	1.25	1.03	1.00	1.00
CR8	-0.07	0.30	0.20	-0.03	-0.09
CR9	21.24	3.33	3.54	3.61	3.71
CR10	21.30	3.48	4.15	4.64	3.58
CR11	0.07	0.07	0.07	0.07	0.10
Ratios	2017	2018	2019	2020	2021
CR1	6.71	7.03	7.15	7.03	9.76
CR2	2.21	2.75	3.24	2.46	2.93
CR3	0.86	0.92	1.20	1.13	1.04
CR4	1.05	1.32	0.69	0.69	1.84
CR5	22.96	23.22	21.93	15.91	31.25
CR6	0.02	0.86	0.59	0.43	0.06
CR7	1.03	1.93	1.70	1.05	1.36
CR8	-0.29	-0.03	0.25	-0.28	0.02
CR9	3.49	3.19	2.43	2.66	0.23
CR10	3.38	3.99	3.68	3.81	0.38
CR11	0.10	0.09	0.09	0.09	0.10

The table is prepared by the researchers

6.1 Credit Risk:

Each ratio will be explained in detail with an explanation for each indicator in case it increases and decreases as follows:

- 1. Ratio of total loans to total assets (CR1):** The extent to which the bank's lending activities are financed by its own capital against external borrowing. Banks borrow money from depositors and other lenders and use this money to make loans to individuals, companies and other entities. Loans generate interest income, which is the bank's primary source of revenue. The ratio of total loans to

total assets is an important measure for banks because it measures the ratio of the bank's assets that are restricted to loans. A higher ratio may indicate that the bank is taking on more risk by lending a higher percentage of its assets, while a lower ratio may indicate that the bank is becoming more conservative in its lending activities. Through Table (2), we note that this percentage, which I gave the symbol (CR1), has begun to increase significantly and reached its highest level in 2021. This indicates that the bank is in a good position and gives loans more often and did not face any strong risks during this period. We note that this percentage has risen strongly since 2015. This indicates the direction of the bank's policy towards granting loans.

2. **The ratio of non-performing loans to total loans (CR2):** is a financial ratio used to measure the quality of a bank's loan portfolio. Non-performing loans are loans that are non-performing or at risk of default. These loans do not achieve the expected income level of a bank, and may also require additional resources to manage or recover. This ratio provides an indication of the overall quality of the bank's loan portfolio. A higher ratio indicates that the bank has a higher percentage of non-performing loans, which may indicate that the bank bears higher levels of risk. The interpretation of this ratio can vary depending on the context. For example, a high percentage may indicate that the bank is facing financial difficulties, and may be at risk of bankruptcy. Conversely, a low ratio may indicate that the bank is effectively managing its loan portfolio, and may be a sign of financial stability. However, it is important to note that the minimum of what is considered a "good" or "bad" ratio can vary depending on factors such as the size of the bank, the nature of its loan portfolio, and prevailing economic conditions. From Table (2), we note that the percentage of non-performing loans did not rise to a dangerous level, which does not pose a risk to the bank of the study sample, as it enjoys a large capital that reached at the end of 2021 to (250) billion Iraqi dinars. In addition, the current bank has other investments.
3. **The ratio of loan losses to total loans (CR3):** is a financial ratio used to measure the credit risk associated with a bank's loan portfolio. Loan losses represent the amount of money written off by the bank as uncollectible due to borrowers defaulting on their loans. By dividing loan losses by total loans, this ratio provides an indication of the overall credit risk associated with a bank's loan portfolio. A higher ratio indicates that the bank is experiencing higher levels of loan losses, which may indicate that the bank is taking on higher levels of credit risk. The interpretation of this ratio can vary depending on the context. For example, a high ratio may indicate that the bank has a riskier loan portfolio, which could lead to financial difficulty or bankruptcy if losses become too large. Conversely, a low ratio may indicate that the bank has a relatively secure loan portfolio and effectively manages credit risk. It is important to note that the minimum of what is considered a "good" or "bad" ratio can vary depending on factors such as the size of the bank, the nature of its loan portfolio, and economic conditions. We note from Table (2) that the percentage of loan losses was high from the year (2012-2014) and then decreased significantly, which indicates that the bank began to manage its money portfolio well and gives loans to individuals and entities with a good financial position.
4. **Loan Loss Reserve Ratio (CR4):** A loan loss reserve is an amount of money allocated by a financial institution to cover potential losses that may occur due to non-performing loans or loans that have not been repaid. The loan loss reserve is an important financial measure for banks and other lending institutions, because it reflects their ability to absorb potential loan losses without significantly affecting their financial stability. On the other hand, total loans are the total amount of loans that the institution has in its books. By dividing the loan loss reserve by total loans, we can determine the percentage of total loans held in reserve to cover potential losses. This metric is commonly referred to as the Cr and Z Loss Reserve Ratio. A high loan loss reserve ratio indicates that the institution has allocated more funds to cover potential losses, which can be considered a positive indicator of its financial stability and risk management practices. On the other hand, a lower loan loss reserve ratio may indicate a higher level of risk to the organization. We note from Table (2) that the loan losses reserve was high in the first three years where the bank was facing non-performing loans, but then began to reduce this percentage significantly. This may be due to the fact that the bank gives loans

with real estate guarantees or gives them at most to the employees and the employee's salary is continuous and guaranteed and this bank always gives loans to employees in the presence of another employee who guarantees the borrowing employee. If the borrowing employee fails to pay, the loan installment is taken with interest from the employee who guaranteed the borrower, and this is what we have already noted in the bank's policy.

5. **Total Loans to Total Deposits Ratio (CR5):** This ratio is generally known as the loan-to-deposit ratio. It represents the total amount of outstanding loans issued by the bank to its customers. These loans may include mortgages, personal loans, credit card debt and other forms of borrowing. Total deposits, on the other hand, represent the total amount of funds deposited by the bank's customers into their accounts. Deposits may include savings accounts, current accounts and certificates of deposit (CDs). The loan-to-deposit ratio provides insight into the bank's lending practices and financial stability. A high loan-to-deposit ratio may indicate that the bank is lending a larger portion of its deposits, which may increase profitability but also increase the risk of default on loans. On the other hand, a low loan-to-deposit ratio may indicate that the bank is holding more of its deposits, which may provide greater financial stability but may also limit its profitability. In general, banks aim to maintain a loan-to-deposit ratio that is in line with their business objectives and regulatory requirements. The optimal ratio will vary depending on factors such as the size of the bank, market conditions and risk appetite. In general, the loan-to-deposit ratio can provide valuable information to investors, regulators and other stakeholders in evaluating a bank's financial performance. From Table (2), we find that the bank began to expand very significantly in granting loans and reached its peak in 2021. As the sample bank of the study began to invest heavily in its deposits.
6. **The ratio of non-performing assets to total loans and leases (CR6):** This equation calculates the ratio of non-performing assets to the total loans and leases of the bank. This ratio is commonly known as the non-performing loan ratio (NPL). Non-performing assets are loans or leases that are in default or do not generate income for the bank because the borrower is late in paying his payments. These assets are often referred to as "bad loans" or "non-performing assets" and can include overdue loans, restructured loans, seized property and assets that are under-valued. On the other hand, gross loans and leases represent the total amount of outstanding loans and leases issued by the bank to its customers. The NPL ratio is an important measure of a bank's credit quality and risk management practices. A high NPO ratio indicates that a larger portion of the bank's assets and leases are not working as expected, which can be a sign of poor credit underwriting or economic conditions. On the other hand, a low NPO ratio indicates that the bank has a healthier asset portfolio. Regulators and investors often monitor the proportion of non-performing assets as an indicator of a bank's financial health. A high loan-to-existence ratio can lead to increased regulatory scrutiny, and can also affect a bank's profitability and ability to raise money in capital markets. Overall, the NPO ratio is an important measure of the credit risk assessment of a bank's loan portfolio and its ability to manage and mitigate potential losses from NPOs. We note from Table (2) that the ratio of non-performing assets to total loans and rent is very low and has decreased significantly in recent years, which indicates that the bank has a high ability to manage assets in an excellent manner. In 2021, the ratio was very low, reaching (0.06%).
7. **Net charge-offs of loans tototal loans and leases (CR7):** This equation calculates the net discount ratio of the bank, which is the ratio of net discounts on loans to total loans and leases. Net reductions are loans that the bank has written off as uncollectible and removed from the balance sheet, net of refunds. Deductions occur when a borrower defaults on their loan payments and the bank has exhausted all efforts to collect the debt. Gross Loans and Leases, as mentioned above, represents the total amount of outstanding loans and leases issued by the Bank to its customers. The net discount ratio is a key indicator of a bank's credit quality and loan loss provisions. A high net debit ratio indicates that the bank has higher credit losses and is writing off more loans. This may be due to economic conditions, poor underwriting standards or other factors. On the other hand, a lower net debit ratio indicates that the bank has lower credit losses and has better credit risk management practices. Regulators and investors often monitor the net discount ratio as an indicator of a bank's

financial health and credit risk management. Overall, the net discount ratio is an important measure to assess the credit risk of a bank's loan portfolio and its ability to manage and mitigate potential losses from loan defaults. It is noted from Table (2) that the losses were very few, as the highest percentage in (2018) did not exceed (1.93%) and this indicates the financial health enjoyed by this bank.

8. Ratio of the annual provision for loan losses/total loans and leases or to equity capital (CR8):

This equation represents a common financial ratio used in the banking industry to assess the adequacy of the bank's loan loss reserves. The ratio is calculated by dividing the annual provision for loan losses either by the total loans and rents or the equity capital. Loan loss provision is the amount of money that a bank allocates to cover potential losses from loans that may default on repayment. It is an expense that is recorded in the bank's income statement. The provision depends on various factors, including the bank's historical experience of loan loss, the current economic environment, and the credit quality of the bank's loan portfolio. Total loans and leases refer to the amount of money the bank has lent to its customers. They include both active and non-performing loans. Share capital is the amount of money the bank's owners have invested in the bank. It is a measure of a bank's financial strength and its ability to absorb losses.

The ratio can be interpreted in two ways:

- The ratio of the annual provision for loan losses to total loans and rents refers to the percentage of the bank's loan portfolio booked for potential losses. The high ratio suggests that the bank is more conservative in provisions for loan losses and may have a more cautious lending approach.
- The ratio of the annual provision for loan losses to equity capital indicates the bank's ability to absorb potential loan losses. The low ratio indicates that the bank has a stronger capital position and is better able to withstand potential loan losses.

In both cases, the ratio is used as a measure of bank risk management and financial health. Investors and regulators may view a bank with a high allocation of loans and rents or a low allocation of equity capital as riskier. We note from Table (2) that the percentage was very low and in some years the percentages came with a negative signal, and this indicates that the bank has a very strong capital and is highly able to bear losses.

9. Ratio of loan loss provision to (total loans +rents) or to equity (CR9): Total loans and rents refers to the amount of money that the bank lent to its customers. They include both active and non-performing loans. Share capital is the amount of money the bank's owners have invested in the bank. It is a measure of a bank's financial strength and its ability to absorb losses.

The ratio can be interpreted in two methods:

- The ratio of loan loss provision to total loans and rents refers to the percentage of the bank's loan portfolio covered by the loan loss provision. The high ratio suggests that the bank has more conservative provisions for loan losses and may be more cautious in its lending approach.
- Loan loss provision to equity ratio refers to a bank's ability to absorb potential loan losses. The high ratio indicates that the bank has a stronger capital position and is better able to withstand potential loan losses.

In both cases, the ratio is used as a measure of bank risk management and financial health. Investors and regulators may view a bank with a high allocation of loans and rents or a low allocation of equity capital as riskier. Conversely, a bank with low provisions for loans and leases or a high provision for equity capital may be seen as more conservative and financially sound. In both cases, the ratio is used as a measure of bank risk management and financial health. Investors and regulators may view a bank with a high allocation of loans and rents or a low allocation of equity capital as riskier. In our case study we adopted by dividing the provision for loan losses into the total loans set with rents, and the ratio has been very low especially in recent years. That is, the current bank has no reservation in granting loans, as we have noticed in recent years that the bank is starting to grant loans more and reduces the allocation of loan losses, so the bank will not depend on the strength of its capital.

10. Ratio of non-performing loans to equity (CR10): This equation represents the financial ratio that is used to assess the credit risk of the bank. The ratio is calculated by dividing the total amount of non-performing loans (NPLs) by the total of non-performing loans and equity capital. Non-performing loans are loans that are non-performing or likely to default. These loans are considered high-risk assets, and banks are required to set aside reserves to cover potential losses from these loans. Equity capital is the amount of money the bank's owners have invested in the bank. It is a measure of a bank's financial strength and its ability to absorb losses. The ratio can be interpreted as a measure of a bank's credit risk. A higher ratio indicates that the bank has a higher percentage of non-performing loans compared to its capital, which may indicate weaker credit risk management or higher exposure to borrowers or riskier industries. Conversely, a lower ratio indicates that the bank has a lower percentage of non-performing loans compared to its capital, which may indicate stronger credit risk management or less exposure to borrowers or risky industries. On the other hand, a bank with a low ratio may be seen as more conservative and financially strong. It is noted from Table (2) that the bank has a strong management to face credit risk and that the ratio of non-performing loans to non-performing loans and equity capital has been very low, especially in recent years.

11. The ratio of foreign currency loans to total loans (CR11): is a financial ratio used to assess a bank's exposure to foreign currency risk. The ratio is calculated by dividing the total amount of foreign currency loans by the total amount of loans. Foreign currency loans are loans in a currency other than the local currency of the bank. These loans are subject to foreign exchange risk, which is the risk that changes in exchange rates can affect the value of the loan and the bank's profitability. The high ratio of foreign currency loans to total loans indicates that the bank is more exposed to foreign exchange risk. The ratio can be interpreted as a measure of a bank's foreign currency risk management. A high ratio suggests that a bank may be more vulnerable to fluctuations in exchange rates and may be less effective at managing foreign currency risk. Conversely, the low ratio suggests that the bank may be less exposed to foreign currency risk and may be more effective at managing foreign currency risk. Investors and regulators use this ratio to assess the bank's financial situation and foreign currency risk. A bank with a high ratio of foreign currency loans to total loans may be seen as riskier and less financially sound. On the other hand, a bank with a low ratio may be seen as more conservative and financially strong with less exposure to foreign currency risk. It is noted from Table (2) that this percentage was very low for the ten years, and the reason for this is that when the bank gives loans in foreign currencies, it gives them to a few groups and be confident that they will pay the amount in foreign currency, as well as the bank is conservative in granting loans in foreign currencies because of the change in exchange rates, especially in the last three years where the exchange rate was unstable in Iraq due to political conditions.

6.2 Liquidity risk

Each ratio will be explained in detail with the reliance on Table (3), which shows the results of the rates with an explanation for each indicator in case it increases and decreases as follows:

Table (3) Liquidity Results of Trade Bank of Iraq (TBI)

Ratios	2012	2013	2014	2015	2016
L1	4.52	3.13	2.79	1.55	1.52
L2	42.17	31.48	54.01	42.07	43.61
L3	122.60	198.37	111.18	160.62	97.10
L4	89.89	161.24	99.19	116.43	79.54
L5	124.96	199.29	112.00	174.09	107.77
L6	64129825764	72392166711	249973339914	235835968067	273251070280
L7	142.69	152.36	251.60	267.63	294.23
L8	25.06	25.83	23.64	25.17	25.28
L9	8.83	7.59	7.60	4.58	4.57
L10	1768345.29	1535006.99	3192788.58	2992161.54	2771889.49
L11	315.68	-85.28	18.97	-341.95	48.76

L12	67.23	228.60	5.50	71.84	10.78
L13	8.79	4.18	101.63	6.18	43.27
L14	4.50	1.73	37.30	2.10	14.40
L15	15.69	2.94	58.92	3.17	21.42
Ratios	2017	2018	2019	2020	2021
L1	1.26	1.67	1.95	2.18	3.06
L2	52.89	56.88	57.73	41.44	51.27
L3	92.84	115.81	162.55	147.03	111.75
L4	57.73	102.55	132.47	122.24	66.92
L5	103.19	126.85	172.80	154.08	124.59
L6	141926799800	100000000000	67424080521	7754628020	119180482020
L7	15.92	162.50	138.01	102.51	160.26
L8	27.14	33.37	27.51	20.57	29.40
L9	3.45	4.63	4.94	4.35	7.93
L10	102537.52	1778897.52	1134693.63	946154.49	871081.70
L11	15.65	4.75	16.85	4359.30	86.53
L12	0.75	6.42	1.99	484.51	1.65
L13	96.06	98.05	71.50	0.66	66.34
L14	35.22	35.33	28.23	0.33	25.61
L15	55.12	48.38	33.53	0.43	22.93

The table is prepared by the researchers

1. **Cash to Total Assets Ratio (L1):** A high cash ratio indicates that a bank has more cash or cash equivalents relative to its total assets, which can be a positive sign for investors. This indicates that the bank has a stronger financial position and may be better able to meet its short-term liabilities. However, a very high liquidity ratio may indicate that the bank is not effectively servicing its assets to generate profits. On the other hand, a low cash ratio indicates that a bank has less cash or cash equivalents compared to its total assets, which can be a negative sign for investors. This may indicate that the bank has a weaker financial position and may be more likely to default on its short-term liabilities. However, a very low liquidity ratio may also indicate that the bank is effectively leveraging its assets to generate profits and grow its business. From our observation of Table (3), we note that this percentage was very low on the whole, and this indicates that the bank invests most of its money and the rest and thus may be unable to meet its short-term liabilities, the bank here enters into risky operations in order to generate more profits.
2. **The ratio of cash + short-term investment to total assets (L2):** measures the ratio of a bank's current assets (i.e., those expected to be converted into cash within one year) available to cover its current liabilities (i.e., those due within one year). The interpretation of the equation depends on the context and industry of the bank in question. In general, the current high ratio indicates that the bank has more current assets compared to its current liabilities, which can be a positive sign for investors. This indicates that the bank is better able to meet its short-term liabilities and has a stronger financial position. However, the current very high ratio may also indicate that the bank is not effectively servicing its assets to generate profits. On the other hand, the current low ratio indicates that the bank has fewer current assets compared to its current liabilities, which can be a negative sign for investors. This may indicate that the bank has a weaker financial position and may be more likely to default on its short-term liabilities. However, the current very low ratio may also indicate that the bank is effectively leveraging its assets to generate profits and grow its business. In short, the current ratio is a useful tool for assessing a bank's ability to meet its short-term liabilities and can provide valuable insights into its financial health. We note from Table (3) that this percentage is almost half over the ten years and this is good and that the bank is able to meet short-term liabilities and also invest the remaining half.

3. **Ratio of (cash on hand + cash at the central bank + balances with other banks) to total deposits (L3):** The interpretation of the equation depends on the context and regulatory requirements of the banking industry concerned. In general, a high cash reserve ratio indicates that the bank has a larger percentage of its total cash deposits or equivalent, which can be a positive sign for regulators and depositors. This indicates that the bank is better able to meet its short-term liabilities and has a stronger financial position. On the other hand, a low cash reserve ratio indicates that the bank has a lower percentage of its total cash deposits or its cash equivalent, which can be a negative sign for regulators and depositors. This may indicate that the bank's financial position is weaker and it may be more likely to default on its short-term liabilities. In short, the cash reserve ratio is a useful tool for assessing a bank's ability to meet its short-term liabilities and can provide valuable insights into its financial health. In Table (3), this percentage was very high and exceeded 100%, although in the previous equations, the cash rate was low. This indicates that the study sample bank has very high cash reserves with other banks as well as with the central bank, so it will be able to meet its short-term liabilities.
4. **Central Bank Cash to Total Deposits Ratio (L4):** This equation represents the calculation of a reserve ratio at the Central Bank, which is a ratio used by central banks to monitor the amount of reserves held by commercial banks at the Central Bank. A high central bank reserve ratio indicates that the bank has deposited a large amount of its reserves with the central bank, which can be seen as a sign of financial strength and stability. On the other hand, a low central bank reserve ratio may indicate that the bank is less stable and may be more vulnerable to economic shocks. We note from Table (3) that the reserve ratio with the Central Bank is only low in two years (2017, 2021) and this indicates that the study sample bank is unstable and that it resorted to withdrawing from its reserves to meet short-term liabilities.
5. **Ratio of (primary reserves + secondary reserves) to total deposits (L5):** This equation represents the calculation of the reserve ratio, which is used to determine the amount of reserves held by the bank to cover potential withdrawals from its customers. The numerator of the equation represents the total amount of reserves held by the bank, including primary reserves and secondary reserves. Primary reserves are the most liquid and easily accessible assets, such as cash and deposits held with the central bank, while secondary reserves are slightly less liquid assets, such as government securities or marketable short-term securities. Explaining this equation helps us understand how much bank deposits are held in reserves to cover potential withdrawals by customers. A high reserve ratio indicates that the bank holds a large amount of reserves to cover potential drawdowns, which can be seen as a sign of financial strength and stability. On the other hand, a low reserve ratio may indicate that the bank is less stable and may be more vulnerable to economic shocks. It is noted from Table (3) that the bank maintains high reserves with the Central Bank despite its decline in the last year, where it resorted to withdrawing from it, but it nevertheless remained within a good level.
6. **Current assets-current liabilities equation (L6):** This equation represents the working capital account of the bank and helps us to interpret this equation to understand the bank's ability to meet its short-term liabilities and finance its operations. Positive working capital indicates that the bank has sufficient current assets to cover its current liabilities, which can be considered a sign of financial health and stability. Passive working capital, on the other hand, indicates that the bank has more current liabilities than current assets, which may be a sign of financial difficulty and may require further analysis. It is noted from Table (3) that the amount of working capital has been within good levels throughout these years.
7. **Ratio of current assets to current liabilities (L7):** Interpreting this equation helps us understand a bank's short-term liquidity. A current ratio of more than 1 indicates that the bank has sufficient current assets to cover its current liabilities, which can be considered a sign of financial health and stability. The current high ratio is generally considered better because it means that the bank has more liquidity to meet its short-term liabilities. However, the current very high ratio may also indicate that the bank is not effectively using its existing assets to generate revenue. On the other hand, the current ratio of less than 1 indicates that the bank may have difficulty meeting its short-term liabilities

with its current assets alone, which can be considered a sign of financial difficulty. The current low ratio may indicate that the bank is struggling to generate revenue or has a large amount of short-term debt. It is noted from Table (3) that the percentage has been very good over the previous years, but only in (2017) was it low compared to other years.

8. **Ratio of (cash + negotiable securities + receivables) to current liabilities (L8):** The current ratio of 1 or higher indicates that the bank has sufficient current assets to cover its current liabilities. A ratio of less than 1 indicates that the bank may have difficulty meeting its short-term liabilities. To explain this equation, you should look at the current assets of a bank, which include cash, negotiable securities, and debtors, and divide that by their current liabilities. The resulting ratio indicates the bank's liquidity position and its ability to meet its short-term liabilities. It should be noted that while the current ratio is a useful measure of liquidity, it is important to consider ratios and other financial factors when assessing a bank's financial health. It is noted from Table (3) that this percentage came at an average level where we infer that the bank is able to meet short-term liabilities if they are not very high amounts.
9. **Cash/Current Liabilities Ratio (L9):** A cash ratio of 1 or higher indicates that the bank has enough cash and cash equivalents to cover its current liabilities. A ratio of less than 1 indicates that the bank has had difficulty meeting its short-term liabilities through cash and cash equivalents alone. To explain this equation, you must look at the cash and cash equivalents of a bank and divide that by its current liabilities. The resulting ratio refers to a bank's liquidity position and its ability to meet its short-term liabilities using only cash and cash equivalents. It should be noted that while the cash ratio is a useful measure of liquidity, it is important to consider ratios and other financial factors when evaluating the financial health of a bank. In particular, a high cash ratio may also indicate that the bank has a lot of liquidity that can be invested or used to generate more profits. Therefore, it is necessary to look at the liquidity ratio in conjunction with other metrics and financial factors to get a complete picture of the financial health of a bank. It is noted from Table (3) that these ratios were weak at the level of ten years compared to the financial position of the bank, and this was confirmed in a number of previous indicators.
10. **Ratio of current assets to the average daily operating expenses (L10):** This equation is used to calculate the operating cycle, which is a measure of how long it takes a bank to convert its current assets into cash by selling its products or services. The operating cycle is calculated by dividing the current assets of the bank by the average daily operating expenses. A shorter operating cycle indicates that a bank can convert its existing assets into cash more quickly and efficiently, which is a generally positive sign. On the other hand, a longer operating cycle suggests that a bank may have difficulties generating cash from its operations, which could be a warning sign. It should be noted that the operating cycle is just one of many financial ratios and factors that can be used to assess the financial health of a bank. Other factors, such as profitability, leverage, and cash flow, should also be considered when assessing a bank's overall financial strength. It is noted from Table (3) that the operating cycle is very long during the ten years, which confirms that the bank has difficulty in converting its assets into cash quickly.
11. **The ratio of net cash flow from operating activities to cash outflow from investing and financing activities (L11):** is a formula used to calculate the cash flow coverage ratio, which is a measure of a bank's ability to cover its investments and financing activities using cash generated from its operations. The cash flow coverage ratio is calculated by dividing the net cash flow of the bank from operating activities by the cash outflows from investing and financing activities. The result indicates how often the operating cash flow of a bank can cover its investments and the financing of cash outflows. A high cash flow coverage ratio indicates that the bank has generated sufficient cash from its operations to cover its investment and financing activities, which is a generally positive sign. On the other hand, a low cash flow coverage ratio indicates that the bank may have difficulties in generating sufficient cash from its operations to support its investment and financing activities, which can be a warning sign. To explain this equation, you can look at the net cash flow of a bank from operating activities, which represents cash generated from its underlying business operations, and

divide that by cash outflows from investing and financing activities, which represents cash spent on investments and financing activities. The resulting ratio refers to the number of times a bank's operating cash flow can cover its investments and the financing of cash outflows. It is noted from Table (3) that the coverage ratios of cash flow are unstable and began to decline in recent years and came at a negative value for two years (2013, 2015), but rose slightly in 2021.

12. **The ratio of interest on debt to net cash flow from operating activities (L12):** is a formula used to calculate the interest coverage ratio, which is a measure of a bank's ability to cover interest payments using cash generated from its operations. The result indicates how often the bank's operating cash flow can cover interest payments. A high interest coverage ratio indicates that the bank has generated enough cash from its operations to cover interest payments, which is a generally positive sign. On the other hand, the low interest coverage ratio suggests that the bank may have difficulties generating sufficient cash from its operations to support interest payments, which could be a warning sign. To explain this equation, you should look at a bank's interest on debt, which represents the cost of borrowing money, and divide it by the net cash flow from operating activities, which represents the cash generated from its underlying business operations. The resulting ratio refers to the number of times the operating cash flow of a bank can cover interest payments. It should be noted that the interest coverage ratio is just one of many financial ratios and factors that can be used to assess a bank's financial health. Other factors, such as profitability, liquidity and solvency, should also be considered when assessing a bank's overall financial strength. In addition, it is important to note that a high interest coverage ratio does not necessarily mean that the bank is financially healthy, as it may still have other financial problems such as high debt levels. We note from Table (3) that this percentage began to decrease significantly over time, especially in 2021, that is, the bank may go through a future crisis and be unable to cover interest payments.
13. **cash flow from operating activities to current liabilities (L13):** A formula used to calculate the operating cash flow ratio, which is a measure of a bank's ability to meet its short-term financial liabilities using cash generated from its operations. A higher operating cash flow ratio indicates that the bank has generated enough cash from its operations to cover its short-term liabilities, which is a generally positive sign. On the other hand, a low operating cash flow ratio indicates that the bank may have difficulties generating sufficient cash from its operations to support its short-term liabilities, which can be a warning sign. To explain this equation, you must look at the cash flow of a bank from its operating activities, which represents the cash generated by its underlying business operations, and divide that by its current liabilities, which represent its short-term liabilities. The resulting ratio refers to the percentage of the bank's short-term liabilities that can be covered by cash generated from its operations. It should be noted that the operating cash flow ratio is just one of many financial ratios and factors that can be used to assess a bank's financial health. Other factors, such as profitability, liquidity and solvency, should also be considered when assessing a bank's overall financial strength. In addition, it is important to note that a high operating cash flow ratio does not necessarily mean that the bank is financially healthy, as it may still have other financial problems such as high debt levels or low profitability.
14. **The ratio of net cash flow from operating activities to total liabilities (L14):** is a formula used to calculate the cash flow to total debt ratio, which is a measure of a bank's ability to repay its total debt using cash generated from its operations. The ratio of cash flow to total debt is calculated by dividing the net cash flow of a bank from operating activities by the total liabilities. The result refers to the proportion of a bank's total debt that can be covered by cash generated from its operations. High cash flow refers to the ratio of total debt and that the bank has generated enough cash from its operations to cover its total debt, which is a generally positive sign. On the other hand, a decrease in cash flow to the total debt ratio indicates that the bank may have difficulties in generating sufficient cash from its operations to support its total debt liabilities, which could be a warning sign.

To explain this equation, you should look at the net cash flow of a bank from its operating activities, which represents the cash generated by its underlying business operations, and divide that by its total liabilities, which is equal to all its outstanding debts and liabilities. The resulting ratio refers to the

proportion of a bank's total debt that can be covered by cash generated from its operations. It is important to note that high cash flow to total debt ratio does not necessarily mean that the bank is financially healthy, as it may still have other financial problems such as low profitability or high debt levels relative to its cash flow. It is noted from Table (3) that this percentage was fluctuating for the study sample bank and is unstable, and this confirms that there is an imbalance in the net operating flow of the bank and must be addressed.

15. **The ratio of net cash flow to long-term debt (L15):** is a measure of a bank's ability to repay its long-term debt using cash generated from its operations. The result refers to the ratio of a bank's long-term debt that can be covered by cash generated from its operations. High cash flow refers to the ratio of long-term debt that a bank generates enough cash from its operations to cover its long-term debt, which is generally a positive sign. On the other hand, the low cash flow to long-term debt ratio indicates that the bank may have difficulties generating sufficient cash from its operations to support long-term debt liabilities, which can be a warning sign. It is noted from Table (3) that the bank suffered some setbacks in some years but began to improve since 2021.

6.3 Profitability

Each percentage will be explained in detail based on Table (4) with an explanation of each indicator in case of increase and decrease as follows:

Table (4) Results for profitability Of Trade Bank of Iraq (TBI)

Ratios	2012	2013	2014	2015	2016
P1%	2.68	4.25	1.83	1.75	1.79
P2%	5.50	7.23	2.88	2.64	2.68
P3%	10.12	5.48	3.70	2.97	3.07
P4	13.71	11.02	21.62	18.97	14.00
P5	0.85	0.74	0.70	0.50	0.37
P6%	1168.53	1263.64	2923.92	1431.70	720.41
Ratios	2017	2018	2019	2020	2021
P1%	2.15	2.45	1.45	5.75	2.54
P2%	3.40	3.82	2.40	11.521	4.13
P3%	1.72	2.10	0.97	4.58	1.30
P4	11.00	9.77	14.62	3.24	11.15
P5	0.38	0.34	0.31	0.35	0.45
P6%	845.18	5155.40	85527.54	3031822.47	1211257.35

The table is prepared by the researchers

1. **The ratio of revenue to total assets (P1):** It measures the bank's efficiency in using its assets to generate revenue. The high turnover ratio indicates that the bank achieves a relatively large amount of revenue for every dollar of its assets. This can be a positive sign, as it indicates that the bank is servicing its assets efficiently and effectively. However, a very high percentage may also indicate that the bank has a low or underinvested asset base in its operations, which may limit its growth potential. On the other hand, a low turnover of assets indicates that the bank may have struggled to generate income from its assets or may have excess assets that are not being used efficiently. This can be a negative sign, as it may indicate that the bank is not effectively servicing its resources. In short, the asset turnover ratio is a useful tool for assessing a bank's operational efficiency and can provide valuable insights into its financial health. However, it is important to interpret the ratio in the context of the industry and the specific circumstances of the bank. In Table (4), we find that this percentage is fluctuating and unstable, but it remains within the reasonable level for the study sample bank.
2. **Revenue to Total Equity Ratio (P2):** This ratio is known as the equity turnover ratio. Measures the bank's efficiency in using its equity to generate revenue. The interpretation of the equation depends

on the context and industry of the bank in question. In general, a high turnover of equity indicates that the bank generates a relatively large amount of revenue for every dollar of equity it has. This can be a positive sign, as it indicates that the bank is servicing its shares efficiently and effectively. However, a very high ratio may also indicate that the bank has high leverage, with a great deal of debt financing, which can be risky in certain situations. On the other hand, a low equity turnover ratio suggests that a bank may struggle to generate equity income or may have a capital surplus that is not being used efficiently. This can be a negative sign, as it may indicate that the bank is not effectively servicing its resources or its financial performance may be poor. In short, the equity turnover ratio is a useful tool for assessing the operational efficiency of a bank and can provide valuable insights about its financial health. However, it is important to interpret the ratio in the context of the industry and the specific circumstances of the bank. We note from Table (4) that the percentage is in a state of continuous rise and fall and this indicates that the bank is facing internal problems in the use of equity and here it needs to reconsider the bank's strategy.

3. **The earnings before interest and tax to working capital ratio (P3):** is a financial ratio known as the working capital turnover ratio. It measures the bank's efficiency in using its working capital to generate profits before interest and taxes. The interpretation of the equation depends on the context and industry of the bank in question. In general, a high working capital turnover ratio indicates that the bank generates a relatively large amount of earnings before interest and taxes for every dollar of its working capital. This can be a positive sign, as it indicates that the bank is effectively using its working capital to generate profits. However, a very high percentage may also indicate that the bank does not have sufficient working capital to support its operations or may be exposed to excessive risk. On the other hand, a low working capital turnover ratio indicates that the bank may have struggled to realize EBITR from its working capital or may have surplus working capital that is not being used efficiently. This can be a negative sign, as it may indicate that the bank is not effectively servicing its resources or its financial performance may be poor. In short, the Working Capital Turnover Ratio is a useful tool for assessing the operational efficiency of a bank and can provide valuable insights into its financial health. However, it is important to interpret the ratio in the context of the industry and the specific circumstances of the bank. We note from Table (4) that the bank is inefficient in the use of working capital, especially in the last year.
4. **Price-per-share to earnings-per-share ratio (P4):** is one of the most commonly used valuation metrics in the financial industry, measuring how much investors are willing to pay for every dollar of profit made by the bank. The interpretation of the equation depends on the context and industry of the bank in question. In general, a high P/E ratio indicates that investors are willing to pay more for every dollar of profit made by the bank, which can be a positive sign. This can indicate that investors are confident in the future growth prospects of a bank, and are willing to pay a premium on its shares. However, a very high price-to-earnings ratio per share may indicate that the stock is overvalued and may be subject to price correction. On the other hand, a low P/E ratio indicates that investors are not willing to pay the same amount for every dollar of profit made by the bank, which can be a negative sign. This may indicate that investors are not confident about the future growth prospects of a bank, or that a stock is undervalued and may be a good investment opportunity. In short, the price-to-earnings ratio per share is a useful tool for assessing a bank's valuation and can provide valuable insights into investor sentiment. It is noted from Table (4) that the percentage is reasonably high, although it decreased in 2020, but it rose again reasonably.
5. **The ratio of market price per share to book value per share (P5):** is a financial ratio known as the ratio of price to book value per share. It is another widely used valuation measure in the financial industry, measuring how much investors are willing to pay for each dollar of assets owned by the bank. The high price-to-value ratio indicates that investors are willing to pay more for every dollar of assets held by the bank, which can be a positive sign. This can indicate that investors are confident in the future growth prospects of a bank, and are willing to pay a premium on its shares. However, a price-to-value ratio that is too high may indicate that the stock is overvalued and may be subject to a price correction. On the other hand, the price-to-value ratio indicates that investors are not willing to

pay the same amount for every dollar of assets owned by the bank, which can be a negative sign. This may indicate that investors are not confident about the future growth prospects of a bank, or that a stock is undervalued and may be a good investment opportunity. In short, the price-to-value ratio is a useful tool for assessing a bank's valuation and can provide valuable insights into investor sentiment. It is noted from Table (4) that the percentage is low over the ten years, and here the bank must pay attention and develop plans to address this matter.

6. **Total Equity to Traded Shares Ratio (P6):** The equation of total equity to traded shares is a financial ratio known as the book value of each share. It measures the net worth of the bank's assets for each of its outstanding shares. The interpretation of the equation depends on the context and industry of the bank in question. In general, a higher book value of a stock indicates that the bank has a higher net worth of assets per share, which can be a positive sign for investors. This indicates that the bank has a solid financial basis and may be less risky to invest in. However, the very high book value of the stock may indicate that the bank is not effectively servicing its assets to make profits. On the other hand, a lower book value per share indicates that the bank has a lower net worth of assets per share, which can be a negative sign for investors. This may indicate that the bank has a weaker financial basis and investing in it may be riskier. However, a very low book value per share may also indicate that the bank is undervalued and may be a good investment opportunity. It is noted from Table (4) that this percentage is very high over the ten years and this indicates that the bank has a very solid financial basis.

7. Dispersion metrics analysis

Table (5) shows the arithmetic means, median, and standard deviations for credit risk. It is noted that the highest arithmetic average was for (CR4, CR5), which means that these indicators are important and have a direct impact on the bank's work. We also find that the standard deviation was very high for each of (CR5). This confirms the existence of a dispersion in the values of these. And this confirms that the bank has a high bid loss reserve capable of facing crises during the ten-year period, and this is what made the bank expand in granting loans higher than the value of the deposits it has.

Table (5) results of the arithmetic mean, median, and standard deviation of credit risk

ratios	Arithmetic mean	Mediator	standard deviation
CR1	5.497	6.865	3.106971
CR2	2.913	2.84	0.523706
CR3	8.559	1.965	13.30357
CR4	49.48	2.495	85.22686
CR5	18.276	22.445	10.82597
CR6	0.421	0.49	0.315399
CR7	1.266	1.15	0.323151
CR8	-0.002	-0.03	0.202803
CR9	4.743	3.41	5.887684
CR10	5.239	3.745	5.758521
CR11	0.085	0.09	0.01354

We notice from Table (6) that most of the arithmetic averages were very high, and this means that these indicators are all of relative importance to the study sample bank, while the standard deviation was very high for each of (L3, L4, L5, L7, L13). This confirms the existence of a dispersion in the indicators used. This means instability in liquidity during the time period of the study sample.

Table (6) results of the arithmetic mean, median, and standard deviation of liquidity

ratios	Arithmetic mean	Mediator	standard deviation
L1	2.363	2.065	1.010039

L2	47.355	47.44	8.462086
L3	131.985	119.205	33.87692
L4	102.82	100.87	31.4443
L5	139.962	125.905	32.94076
L6	1.33	1.1	9.05
L7	168.771	156.31	83.08977
L8	26.297	25.555	3.427808
L9	5.847	4.785	1.911213
L10	1709356	1651676	1011662
L11	443.926	17.91	1385.136
L12	87.927	8.6	156.1951
L13	49.666	54.805	42.19238
L14	18.475	20.005	15.47262
L15	26.253	22.175	21.93962

As for profitability, we find from the table (7) that the arithmetic mean was not very high compared to the indicators of liquidity and credit risk. That is, the bank is making good profits. However, we find that the indicator (P6) was very high compared to the rest of the indicators. This indicates that the bank has a solid financial foundation and it may be less risky to invest in it. This is confirmed by the index ratio (P4) and this confirms that investors are willing to pay a higher value for the bank's shares in order to invest in it. Therefore, it is preferable for the bank, the study sample, to offer additional shares to the market. And re-price the shares.

Table (7) results of the arithmetic mean, median, and standard deviation of liquidity

Ratios	Arithmetic mean	Mediator	standard deviation
P1	2.664	2.3	1.338865
P2	4.6201	3.61	2.852266
P3	3.601	3.02	2.701528
P4	12.91	12.43	5.066515
P5	0.499	0.415	0.193818
P6	434211.6	2177.81	987761.3

7. Conclusion

By discussing the results in the practical aspect, we find that the bank tends to enter into risks through the high ratio of total loans to assets. In addition, the bank manages the loan portfolio well, as the percentage of non-performing loans is constantly decreasing and has not reached a stage that poses a risk to the bank or its intervention in the bankruptcy stage. The bank has a good management capable of managing loan losses and has the competence to manage its portfolio of funds. One of the issues that is considered a weakness of the bank is that the ratio of loan reserves to total loans began to decrease significantly and reached the lowest levels in recent years, and in the event that the bank faced a large loss represented by the inability of large borrowers to pay due to circumstances that may face it, this is reflected in a significant damage to the bank and affects its financial structure.

We also noticed that the bank has begun to expand the granting of loans in recent years compared to the deposits it has. This is due to the large amount of money deposited with the bank, which made the bank looking for a source to invest the depositors' money to be able to pay the interest on the deposits. Here, the bank must diversify its forms instead of relying heavily on loans, and invest in and lease real estate projects. The bank should also raise the annual allocation for loan losses as they have begun to decrease in recent years. We suggest that the bank tend to grant loans in foreign currency more, and that the repayment of the loan with interest in local currency based on the exchange rate fixed on the date of

granting the loan approved by the Central Bank. In order to contribute to the infusion of foreign currency to the market through borrowers and helps to stabilize exchange rates, preferably these loans are short-term and do not exceed 30 thousand dollars. The bank invests all its funds, which may be a reason for its inability to meet short-term liabilities and may resort to withdrawing funds held by other banks or selling its investments. The bank should also increase cash held as a reserve at the central bank, because the bank's cash-to-liabilities ratio has begun to decline in recent years and it may face a liquidity deficit in the future. The bank in its investments in loans began to enter a larger stage, which requires the existence of primary and secondary reserves or hold quickly convertible and desirable securities or have a reserve of gold or commercial real estate investments easy to convert to cash when the desire to sell quickly without loss. It is necessary for the bank to have assets that are easy to convert into cash. Also, the cash flow ratio from operating activities is unstable and the bank does not generate sufficient cash. In addition to the fact that the bank will be unable to pay the deposit interest due to the decline in operational activities, and it is necessary for the bank to conduct a restructuring of its capital again, as well as the price of shares must be corrected, and make its shares desirable in trading in global markets and that requires the use of financial experts to implement these new changes.

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