THE EFFECT OF CREDIT RISK IN THE CREDIT CAPACITY AN ANALYTICAL STUDY OF A SAMPLE OF BANKS LISTED ON THE IRAQ STOCK EXCHANGE FOR THE PERIOD (2011-2020)

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Abstract:

The aim of the research is to show the impact of credit risks, which vary in degree of severity from one bank to another, according to the nature of the activity practiced by the bank, on the credit capacity of a sample of banks listed in the Iraq Stock Exchange, as the research community is represented in the Iraq Stock Exchange, while the research sample is represented by (10) banks listed on the Iraq Stock Exchange represented by (Commercial bank of Iraq, Bank of Baghdad, Middle East Bank, Iraqi Investment Bank, United Investment Bank, National Bank of Iraq, Sumer Commercial Bank, Khaleej Commercial Bank, Ashur International Bank, Mansour Bank investment) for the period (2011-2020), and the independent variable was represented by credit risk, while the dependent variable was represented by credit capacity indicators, which are the non-performing loans index to total loans, the loan loss allowance index, and to analyze and test the research hypotheses, the statistical program SPSS was used to identify the correlation and impact relationships between the research variables through tests (F, T, R2), and the research reached a set of conclusions, the most important of which was that the analysis of the relationship between credit risk and its impact on indicators of credit ability showed the existence of a direct and significant correlation, as the higher the credit risk, the more credit ability indicators were affected by the increase, and vice versa the research also recommended the necessity of emphasizing that the bank's credit department adopts a moderate credit policy that works to achieve a balance between the profits that the bank seeks to achieve by investing depositors' money in the form of loans and the risks that the bank may be exposed to as a result of investing that money.

Keywords: credit risk, credit capacity.

INTRODUCTION:

The banking sector is one of the important sectors as it is the main link in the development of the financial system and a reflection of the development of the economic systems of any country, so banks are facing a variety of banking risks that vary in degree of severity from one bank to another according to the nature of the activity practiced by the bank, and with the increase of these risks it became it is imperative for the management of banks to devise financial methods and methods for managing, analyzing and evaluating all expected risks, not with the aim of eliminating them, but rather to limiting their effects to ensure continuity in the banking market and achieve satisfactory returns with low risks, hence the need to take a look at the types of these risks to obtain an effective policy that helps in reducing from the impact of these risks and achieving financial stability and economic development, as well as determining the credit capacity of banks in a way that enables them to make sound investment decisions, as the credit capacity depends on several variables, the most important of which is the size of the risks to which banks are exposed.

To view the research topics, he came up with four topics, the first topic dealt with the research methodology and some previous studies, the second topic dealt with the theoretical side of the research, while the third topic included the applied side, so the research ends with conclusions and recommendations as a fourth topic.

The first topic: research methodology and some previous studies:

First: the research problem:

Banks are exposed to several types of risks, and one of the most important of these risks is the credit risk resulting from the borrowers' refusal to repay the loans they owe with interest on the due date, and the extent of this impact on achieving the bank's objectives required for granting credit, in addition to its negative impact on the growth of the bank in a manner in particular, and on banking stability in general, and as a result of the controversy surrounding the impact of credit risks on the credit capacity of a sample of banks listed in the market, the research problem came according to the following questions:

1- Is there a statistically significant effect of credit risk in the non-performing loans index on the total loans of the research sample banks?

2- Is there a statistically significant effect of credit risk in the loan loss provision indicator for the banks in the research sample?

Second: the importance of research:

The importance of the research can be summarized in the following points:

1- Identifying credit risks and how to measure them in order to raise the bank's ability to grant credit.

2- Identify the indicators of measuring the credit capacity of Iraqi banks, the research sample.

Third: Research objective:

The aim of the research is to demonstrate the impact of credit risks on the credit capacity of a sample of banks listed in the Iraq Stock Exchange, as well as to identify credit risks and determine the type of relationship between them and the indicators measuring the credit capacity of Iraqi banks, the research sample.

Fourth : Research Hypotheses :

According to the questions raised by the research problem, the following hypotheses were formulated:

The first hypothesis:

There is no statistically significant effect of credit risk in the non-performing loans index on the total loans of the banks in the research sample.

The second hypothesis:

There is no statistically significant effect of credit risk in the loan loss provision indicator for the banks in the research sample.

Fifth: Some previous studies:

1-   Study (Abdul Qader, 2008)

The study entitled "credit risks and their impact on the right credit decision" aimed to identify one of the vital and important issues in practice, which is the analysis of credit risks in banking institutions by searching for their basic components and developing a proposed model to measure them, the sample of the study was the Iraqi banking environment and the directorate's publications, the general authority for statistics and research in the central bank of Iraq for the years (2001-2005), and the study reached a set of conclusions, the most important of which was that the banking system is an essential pillar in completing the development process and activating investment, and that local banks work traditionally in granting credit instead of relying on the initial investment cost and the profitability of projects and their future cash flows, while the study recommended the necessity of encouraging local investment by granting banking facilities and starting to invest part of the monetary authority's funds locally.

2-   Study (Al-Tamimi et al., 2018)

The study entitled "measuring the credit risks of a sample of commercial banks listed in the Iraq Stock Exchange for the period (2010-2015)", aimed to study and measure the credit risks of a sample of Iraqi private commercial banks for the period (2010-2015) on the basis that Iraqi private commercial banks are exposed to credit risks, but in different proportions, the sample of the study consisted of (10) banks, on which data was collected and analyzed, the study recommended the need to reconsider the credit policy followed by the study sample banks in granting credit.

3-   Study (Muhammad; Hamid, 2019)

The study entitled "the impact of credit risks on cash and pledge credit facilities" aimed at showing the impact of credit risks to which banks are exposed to the study sample on granting loans and credit facilities and trying to reduce the size of those risks, in (14) banks selected from among (37) banks listed in the Iraq Stock Exchange for the period (2012-2017), and the study reached a set of conclusions, the most important of which was that there is no statistically significant effect of credit risk indicators on the monetary and pledge credit facilities , while the study recommended the need to identify the most important indicators for measuring credit risks and the most influential on loans and credit facilities and to adopt them in the process of measuring credit risks.

The second topic: the theoretical framework:

First: the concept of credit risk:

The process of granting bank credit is considered one of the main and important functions that commercial banks perform to achieve their goals, the most important of which is the achievement of profits, and the process of granting bank credit is usually accompanied by exposure of the bank to risks that are difficult to predict or hedge with the utmost accuracy, which may lead to the failure of the bank and the occurrence of economic crises in developing and developed countries alike, credit risk tops the list of importance with regard to the risks that banks are exposed to, and it is defined as the expected financial losses as a result of the customer's refusal or inability to fulfill his obligations to the bank on time, which affects the bank's revenues and thus a net decrease income, in addition to the decrease in the market value of property rights, which will negatively affect the capital and may lead the bank to bankruptcy (Arshid; Judeh, 1999: 213).

In addition to the risks of the inability to collect the bank's debts, there is another type of credit risk that is no less important in terms of its impact on the bank's ability to achieve its objectives, which is the risk of delayed payments, and this type of risk leads to higher interest rates and then higher financing costs that lead to in turn, the credit rating of the bank's debts decreased (Badran, 2005: 66).

Second: The importance of bank credit:

Bank credit occupies a very important role in the economies of both developed and developing countries through the provision of funds that manage the process of economic development and increase production capacity and national income.

Also, banks should not be strict in the process of granting credit, since this will lead to the remaining of funds idle or frozen, and thus limit the movement of the monetary mass necessary for the investment process that achieves economic development in countries, the importance of bank credit can be summarized as follows (Al-Barzanji, 2018: 79-80) :

1- Increasing production: Bank credit provides the continuous and necessary financial resources needed by large industrial, agricultural and service projects, whether new or existing projects that exceed their own resources, and specialized banks play the main role in providing financial resources for these projects.

2- Increasing consumption: As bank credit contributes to low-income consumers obtaining some consumer goods despite their inability to pay their value at the present time, which entails them paying the value of that credit when their incomes rise in the future, and therefore credit plays a role in increasing consumption, which entails increasing production and supporting the national economy.

3- Distributing financial and credit resources to various economic activities: The bank credit department works through the process of granting credit to move the monetary mass by distributing the financial resources of banks to various economic sectors and activities in a way that achieves the optimal use of these resources by distributing them to projects according to their needs and according to their needs, economic growth is achieved.

4- Operating idle resources: As the process of granting credit works temporarily to operate idle funds by granting short-term credit, and thus the borrower will benefit from operating these resources by using them in short-term activities that bring him profitable income, and in return the

lender will get adequate income as a result of the use of that money by giving it as a short-term trust.

And because bank credit has become one of the most important basic pillars in our daily lives, we will explain its importance in some detail for individual consumers, business establishments, and the economy in general, as follows (Al-Naimi, 2010: 27-29):

A- For individual consumers:

1- Raising their standard of living, as obtaining credit will help them use their future income to pay the values of the required goods and services, and accordingly they can raise the current standard of living through their ability to achieve funds in the future.

2- Facing emergencies, through the use of credit in facing any emergencies or crises that may occur unexpectedly, or any health problems and other urgent matters.

3- Enjoying the services provided by the credit department, such as using credit cards to pay for hotels, fuel, airline tickets, and other services, as the consumer can travel around the world without the need to carry large amounts of cash.

B- For business establishments:

1- The use of credit in expanding markets, as business establishments work on using credit in expanding their markets and obtaining new consumers, and these establishments work to motivate their customers to buy through the many credit options they offer.

2- Business establishments rely on credit programs offered by suppliers in the market for the purpose of obtaining inventory and other equipment that they need in their operations, in addition to expanding the supply of products and providing a larger stock of goods.

3- Credit can provide business establishments with the necessary capital to start practicing their activity or to maintain and expand the continuity of the current activity, as these operations require continuous cash flows to meet the expenses and costs incurred in establishing new sites, or employing additional workers, in addition to the expenses of marketing activities.

C- For the economy:

The importance of credit for the economy is evident in the flows of funds and factors of production it provides, and its role in achieving economic stability through the change in interest rates due on the use of credit, as the credit policy must achieve economic stability by achieving a balance between the credit granted and the need for economic activity and development plans economic, as the increase in granting credit will lead to an increase in purchasing power, and in the event that it is not matched by an increase in goods and services, this will lead to a rise in prices and the entry of the economy into the stage of inflation and vice versa, and in both cases, credit greatly affects the processes of economic development, which it leads to a loss of balance and economic stability in the country.

Third: Measuring bank credit risks:

Credit risk can be measured through a set of indicators, the most important of which are (Hanafi; Abu Qahf, 2004: 273-274):

1- Net loan burdens / total loans

2- Net bad loans / total loans

3- Provision for doubtful loans / total loans

4- Provision for doubtful loans / loans that are due but not paid

5- Total cash credit / total deposits

Fourth: The concept of credit capacity:

There are many different concepts that dealt with the issue of bank credit, and this difference came as a result of adopting the opinions of writers and researchers, each according to his specialization, as well as the nature of the economic environment that differs from one country to another.

Bank credit is defined as the confidence that a bank gives to a person, whether natural or legal, to put at his disposal an amount of money to be used for a specific purpose and within a period of time agreed upon by both parties and with conditions and guarantees that enable the bank to

recover the loan amount with interest and commissions in the event that the debtor stops fulfilling its obligations, agreed upon in advance (Aishish, 2010: 58).

Credit can also be defined as the process of transferring money from the lender (the bank) to the borrower (the customer) at the request of the latter, and the services plus the amount of interest or commission to the lender at a later date agreed upon between the two parties.

As for the credit capacity, it means the ability of the bank to provide high-quality credit to various economic sectors and under any circumstances, while defining an appropriate mechanism that guarantees the recovery of those amounts with accrued interest and at predetermined times (Rose & Hudgins, 2013: 526).

The credit capacity of the bank is also defined as the ability of the bank to grant loans and advances to various economic sectors, and this ability depends to a large extent on what the bank possesses of financial, human and technological resources that work to increase the efficiency and quality of the credit granted and the extent of capital adequacy, as the larger the bank's capital the greater its credit capacity through the possibility of expanding credit granting, as well as the increase in the bank's ability to face banking risks, especially credit risks, which are classified as the biggest risks facing banks and threatening their credit capacity.

Fifth: Indicators for measuring credit capacity:

In order to assess the ability of banks to grant credit, this requires the use of a set of indicators and measures, which will be presented as follows:

1- Non-performing loans index to total loans: There is no specific concept that explains the meaning of non-performing loans, but there is a set of criteria that distinguish between good loans and bad loans that differ significantly from one country to another, as some countries use quantitative criteria to distinguish between loans, such as the number of days in which the date of payment of the due payments is exceeded, and others use qualitative criteria such as the availability of accurate information about the borrower and the quality of credit management in collecting debts, and bad loans are an important indicator in measuring the availability of liquidity in the bank as well as its financial performance, as the higher the percentage of bad debts, the greater the risk of financial insolvency, while its decrease indicates the efficiency and quality of credit management in following up and collecting bank debts (Bahrini, 2011: 232).

Non-performing loans are defined as loans that cannot be recovered within the date specified in the contract for reasons including the borrowers, refusal or cessation of paying the due installments with interest, which reflects poor credit management in the bank, or because of the environmental conditions that the bank is going through, which affects the follow-up process of the granted credit, non-performing loans can be measured according to the following equation (Funso, et al, 2012: 52):

$$\text{Non-performing loans index to total loans} = \text{non-performing loans} / \text{total loans}$$

2- Loan Loss Provision Indicator: Some laws and regulations require that the bank maintain a sufficient loan loss provision to meet the expected losses as a result of lending to individuals and institutions, as this provision plays a major role in maintaining the stability and strength of the bank, and it can be measured according to the following equation (Ozili & Outa, 2017 : 147):

$$\text{Loan Loss Allowance Index} = \text{Doubtful Loans} / \text{Total Loans}$$

The third topic: the practical framework:

First: Credit Risk Analysis:

Credit risk is considered one of the most prominent risks that can affect the credit capacity of banks, and these risks are associated with a direct relationship with the credit index, and the credit index was calculated by dividing the total cash credit by the total deposits, and the equation below was used for the purpose of measuring the credit index of the research sample banks :

$$\text{Credit index} = \text{total cash credit} / \text{total deposits}$$

The lower this indicator indicates the lower the credit risk to which the bank is exposed, however, it reflects the inefficiency of the bank in employing the funds available to it that come from deposits to meet the demand for loans and advances, and vice versa, table (1) shows the credit index of the research sample banks for the period (2011-2020):

Table (1): The credit index of the banks in the research sample for the period (2011-2020).

banks \ years	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	average for duration
Iraqi Commercial Bank	0.010	0.021	0.041	0.059	0.101	0.082	0.080	0.089	0.078	0.069	0.063
Baghdad Bank	0.214	0.141	0.157	0.153	0.265	0.236	0.204	0.206	0.186	0.132	0.189
Middle East Bank	0.378	0.322	0.378	0.525	0.452	0.452	0.309	0.220	0.347	0.319	0.370
Iraqi Investment Bank	0.674	0.934	0.862	0.645	0.476	0.407	0.483	0.591	0.694	0.516	0.628
United Bank for Investment	0.958	1.570	1.539	2.307	1.416	1.960	1.869	2.392	1.707	0.544	1.626
National Bank of Iraq	0.681	0.446	0.323	0.490	0.688	0.765	0.727	0.403	0.674	0.758	0.596
Sumer Commercial Bank	1.459	0.712	1.002	1.054	1.262	1.330	0.900	0.435	1.112	0.682	0.995
Khaleej Commercial Bank	0.404	0.822	0.687	0.633	0.760	0.610	0.752	0.721	0.705	0.691	0.678
Ashur International Bank	0.630	0.709	1.166	0.777	0.102	0.095	0.111	0.031	0.106	0.214	0.394
Mansour Investment Bank	0.421	0.495	0.185	0.180	0.147	0.145	0.118	0.100	0.094	0.106	0.199
average for all for the banks above	0.583	0.617	0.634	0.682	0.567	0.608	0.555	0.519	0.570	0.403	5.739

Source: prepared by the researcher based on the annual reports of the research sample banks for the period (2011-2020).

The results showed in table (1) the highest and lowest credit index for each bank separately during the research period, so the highest amount of the credit index for the commercial bank of Iraq in the year 2015 was (0.101) as a result of the large increase in the total cash credit granted against the total deposits, as the total cash credit is more than (9) billion dinars, which contributed to the increase in credit risks that the bank may be exposed to, as for the lowest value of the credit index, it was in the year 2011 when it reached (0.010) as a result of the bank's tendency to be conservative and not to exaggerate in granting loans and advances, which contributed in lower credit risk.

The results also showed that the highest amount of the credit indicator for the bank of Baghdad was in the year 2015, when it reached (0.265) as a result of the increase in the total cash credit granted against a decrease in the total deposits, which contributed to the increase in credit risks that the bank may be exposed to, and the lowest amount of the credit indicator was in the year 2020, it reached (0.132) as a result of the fluctuation in the loans granted, in addition to the large increase in the total deposits with the bank, which amounted to (1.073) trillion dinars, which contributed to the decrease in credit risks to which the bank is exposed.

The results of analyzing the data of the middle east investment bank showed that the highest value of the credit index amounted to (0.525) in 2014 as a result of the increase in lending by the bank against a decrease in the volume of cash deposits, which contributed to the increase in credit risks

that the bank may be exposed to, as it reached the lowest An amount for the credit index (0.220) in 2018 as a result of the decrease in the total cash credit granted by the bank despite the increase in the total cash deposits, which contributed to the decrease in credit risks to which the bank is exposed.

The results showed that the value of the credit indicator of the Iraqi investment bank in 2012 reached the highest value (0.934) as a result of the increase in the volume of cash credit granted against the decrease in the volume of cash deposits, which contributed to the increase in credit risks that the bank may be exposed to, while the lowest value of the indicator credit, as it amounted to (0.407) in 2016 as a result of the increase in the volume of cash deposits and the bank's tendency towards conservatism and not exaggerating in granting credit, which contributed to a decrease in credit risks to which the bank is exposed.

The results also showed that the highest amount of the credit index of the united bank for investment was in the year 2018, when it reached (2.392) as a result of the large increase in granting credit in a way that exceeds all banks in the research sample, which exposes the bank to very large credit risks, and the lowest amount of the credit index reached (0.544), in the year 2020 as a result of the significant decrease in the total cash credit granted against the increase in the total deposits, which contributed to the decrease in credit risks to which the bank is exposed.

It also reached the highest value of the credit index for the national bank of Iraq in 2016, when it reached (0.765) as a result of the increase in the volume of cash credit against a decrease in total deposits, which contributed to the increase in credit risks to which the bank is exposed. (0.323) as a result of the increase in the total cash deposits, which contributed to the decrease in credit risks to which the bank is exposed.

The results of the analysis also showed that the highest value of the credit index of the Sumer commercial bank was in the year 2011, when it reached (1.459) as a result of the bank expanding its credit granting significantly against the decrease in the total cash deposits, which contributed to the increase in credit risks to which the bank is exposed, credit was in the year 2018, when it reached (0.435) as a result of the significant decrease in the volume of cash credit granted, which led to a decrease in credit risks to which the bank is exposed.

The results also showed that the highest value of the credit indicator for Khaleej commercial bank was in 2012, when it reached (0.822) as a result of the great expansion in granting credit as loans to small and medium enterprises and for all economic sectors, as the granted cash credit constituted (82%) of the total cash deposits, which contributed to the increase in credit risks to which the bank is exposed, and the lowest value of the credit index reached (0.404) in 2011 as a result of the bank's reservation and not exaggerating in granting cash credit, which contributed to the decrease in the degree of risk to which the bank is exposed.

The results also showed that the highest amount of the credit index of the Ashur International Bank was in the year 2013, when it reached (1.166) as a result of the bank's tendency to expand the policy of granting credit in exchange for a decrease in the total cash deposits, which contributed to the increase in credit risks to which the bank is exposed. It also reached the lowest amount of the indicator Credit (0.031) in 2018 as a result of the great hedging in granting credit against the increase in total deposits, which contributed to reducing the risks to which the bank is exposed.

The results also showed that the highest value of the credit indicator for Al-Mansour investment bank was in the year 2012, when it reached (0.495) as a result of the decrease in the total cash deposits against the increase in the volume of cash credit granted, which contributed to the increase in credit risks to which the bank is exposed, and the lowest amount of the credit indicator was (0.094) in the year 2019 as a result of the decrease in the volume of cash credit granted in exchange for the large increase in the total cash deposits, which contributed to reducing the risks to which the bank is exposed.

Second: Credit Capacity Analysis:

1- Non-performing loans index to total loans:

Non-performing loans are an important indicator in measuring the availability of liquidity in the bank, as it reflects the efficiency and quality of the financial performance of its credit

management, the non-performing loan index was calculated to the total loans by dividing the non-performing or non-performing loans by the total loans, the equation below was used for the purpose of measuring the loan index, non-performing to total loans to banks, the research sample for the period (2011-2020):

Non-performing loans index to total loans = non-performing loans / total loans

Whenever this indicator decreases, it reflects the extent of the efficiency and quality of credit management in the bank in following up and collecting loans granted to customers, and vice versa, large on its liquidity, and table (2) shows the index of non-performing loans to the total loans to banks, the research sample for the period (2011-2020):

Table (2): Non-performing loans index to total loans to banks, the research sample for the period (2011-2020).

years / banks	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	average for duration
Iraqi Commercial Bank	9.012	5.059	2.502	3.859	2.255	0.024	0.009	0.030	0.014	0.001	2.276
Baghdad Bank	0.245	0.341	0.219	0.306	0.443	0.033	0.042	0.001	0.003	0.427	0.206
Middle East Bank	0.018	0.015	0.025	0.028	0.071	0.011	0.012	0.020	0.013	0.192	0.040
Iraqi Investment Bank	0.030	0.016	0.023	0.035	0.033	0.034	0.022	0.020	0.015	0.021	0.025
United Bank for Investment	0.071	0.043	0.104	0.064	0.102	0.484	0.028	0.046	0.127	0.363	0.143
National Bank of Iraq	0.0001	0.132	0.070	0.088	0.113	0.040	0.054	0.166	0.114	0.034	0.081
Sumer Commercial Bank	0.001	0.0001	0.002	0.001	0.014	0.012	0.014	0.022	0.022	0.031	0.012
Khaleej Commercial Bank	0.468	0.082	0.133	0.488	0.310	0.229	0.322	0.369	0.182	0.134	0.272
Ashur International Bank	0.118	0.021	0.009	0.230	0.045	0.159	0.029	0.036	0.003	0.063	0.071
Mansour Investment Bank	0.018	0.103	0.090	0.123	0.215	0.128	0.110	0.057	0.0001	0.003	0.085
average for all for the banks above	0.998	0.581	0.318	0.522	0.360	0.115	0.064	0.077	0.049	0.127	3.212

Source: prepared by the researcher based on the annual reports of the research sample banks for the period (2011-2020).

The results showed in table (2) the highest and lowest ratio of non-performing loans to total loans and for each bank separately during the research period, the highest ratio of non-performing loans to total loans was for the commercial bank of Iraq in the year 2011 when it reached (9.012) as a result of the decrease in the total loans granted against the large increase in the volume of non-performing loans, after which it began to decline until it reached (0.024) in 2016, and continued to decline until it reached its lowest rate in 2020, when it reached (0.001) as a result of the significant increase in the volume of cash credit granted and the decrease in the volume of non-performing loans, which reflects the increase in borrowers' commitment to repay loans with interest on the due date, as well as the efficiency of credit management in collecting overdue loans.

The results also showed a fluctuation in the ratio of non-performing loans to the total loans of the Bank of Baghdad during the years (2011-2014) between rise and fall, reaching its highest rate in 2015, when it reached (0.443), as a result of the increase in non-performing loans, which amounted to (44%) compared to the total loans, granted, after which it began to gradually decrease until it reached its lowest percentage in 2018, when it reached (0.001) as a result of the significant decrease in the volume of non-performing loans against the increase in the volume of cash credit granted.

The results of analyzing the data of the middle east investment bank showed that the highest ratio of non-performing loans to total loans amounted to (0.192) in the year 2020 as a result of the decrease in the volume of cash credit granted due to the imposition of high interest rates in addition to non-concessional credit conditions, the lowest ratio of non-performing loans reached (0.192). 0.011) in the year 2016 as a result of the increase in the volume of cash credit granted, which amounted to (106) billion dinars, in exchange for the significant decrease in the volume of non-performing loans, and the bank's management must monitor its levels of liquidity and lending and create a balanced growth between the demand for loans and attracting new deposits in order to avoid exposure risk.

The results showed that the highest ratio of non-performing loans to the total loans of the investment bank of Iraq was in the year 2014, when it reached (0.035) as a result of the decrease in the total cash credit granted against the increase in the volume of non-performing loans, which means an increase in the volume of risks that the bank is likely to be exposed to, to start after gradually decreasing until it reached its lowest rate in 2019, when it reached (0.015) as a result of the decrease in the volume of non-performing loans, which reflects a decline in the risks facing the bank and an increase in the commitment rate in paying outstanding loans.

The results also showed a fluctuation in the ratio of non-performing loans to the total loans of the united bank for investment during the years (2011-2015), until it reached its highest ratio in 2016, when it reached (0.484) as a result of the large increase in the volume of non-performing loans in exchange for the decrease in the total loans granted, a ratio that amounted to (0.028) in the year 2017 as a result of the significant decrease in the volume of non-performing loans in exchange for the large increase in the total cash credit granted, to rise again until it reached a ratio of (0.363) in the year 2020.

The highest ratio of non-performing loans to total loans to the national bank of Iraq was in 2012, when it reached (0.132) as a result of the large increase in the volume of non-performing loans in exchange for the decrease in the volume of cash credit, which reflects an increase in the risks facing the bank, and the lowest ratio of those loans was in the year 2011 it amounted to (0.0001) as a result of the significant decrease in the volume of non-performing loans to the total cash credit granted.

The results of the analysis also showed that the highest ratio of non-performing loans to the total loans of the Sumer commercial bank in the year 2020 reached (0.031) as a result of the increase in the volume of non-performing loans in exchange for the decrease in the total cash credit granted, which requires banks to study the customer's creditworthiness well as well as to develop a solid plan to collect overdue loans, the lowest percentage of non-performing loans in 2012 was (0.0001) as a result of the decrease in the volume of non-performing loans to its lowest levels.

2- Loan Loss Provision Indicator:

The indicator of the provision for bank loan losses was calculated by dividing the total doubtful loans by the total loans, and the equation below was used for the purpose of finding the indicator of the provision for loan losses for banks, the research sample for the period (2011-2020):

$$\text{Loan Loss Allowance Index} = \text{Doubtful Loans} / \text{Total Loans}$$

As the lower this indicator indicates the extent of the bank's credit management efficiency and the strength of the procedures adopted by it in recovering the funds granted to borrowers and reinvesting them optimally in the bank's credit activity, and vice versa, the high of this indicator

gives a clear indication of the failure of the bank's mechanisms and procedures in following up on lagging borrowers and collecting his money from them, and table (3) shows the loan loss allocation for banks, the research sample for the period (2011-2020):

Table (3): Provision of loan losses for the research sample banks for the period (2011-2020).

Banks \ years	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	average for duration
Iraqi Commercial Bank	10.292	3.971	2.313	3.156	1.674	0.358	0.330	0.303	0.310	0.249	2.295
Baghdad Bank	0.133	0.160	0.111	0.109	0.224	0.172	0.252	0.179	0.172	0.224	0.174
Middle East Bank	0.096	0.097	0.098	0.111	0.128	0.111	0.121	0.126	0.126	0.231	0.124
Iraqi Investment Bank	0.031	0.019	0.021	0.038	0.040	0.044	0.034	0.028	0.022	0.024	0.030
United Bank for Investment	1.089	0.582	0.594	0.596	0.909	1.690	0.439	0.347	0.563	1.291	0.810
National Bank of Iraq	0.114	0.082	0.083	0.139	0.144	0.127	0.165	0.132	0.095	0.063	0.114
Sumer Commercial Bank	0.064	0.034	0.031	0.035	0.037	0.040	0.044	0.026	0.027	0.038	0.038
Khaleej Commercial Bank	0.776	0.205	0.135	0.252	0.200	0.088	0.124	0.123	0.124	0.125	0.215
Ashur International Bank	0.313	0.199	0.142	0.241	0.389	0.495	0.577	0.407	0.414	0.233	0.341
Mansour Investment Bank	0.089	0.105	0.062	0.060	0.087	0.276	0.260	0.137	0.164	0.151	0.139
average for all for the banks above	1.300	0.545	0.359	0.474	0.383	0.340	0.235	0.181	0.202	0.263	4.281

Source: prepared by the researcher based on the annual reports of the research sample banks for the period (2011-2020).

The results showed in table (3) the highest and lowest percentage of the loan loss provision for each bank separately during the research period, the failure of the bank's mechanisms and procedures to follow up and obtain the granted loans, then this percentage began to gradually decrease during the subsequent years until it reached (0.358) in 2016, after which it continued to decline until it reached the lowest percentage, which was in the year 2020 when it reached (0.249).

The results also showed that the highest percentage of the loan loss provision for the bank of Baghdad was in the year 2017, when it amounted to (0.252) as a result of the bank allocating an amount that exceeded (30) billion dinars as a provision for doubtful loans, in order to face some problems, including the failure of some borrowers to pay in addition to providing them with guarantees forged real estate, and this is a negative indicator indicating the weakness of the bank's procedures in ensuring the correctness and integrity of the data and documents submitted by the borrowers before approving their granting of the loan, the results also showed that the lowest percentage was in the year 2014, when it reached (0.109).

The results of analyzing the data of the middle east investment bank showed a gradual increase in the percentage of the provision for loan losses until it reached the highest percentage in 2020, when it reached (0.231) as a result of the decrease in loans granted to customers and the increase in the provision for doubtful loans, and this is due to the weakness of the bank's procedures in recovering the loans granted to its customers, which contributed to its exposure to high credit

risks, as it reached the lowest rate (0.096) in the year 2011 as a result of the decrease in the allowance for doubtful loans.

The results showed a fluctuation in the ratio of loan losses to the Iraqi investment bank during the years (2011-2015), until it reached its highest rate in 2016, when it reached (0.044) as a result of the high percentage of doubtful loans, indicating the bank's weak procedures in following up on obtaining granted loans, which contributed In the bank's exposure to high credit risks, while the lowest percentage was (0.019) in the year 2012 as a result of the large increase in loans granted to customers, as the total loans granted amounted to more than (150) billion dinars.

The results of the data analysis of the united bank for investment also showed a fluctuation between the decrease and the increase in the loan loss provision ratio during the years of research, as it reached the highest rate in 2016, reaching (1.690), which reflects the bank's exposure to high credit risks, which requires the credit department in the bank to develop Policies and procedures that reduce the percentage of doubtful loans by following up on loans granted and mechanisms for recovering them from borrowers, after which it began to decline until it reached the lowest percentage in 2018, when it reached (0.349).

The results of the analysis also showed that the highest percentage of the provision for loan losses for the national bank of iraq was in the year 2017, when it amounted to (0.165) as a result of the increase in the provision for doubtful loans to face the cases of some borrowers' refusal to pay their debts of loans and interest, and that the lowest percentage was in the year 2020 as it amounted to (0.063) as a result of the large increase in the total loans granted.

The results of the analysis also showed that the highest percentage of the loan loss provision for Sumer commercial bank in 2011 amounted to (0.064), which indicates that the bank is exposed to high credit risks as a result of the failure and inefficiency of the mechanisms to follow up on its invested funds in the form of loans, gradually, until it reached its lowest rate in 2018, when it reached (0.026).

The results also showed that the highest percentage of the loan loss provision for Khaleeji commercial bank was in 2011 with a rate of (0.776) as a result of the bank's weak procedures in recovering loans granted to its customers, which contributed to its exposure to high credit risks, and the lowest percentage was (0.088) in the year 2016 as a result of the increase in the total granted loans, in contrast to the decrease in the provision for doubtful loans.

The results also showed that the highest percentage of the loan loss provision for the Ashur international bank was in 2017, when it amounted to (0.577) as a result of the bank allocating an amount that exceeded (27) billion dinars as a provision for doubtful loans in order to face some problems resulting from the stopping of some borrowers from paying, and this a negative indicator indicating the weakness of the bank's procedures in ensuring the validity and integrity of the data and documents submitted by the borrowers before approving the granting of the loan, as it reached the lowest percentage (0.142) in the year 2013 as a result of the increase in the total loans granted against the decrease in the allowance for doubtful loans.

The results of analyzing the data of Al-Mansour Investment bank also showed that the highest percentage of loan losses was in 2016, when it amounted to (0.276) as a result of the high percentage of doubtful loans, which gives a clear indication of the bank's weak procedures in following up on obtaining granted loans and thus exposure to high credit risks.

Third: Testing research hypotheses:

Testing the first hypothesis (there is no statistically significant effect of credit risk in the non-performing loans index to the total loans of the banks in the research sample):

The effect relationship of the independent variable represented by credit risk on the dependent variable represented by the non-performing loans index to total loans can be described through a simple regression model as shown in the table below:

Table (4): The results of the simple regression coefficient for credit risk on the non-performing loans index to the total loans.

The dependent variable / The independent variable	Non-performing loans index to total loans			(F) calculated	Sig
	value (β)	Calculated (T)	Sig		
fixed limit	0.612	11.756	0.0000	4.258	0.007
credit risk	0.146	2.063	0.0317		
Corrected coefficient of determination R̄² = 0.157 Determination coefficient R² = 0.178					

From the results presented in the table above, we note that when credit risk increases by one unit, the non-performing loans index variable to total loans will be affected by the increase by ($β = 0.146$), which means that there is a direct and significant effect of the credit risk variable in the non-performing loans index to total loans, and this leads to the possibility of saying that credit risks will have a positive role on the non-performing loans index to the total loans, and this is evident through the (T) test for the beta value coefficient (B1), which reached (2.063) and its probability value is (0.0317), which is evidence of the significance of the beta coefficient is below the level of significance (0.05), and through the results above, we reject the hypothesis that says (there is no statistically significant effect of credit risk in the non-performing loans index to the total loans of the banks in the research sample) against any other hypothesis.

Also, through the value of (F) calculated (4.258), which is a significant value below the level of significance (0.05), we conclude that the studied model between credit risk and the index of non-performing loans to total loans is largely consistent with the phenomenon under study, in addition to that it is noted from the table (4) the coefficient of determination (R^2) amounted to (0.178) and the corrected coefficient of determination (R̄2) amounted to (0.157), which indicates that the regression equation can be interpreted as high, which indicates that (15.7%) of the changes that occur in the non-performing loans index to the total loans are subject to variable credit risk.

Testing the second hypothesis (there is no statistically significant effect of credit risk in the loan loss allowance index for the banks in the research sample):

The effect relationship of the independent variable represented by credit risk on the dependent variable represented by the loan loss allowance index can be described through a simple regression model as shown in the table below:

Table (5): The results of the simple regression coefficient for credit risk on the loan loss allowance index.

The dependent variable / The independent variable	loan loss allowance indicator			(F) calculated	Sig
	value (β)	Calculated (T)	Sig		
fixed limit	0.592	10.269	0.0000	6.252	0.007
credit risk	0.042	4.502	0000.0		
Corrected coefficient of determination R̄² = 0.237 Determination coefficient R² = 0.253					

From the results presented in the table above, we note that when credit risk increases by one unit, the variable of the loan loss allowance index will be affected by the increase by ($β = 0.042$), which means that there is a direct and significant effect of the credit risk variable in the loan loss provision index, and this it leads to the possibility of saying that credit risk will have a positive role in the loan loss allowance indicator, and this is evident through the (T) test for the beta value coefficient (B1), which amounted to (4.502) and its probability value (0.0000), which is evidence of the significance of the beta coefficient below the level of significance (0.05), and through the results above, we reject the hypothesis that says (there is no statistically significant effect of

credit risk in the loan loss provision index for banks in the research sample) against any other hypothesis.

Also, through the value of (F) calculated (6.252), which is a significant value below the level of significance (0.05), we conclude that the studied model between credit risk and the loan loss allowance index is largely compatible with the phenomenon under study, in addition to that it is noted from table (5) the coefficient of determination (R^2) amounted to (0.253) and the corrected coefficient of determination ($\bar{R}2$) amounted to (0.237), which indicates that the regression equation is interpretable and high, which indicates that (23.7%) of the changes that occur in the loan loss allowance index are due to a risk variable. credit.

The fourth topic: conclusions and recommendations:

First: Conclusions:

1-   The results of the analysis of the relationship between credit risk and its impact on the non-performing loans index to total loans showed that there is a direct and significant correlation, as whenever the credit risk increases by one unit, the non-performing loans index to total loans is affected by an increase of (0.146) and vice versa, due to the increase the amount of non-performing loans will, in turn, lead to a decrease in the ability of the bank to grant credit, and thus an increase in the credit risks that the bank will be exposed to.

2-   The results of the analysis of the relationship between credit risk and its impact on the loan loss provision index showed that there is a direct and significant correlation, as whenever the credit risk increased by one unit, the loan loss provision index was affected by an increase of (0.042) and vice versa, this is due to the increase in the loan loss provision for the purpose of avoiding expected losses when granting loans will lead to a decrease in the credit capacity of the bank and, consequently, an increase in the credit risks that the bank will be exposed to, and vice versa.

Second: Recommendations:

1-   The need for commercial banks in Iraq to avoid non-performing loans, as they negatively affect their credit capacity and thus contribute to the rise in credit risks, which weakens the ability of the bank to grant credit.

2-   Banks should pay attention to studying credit applications submitted to them according to sound scientific bases in order to grant loans with a high credit rating that contributes to reducing the provision for loan losses and maximizing returns by minimizing losses and avoiding the risk of financial default.

3-   Emphasis on the bank's credit management adopting a moderate credit policy that works to achieve a balance between the profits that the bank seeks to achieve by investing depositors' funds in the form of loans, and the risks that the bank may be exposed to as a result of investing those funds.

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