

**REPUBLIC OF TURKEY
ISTANBUL GELISIM UNIVERSITY
INSTITUTE OF GRADUATE STUDIES**

Department of Economics and Finance

**THE IMPACT OF THE MANAGEMENT OF CREDIT
RISK ON PROFITABILITY: A STUDY ON IRAQI
BANKS**

Master Thesis

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I hereby declare that in the preparation of this master thesis, scientific ethical rules have been followed, the works of other persons have been referenced in accordance with the scientific rules if used, there is no falsification in the used data, any part of the thesis has not been submitted to this university or any other university as another thesis.

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SUMMARY

The essential goal of this thesis is to see how the management of credit risk impacts commercial bank profit making possibility in Iraq. To investigate this effect, we must first identify whether or not these two factors are related. Metrics for the management of credit risk and profit making possibility. CAR ratio and the Default Rate NPLR ratio are used to monitor credit risk management, whilst (R.O.E) and (R.O.A) are used to measure bank profit making possibility. If the connection is genuine, the next step is to figure out if it is good or negative. Finally, we'll monitor this relationship's stability over time to determine if it's changing or staying the same. This type of study is done part-time over a specific length of time and allows us to explore further into the research issue, which may lead to future research subjects.

According to empirical findings, the association among (C.A.R) and (ROE) and capital adequacy ratio (C.A.R) and (ROE) isn't meaningful. This could be because of a divisive theoretical prediction of a relationship among capital adequacy ratio (C.A.R) and bank profit making possibility. Another reason for the capital adequacy ratio (CAR) city of exceptional connections might be the flaws in our model modification. Furthermore, during the financial crisis, the significance of systemic risks should not be overlooked.

Key Words: Credit Risk Management, profit making possibility, Capital Adequacy, Default Rate

ÖZET

Araştırmanın temel amacı, kredi riski yönetiminin Irak'taki (CAR) banka karlılığını nasıl etkilediğini görmektir. Etkiyi araştırmak için önce bu iki faktörün ilişkili olup olmadığını belirlememiz gerekir. Kredi riski yönetimi ve karlılık ölçütleri Sermaye Yeterlilik Oranı (CAR) ve Temerrüt Oranı (NPLR) kredi riski yönetimini izlemek için kullanılırken, (ROE) ve (ROA) ticapital adequacy ratio (CAR) banka karlılığını ölçmek için kullanılır. Bağlantı gerçekse, bir sonraki adım iyi mi yoksa olumsuz mu olduğunu anlamaktır. Son olarak, değişip değişmediğini veya aynı kaldığını belirlemek için bu ilişkinin zaman içindeki istikrarını izleyeceğiz. Bu tür bir çalışma, belirli bir süre boyunca yarı zamanlı olarak yapılır ve gelecekteki araştırma konularına yol açabilecek araştırma konusunu daha fazla keşfetmemize olanak tanır.

(CAR) ve (ROE) ile (CAR) ve (ROE) arasındaki ilişki, ampirik sonuçlara göre önemli değildir. Bu, (CAR) ve banka karlılığı arasındaki bağlantının tartışmalı teorik tahmininden kaynaklanıyor olabilir. İstisnai bağlantıların azlığının bir başka nedeni de model modifikasyonumuzdaki kusurlar olabilir. Ayrıca finansal kriz sırasında sistemik risklerin önemi de göz ardı edilmemelidir.

Anahtar Kelimeler: Kredi Riski Yönetimi, Karlılık, Sermaye Yeterliliği, Temerrüt Oranı

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INTRODUCTION

Banks consider now the world's largest financial organizations, with branches and subsidiaries open 24 hours a day, seven days a week. There are several differences among bank kinds, the majority of which are determined by the commodities and services that banks provide (Howells & Bain, 2008, p. 34). Commercial banks hold deposits, which they organize as loans, payment systems, and so on (Hull, 2012, p. 22)., particularly the Basel Committee, whose mission is to improve the basic issue of banking supervision and the quality of financial supervision (Hull, 2012, p. 22). (Bis.org, 2014) When the Herstatt bank's currency risk was assessed to be three times its capital in 1974, worldwide financial markets were disrupted, and the bank's banking license was terminated.

As a result, banks outside of Germany lost a lot of money on outstanding Herstatt transactions. Due to significant financial losses, the Franklin National Bank in America likewise closed its doors in the same year. The south American debt crisis erupted in the early 1980s, with Mexico's bank debt increasing by about 230 percent, Brazil's by 160 percent, Venezuela's obligations by 330 percent, Argentina's by a monstrous 550 percent, and Chile's by a monstrous 550 percent, to which the Basel Committee was alerted, and capital adequacy quickly became a focal point of its efforts, as shown in 1984, p. 1988 is the year (Bis.org, 2014). The Basel Committee then tried to update and expand the Basel Agreement by including a market risk capital requirement (bis.org, 2014) As a result; they launched Basel II, a new equity structure, in June of 2004.

The banking system had too much debt and inadequate liquidity buffers when the crisis hit, besides, inefficient governance and risk management, and ineffective structures, which prompted the Basel Committee to recognize that Basel II was forming (Bis.org, 2014). Due to the combination of these variables, credit and liquidity risk were mispriced, as well as excessive loan growth. As a result, a new Basel III standard was issued in the year 2010, strengthening the Basel II framework while also introducing some innovations, such as a tougher definition of capital, leverage ratio rules, and a countercyclical buffer, all of which are expected to be completely adopted by the end of 2019. In the twentieth century, capital was used to cover liquidity risk, counterparty credit risk, and swaps.

Because of the nature of their business, Credit risks threaten banks and the most important problems that have been diagnosed. Banks help to maintain not just their profit making possibility and profit making possibility, but also economic systemic stability and active capital allocation, by properly managing credit risk. “A small number of consumers failing to pay can result in a significant loss for the bank”. In the early stages of the Basel Accord, the Basel Committee identified them as the primary source of risk. Credit risk is the danger of a borrower defaulting if the counterparty does not pay on time.

Noncompliance can be caused by a variety of factors. The most prevalent reason for this is because the debtor is experiencing financial troubles (Gestel & Baeseems, 2008). Furthermore, even if a borrower has a good credit score, his or her profile may be compromised, causing banks to lose money on credit risk (Gestel & Baeseems, 2008). Banks make investments in their clients' debt (Gestel & Baeseems, 2008.) It's possible that the debt being sold is worthless less expensive in comparison to debt purchased by the bank (Gestel & Baeseems, 2008). As a result, the banks suffer a net loss. To be gigantic, a bank does not have to fail (Gestel, 2008). The debtor's recovery percentage and the banks' total commitment define it (Gestel & Baeseems, 2008), with sensible risk management attempting to avoid high-risk circumstances (Gestel & Baeseems, 2008, 23-24). Using appropriate internal the management of credit risk techniques, they may assess their capital requirements.

This parameter permits banks to accept a certain level of hazard while also supporting them with short-period problems.” According to a study conducted using Haslem, the profit making possibility of banks is impacted by a variety of factors such as control, the size, the location, and the time (1968).

And it's a fascinating pastime to observe how profit making possibility suffers as a result of the threats that come with the use of business banks. There were a lot of people who were interested in this subject. For example, at the same time as Molyneux & Thornton (1989), Bourke (1989) In 12 European, North American, and Australian countries, researchers discovered a positive association among bank liquidity and profit making possibility (1992) They discovered that the two factors are negatively connected as a result of their investigation. In his empirical study from 1995, According to Berger, There was a significant amount of favorable association among (C.A.R) and profit making possibility for US banks in the 1980s, but only if the relationship was negative. These issues have also been studied by a number of modern

academics. Sun, Ara, and Bakaeva (2009) In Sweden, researchers established a link among the management of credit risk and commercial bank profit making possibility. According to Kolapo, credit score risk management is inextricably linked to bank profit making possibility in Nigeria (2012). In Kenya, Kithinji (2010) investigated the influence of credit score risk management on business bank profit making possibility and discovered that credit score risk control does not necessarily hurt banks' profits. Ruziqa (2013) looked at the influence of credit and liquidity risk on Indonesian traditional banks' monetary performance. Credit risk was shown to have an inverse relationship with profit making possibility, but liquidity risk had a positive relationship. These findings refers to that no definitive conclusions can be formed at this time, indicating that this location is worth researching. As previously said, the energy of banks plays a critical role in the economy's balance and growth. Banks' stability is dependent on their profit making possibility and capital adequacy. We discovered the missing end of the dating among credit score risk control and business bank profit making possibility after a capital adequacy ratio (CAR) eful examination of previous studies on bank profit making possibility. The majority of researchers focused on one or more overseas areas and found unique outcomes. No researcher, however, has put the studies in Iraq. As a result, we've observed the lives of studies holes and have dedicated our efforts to researching them (Tabari et al., 2013, p.1624).

The essencial the research's aims is to see how the management of credit risk impacts commercial bank profit making possibility in Iraq. To investigate the effect, we must first identify whether or not these two factors are related. Metrics for the management of credit risk and profit making possibility The Capital Adequacy Ratio (CAR) and the Default Rate (NPLR) are used to monitor credit risk management, whilst (ROE) and return on asset (ROA) are used to measure commercial bank profit making possibility. If the connection is genuine, the next step is to figure out if it is good or negative. Finally, we'll monitor this relationship's stability over time to deperiod ine if it's changing or staying the same. Part-time study for a certain amount of time allows us to delve further It may provide insight into the research issue and lead to future areas of research.

CHAPTER ONE

CREDIT RISK MANAGEMENT

1.1. Risk Management

Risk management is to reduce earnings volatility while minimizing potential losses. Risk management, according to Adeusi et al. (2014), is a technique in which banks identify risk, assess, watch, and control hazards, in addition decide if they have enough monetary to resources reduce hazards. According to ISO 2009 number 31000, the risk management process is as follows:

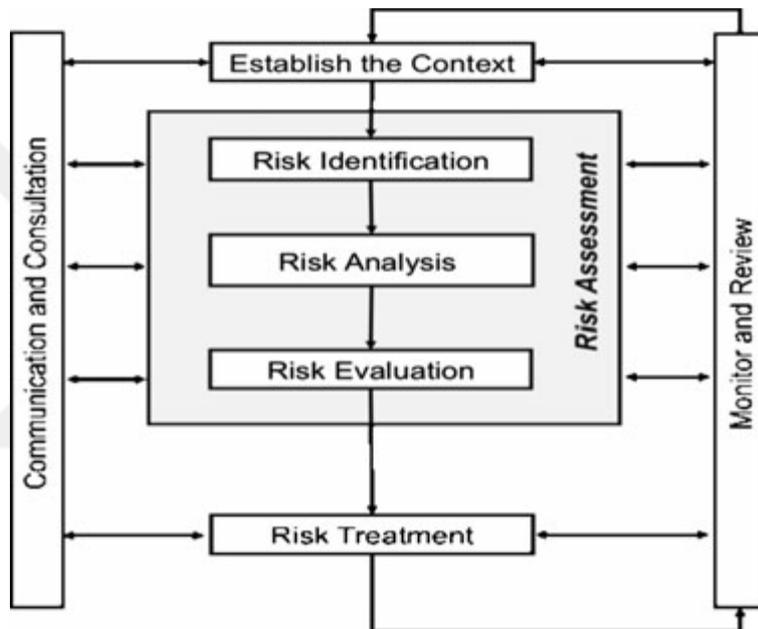


Figure 1 shows the risk management procedure.

Source: Purdy, 2010

Figure 1 depicts the risk management technique described in ISO 31000:2009 is a standard that was published in 2009. The handling of imperiling process is shown to include two primary components: internal and external stakeholder communication and consultation, as well as inside and outside environment monitoring and review. The three main the several stages of the risk management procedure are context setting, risk assessment, and management. The first step is to deperiod in the organization's objectives and the internal and external factors that may have an influence on those objectives (Purdy, 2010).

Risk assessment, according to ISO 31000, is the second step in risk management. It consists of three phases: identifying the risk by establishing what may happen, at any time, by whom, and why. The risk analysis follows, which entails a comprehension of each threat and its consequences. The final process is imperiling assessment, which entails deperiod in the amount of risk. Risk treatment is the third phase in risk management, and it involves either enhancing current controls or inventing and implementing new ones (Purdy, 2010). ISO number 31000 which is a common risk management procedure has evaluated the risk management method that we described after considering several choices. Iteration occurs among phases and parts of communication and consultation, as well as monitor and review, in practice. However, it is also applicable to the risk management procedure of a bank. Banking operations such as receiving deposits, lending money, foreign currency transactions, money transfers, and so on have evolved dramatically through time, exposing banks to a wider range of risks. The banking industry requires effective risk management to avert potential losses, avoid insolvency, benefit shareholders and depositors, and increase profit-making possibility (Gestel & Baesens, 2009).

1.2.The Concept Of The management of credit risk

Given banks' heightened sensitivity to credit risks and fluctuations in the evolution of financial instrument prices, managing credit risk of credit portfolios is one of the majority of essential jobs to the banking sector's financial liquidity and stability. The most significant influence on the company's performance is financial risk. Unsystematic risks have a greater influence on an organization's performance than systematic risks, (Kiseáková and Kiseák, 2013).

In the management and reduction of credit risk, the risk assessment techniques used to identify each individual loan, or borrower, are crucial. The loan portfolio as a whole may only be handled after considering the risk suggested by each individual borrower and each unique credit service. The credit risk of a borrower is deperiod ined by examining and analyzing both qualitative and quantitative data indications a portion of the borrower's financial situation.

The evaluation of the imperil considerations associated with the issue of a specific loan, as well as their complete and , allowing the bank to incorporate these

features into the management of credit risk and avoid recurrence and negative influence on future performance (Rodina et al., 2013). Credit risk quantification procedures must meet a certain level of openness, which includes a quantitative evaluation of the methods' precision as well as a statistical method feature known as robustness. Transparency has risen to the top of the priority list attribute of credit risk assessment approach due as a result of the requirement for the most complete Identification of credit risk as well as the credit risk model. Transparency in methodology can be defined as the precision of mathematical methods used, the elimination of subjectivity in expert judgments, as well as the clarity of risk assessment and analysis outcomes, the depth of knowledge of these outcomes among bank workers, as well as the methodologies' accessibility to regulatory authorities and borrowers. In order to evaluate, anticipate, Each bank must be able to manage credit risk and identify key credit risk elements, understand the risk associated with them, and regularly monitor credit risk components (Andrianova , 2013).

The accuracy of risk recognition and assessment will impact the bank's decisions on whether or whether or not to approve a loan, the interest rate, and the repayment period s degree of loan default provisions. The number of mistakes in recognizing The average number of "poor" and "excellent" loans are used to measure the accuracy of risk factor evaluations. When loans are grouped into more than two groups, the accuracy of risk factor evaluations is assessed in a similar way. Furthermore, the robustness of statistical approach return on asset (ROA) is a quality that characterizes the stability of risk assessment procedures. Different risk assessment procedures, or the same approach return on asset (ROA) applied to differing algorithms, result in different ratings of loans as "good" or "poor." Different approach return on asset (ROA) can lead to a loan being classified as "good" or "poor" based on the methodology used. Such inconsistencies in loan classification may have an impact on the evaluation of 20% of all loans (Solojentsev, 2004).

Banks must adjust their credit-related operations to the changing conditions of the developing economy and changes in the level of living in the country. For a bank's smooth operation, the procedures employed to calculate and analyze credit risk are critical (Seitz and Stickel, 2002). To measure and analyze credit risk, Each bank develops its own model for assessing hazard chance. taking into consideration the basic guidelines The Basel Committee on Banking Supervision is a committee of the

Basel Committee on Banking Supervision. Credit risk assessment's high accuracy benefits in limiting bank losses, lowering interest rates, and improving the bank's competitiveness. Only continuous quantitative examination of statistical data on credit performance allows for the development of an appropriate risk assessment model and the successful management of credit risk. The subjective judgement of bank professionals and automated risk assessment systems are two techniques to deperiod ining the credit risk presented by a certain borrower (Konovalova, 2009). Credit risk assessment methods based on mathematical models, on the other hand, have shown to be more productive and trustworthy than any other. To construct a credit risk assessment model, the credit institution's clients who have previously demonstrated themselves to be either excellent or bad borrowers are first chosen (Ralf, 2009).

1.3 The Model and Indicators of Credit Risk Assessment

To provide successful the management of credit risk in commercial banks, Clients of banks that accept loans are subject to certain period s and conditions must be developed things are both appealing new borrowers and assure loan payback. However, developing a distinct a set of period s and conditions specific to each borrower would be impractical. Clients of the bank, both current and future should instead be divided into groups based on their similarities and distinctions. Following that, each organization must develop its own set of rules and conditions based on the unique characteristics of its members. The method of categorization that connects different system parts into homogenous groups based on the commonalities of the elements in question should be used to classify bank clients into separate categories.

This classification approach return on asset (ROA) must fit the structure of the source data and ensure that the data is grouped in the most appropriate way possible. In common, clustering and networking utilized to achieve these goals. In multidimensional samples, both of these algorithms yield equivalent categorization of objects into classes. In this post, we'll look into clustering as a way to measure credit risk. Statistics on the number of times bank clients break contract period s and the amount of money lost to the bank as a result of each breach must be included when analyzing the risk of a bank's lending activity. The regressive dependence of the size of the risk in period s of the potential damage (risk defined as the customer's failure to make timely principle payments) on parameters such as average loan size $1 x$, loan

period $2x$, as well as a variety of other variables can be noticed. The specification and detection of such regressions should be based on information about the harm that each client does as well as each customer class's credit attributes. A model like this would allow the harm caused by each potential client to be predicted.

1.3.1. Capital adequacy ratio (CAR)

CAR is a measure of a bank's capital level stated as a percentage of its risk-weighted credit exposure, computed as the ratio of capital to the risk-weighted total of the bank's assets (Poudel, 2012). It is the minimum amount of capital that a bank must have in order to meet regulatory requirements. Maintaining a specific capital adequacy ratio is critical for deperiod ining banks' ability to meet losses and ensuring that banks can still withstand an acceptable amount of losses. Strong capital adequacy allows banks to withstand potential losses, averting collapse and insolvency. This might be viewed as increasing profit making possibility.

Because of the subprime mortgage concerns that led to the financial crisis of 2007, In the banking business, capital-based regulation has become a key concern. Banks with little capital must either recover outstanding debts or close their doors or become hesitant to provide new credit in order to maintain the required capital adequacy ratio. During economic downturns, bank capital is more likely to be required, and recapitalization is difficult, therefore banks satisfy the capital ratio by lowering their lending. The outcomes of a few empirical studies research that included capital adequacy ratio in their analysis were varied. Abdelrahim (2013), Garba (2014), and Unuafe (2013), for example, discovered a substantial positive association among capital adequacy ratio and bank performance. Alshatti (2015), Zou and Li (2014), on the other hand, discovered a negative relationship among capital adequacy ratio and bank performance. Most studies, on the contrary, suggest that capital adequacy ratio (CAR) be kept in banks to protect them from potential losses. As a result, a positive correlation among capital sufficiency and profit making possibility is envisaged.

The capital adequacy ratio (CAR) is calculated using the following formula:

$$CAR = \frac{CAPITAL}{RISK\ WEIGHTED\ ASSETS}$$

1.3.2. Bank size (BS)

In the banking market, The size of a bank accounts for existing economies and scale diseconomies. (Athanasoglou, 2008). Larger banks are more engaged in the markets, provide a wider range of products, and have more risk diversification options (Lehar, 2005). Furthermore, because they do not compete in a highly competitive market, larger banks can gain efficiency (Flamini, & McDonald, 2009). DemirgüçKunt and Maksimovic (1998), on the other hand, believe that the amount to which financial, legal, and other issues impact a bank's profit making possibility is proportional to its size. In contrast, Abdelrahim (2013) discovered that the size of a bank has a considerable negative influence on the performance of a Saudi bank's credit risk management. As a result, based on theory and previous research, a positive relationship among the bank and the customer size and bank profit making possibility is projected. The following is the bank size calculation used in this analysis:

$$BS = \text{NATIONAL LOGARITHM OF TOTAL ASSETS}$$

1.3.3. Leverage ratio (LER)

As previously stated, The global financial crisis is caused by a number of factors, one of which is largely thought to be the banking system's high leverage ratio. The leverage ratio measures how much debt a bank is employing to fund its operations in comparison to the value of its shareholders' equity. It examines the bank's capacity to satisfy its financial commitments by deperiod ining how much of the bank's capital is in the form of debt. To fund its activities, the bank uses a combination of shareholder stock and liabilities. A high leverage ratio refers to s that a bank is risky when it comes to debt financing. Uncontrollable debt shows too many responsibilities to pay off, therefore aggressive leveraging methods frequently signal a high level of risk. Furthermore, because of the added interest expenditure, a high leverage ratio might result in unpredictable profit making possibility for banks. Maintaining a bank's leverage ratio is critical because it prevents the bank from taking on too much debt, which might harm the wider economic system and financial system; and it strengthens risk assessment mechanisms (Miu, Ozdemir, & Giesinger, 2010).

Only a few research looks at the impact of credit risk management on bank financial performance have utilized the leverage ratio as a measure of credit risk management. According to Alshatti (2015), the leverage ratio has a negative influence on a bank's financial performance. Based on previous research, it is believed that the leverage ratio and bank performance have a negative connection.

The leverage ratio (LER) is calculated as follows:

$$LER = \frac{TOTAL\ LIABILITIES}{TOTAL\ COMMON\ EQUITY}$$

1.3.4. Non-performing loan ratio (NPLR)

Since an increase in the non-performing loan ratio is considered as a failure of bank credit policy, a drop in bank revenues, and a key cause of the financial crisis (Saba, Kouser, & Azeem, 2012). As the non-performing loan ratio represents the proportion of non-performing loans to total loan portfolio, It's also seen as a barometer of how banks handle credit risk. If the borrower is still making payments on the loan, it is generally referred to as a late payment rather than a default loan (Saba et al., 2012).

All loans that have been late on principle, interest, or both for more than 90 days are considered non-performing loans (Wahlen, 1994).

- **Doubtful:** Loans with an overdue amount that looks to be uncertain and for which the actual amount cannot be ascertained. Banks set aside 50% of their lending portfolio for questionable loans.

- **Virtual loss and loss:** Unpaid loans made to businesses who were looking for legal help. Banks set aside 100% of their reserves in the case of non-recoverable loans.

Non-performing loans are classified as substandard, dubious, or virtual loss and loss, depending on how difficult they are to collect. Even though the borrower has not repaid the entire amount owed, if the borrower resumes payments When a non-performing loan is repaid, it is considered a re-performing loan.

Because non-performing loans are so important in financial institutions, various research on the link among non-performing loans and financial performance have been done, with varied findings. Non-performing loans have an inverse influence on bank profit making possibility, according to Bhattarai (2014), Ndoka and Islami (2016), whereas non-performing loans have a positive impact on bank financial performance, according to Alshatti (2015).

The non-performing loan's positive impact on financial performance refers to that, despite the fact that the borrowers are not repaying the loan, profit making possibility is growing. Despite the varied results, it is hypothesized that non-performing loans and bank profit making possibility have a negative association.

The non-performing loan ratio (NPLR) is calculated as follows:

$$NPLR = \frac{NPLs}{GROSS LOANS}$$

Where,

NPLs=Non-Performing Loans

1.4. Risk Management And Bank Performance

Banks are created for a variety of reasons. These might be for the purpose of influencing bank performance, raising profit making possibility, or shareholder are returning, and are frequently achieved at the expense of greater risk. Taking risks is a good thing an unavoidable part of the banking industry, and accomplishing any One of these objectives is a reward for good risk management. According to Soymi (2014), the bigger the risk, the larger as a result of the company must make a a compromise among the two Furthermore, risk management in banking has a substantial influence on national economic growth and corporate development. Banks' ineffective risk management may not only prohibit them from reaching their goals, but it may could lead to insolvency. As a result, banking activities are constantly fraught with danger of many types. Risks are regarded justifiable when they are comprehensible, measurable, manageable, and within a bank's ability to actively reject their negative consequences.

Risk management that is sound allows bank executives to take calculated risks, minimize risks when necessary, and plan for unforeseeable dangers (NRB, 2010). If capital adequacy ratio (CAR) done correctly, it benefits banks by enhancing effectiveness and earning, motivating new consumers, and adhering to the rules (Adeusi, & Oladunjoye, 2014). As a result, banks' risk management has an impact based on their financial performance.

1.4.1. Review of empirical studies about risk management and bank performance

To investigate the impact of risk management on financial performance in various domains, a thorough review of the literature was done. Abdelrahim (2013) investigated the variables, Using a descriptive and analytical approach, the difficulties and drivers of improving the efficacy of the management of credit risk in Saudi banks were identified (ROA). The study established the following independent variables: Capital adequacy ratio, asset quality, managerial soundness, credit facility earnings, liquidity, and bank size are all factors to consider. The findings of this study reveal that liquidity has a large positive influence on the efficacy of Saudi Banks' credit risk management, but bank size has a negative impact on the effectiveness of Saudi Banks' credit risk management. Other factors like as capital sufficiency, asset quality, managerial soundness, and earnings, on the other hand, were shown to have no effect on the efficacy of Saudi Arabian banks' credit risk management.

In period s of the management of credit risk efficacy, Abdelrahim (2013) has noted a number of issues that Saudi banks face. Low asset quality, insufficient training, poor corporate governance, credit diversification, credit ceilings exceeding customers' repayment capacity. To address these problems, he advises Saudi Arabian banks to develop a total the management of credit risk plan, extend the credit risk committee's responsibilities, execute the Basel III agreement, and apply creative credit risk reduction measures.

Adeusi et al. (2014) examined the association among risk management approach return on asset (ROA) and financial performance using secondary data from 10 Nigerian banks' financial performance from 2006 to 2009. The cost of bad and doubt loans, non-performing loans, liquidity, equity-total asset ratio, equity-loan ratio, and debt-equity ratio were all employed as independent variables by the researchers. The ROA is the dependent variable. The data reveal a negative association among bank a positive and significant association among CAR and bank financial performance, but a negative and considerable relationship among CAR and bank financial performance. Bank performance and risk management are closely connected, according to the researchers. The credit risk indicators revealed, according to the researchers, should be used to improve banks' financial performance Costs of bad and problematic loans, controlled funds and debt-to-equity ratio, for example, should be properly handled.

Using both primary and secondary data, Aduda and Gitonga (2011) Thirty Kenyan commercial banks were studied to see if there was a link among the management of credit risk with earnings. Primary data was collected via a questionnaire from 2000 to 2009, while secondary data was acquired from the bank's financial filings. Disclosure. NPLR was employed as an independent variable to represent credit risk management, while return on equity (ROE) was used as a dependent variable to represent bank profit making possibility. In this inquiry, the regression analysis return on assets was used. The survey's findings show that profit making possibility ratios have a big influence on credit risk management. Similarly, regression analysis demonstrates that financial performance is statistically significant and negatively related to return on equity.

Afriyie and Akotey (2012) utilized a regression method to investigate the affects of the management of credit risk on the profit making possibility in Ghana. The authors employed non-performing loans and capital adequacy ratios as the management of credit risk indicators. The researchers uncovered the root of Ghana's poor the management of credit risk techniques, stating that banks pass on the cost of loan default to other customers by charging higher interest rates on loans. As a result of this practice, community banks remained profitable. Non-performing loans, on the other hand, show that Ghana's rural and community banks lack robust and effective the management of credit risk processes, which might jeopardize bank profit making

possibility. To put an end to this practice, the researchers advise the The Bank of Ghana is tightening its grip over Ghana's rural banking industry.

Berrios (2013) investigated the relationship among growing. The first phase included the most recent data, such as insider ownership, executive management salary, and tenure. Regression modeling was utilized in the second phase utilizing data from the Mergent Online database. For the second phase, a total of roughly 200 observations from 2005 to 2009 will be collected from 40 banks chosen at random from the database. Bank performance has been proven to be harmed by insider holdings and chief executive officers with a lengthier tenure. However, the study notes that more evidence is required before this result can be applied broadly return on asset (ROA). The regression findings show that loans to deposits have a negative link with cash flows, whereas lending prudence has a positive relationship with financial success.

From 2004 to 2008, Kithinji (2010) utilized regression analysis to evaluate the relationship among the management of credit risk and commercial bank profit making possibility in Kenya. The quantity of credit and non-performing loans are independent variables, whereas return on total assets is the dependent variable, according to the author. The findings of According to this study, there is no link among bank profit and the quantity of loan issued ruor the number of non-performing loans, contrary to earlier studies. This shows that the amount of credit extended and the number of non-performing loans a bank has have minimal influence on its profit making possibility. As a result, the author encourages commercial banks looking to boost profits to focus on metrics other than lending volume and non-performing loans.

Li (2014) looked at the connection among the management of credit risk and commercial bank profit making possibility in Europe from 2007 to 2012, similar to previous studies. The authors gathered data from 47 of Europe's most prestigious commercial banks. The management of credit risk proxies included the CAR ratio and NPLR , while profit making possibility proxies included The period s "return on assets" and "return on equity" are interchangeable. Overall, the results of this research show that credit risk exists. Management has a positive impact on commercial bank profit potential in Europe, implying that better financial sector leads to higher commercial bank profit potential.

Similarly, from 2004 to 2008, Nawaz et al. (2012) employed multiple regression analysis to investigate the impact of credit risk on Nigerian bank profit making possibility. Credit risk indicators included the (npl) to loan and advances ratio, as well as the loan and advances to total deposit ratio. As a financial performance indicator, the return on asset was used. Bank profit making possibility is inversely associated to the number of loans and advances, NPL, and deposits, placing them at risk of illiquidity and distress, according to the findings of this study. Management should exercise caution when developing credit regulations to prevent harming profit making possibility, according to the experts.

In addition, Alshatti (2015) used thirteen Jordanian commercial banks to evaluate the impact of credit risk indicators on bank financial performance from 2005 to 2013. The author gathered data from secondary sources, such as yearly reports from sample banks, and conducted a panel regression analysis research. CAR, the ratio of interest/ facilities, leverage ratio, and non-performing loan percentage are among the the management of credit risk indicators examined in this study. Bank financial performance measures include return on assets and return on equity. The study's findings suggest that while the ratio of non-performing loans to gross loans has a beneficial influence on bank financial performance, the provision for facilities loan/net facilities ratio has a negative impact.

From 2005 to 2015, Ndoka and Islmi (2016) evaluated the influence of the management of credit risk on the profit of the firm in 16 commercial banks in Albania. As independent variables, The non-performing loan ratio and the capital adequacy ratio were employed in the analysis. Once again, return on assets and return on equity were used as dependent variables. The overall findings of this study show that in Albania, commercial banks' the management of credit risk and profit making possibility. The researchers recommend that Albanian banks concentrate on credit risk management, particularly the supervision and monitoring of non-performing loans, based on their results.

Prahallad Chandra Das (2020) used data from 10 commercial banks to conduct a research on the influence of the management of credit risk on the financial performance of commercial banks in Bangladesh over a seventeen-year period (2000-2016). The bank's annual reports provided secondary data for this study, which was examined using a t-test for mean comparison, correlation, and multiple regression analysis. The financial performance measure was Return on Assets (ROA), while the the management of credit risk indicators were Non-Performing Loan (NPL), Capital Adequacy Ratio (CAR), and Advance Deposit Ratio. Credit risk stagnation is a big worry for Bangladeshi commercial banks, According to the study, all banks should establish the management of credit risk principles and comply with them in order to improve the bank's long-period profit making possibility and growth.

In this study, Ossou Ndzila Fred Nelson (2020) look at the influence of the management of credit risk on the profit making possibility of BGF Bank Congo, identifying credit risk indicators and profit making possibility assessment ratios from 2010 to 2019. As assessed by its the management of credit risk indicators, the results show that the management of credit risk has a minor impact on profit making possibility. Return on equity is harmed by the loan loss provision ratio, the capital assets ratio, and the non-performing loan ratio (ROE). These three ratios have a negative impact on return on assets (ROA) and the ratio of client loans and short-period financing on return on equity, although the capital adequacy ratio (CAR) has a favorable impact return on equity (ROE). As a result, the management of credit risk has a big influence on profits. Other the management of credit risk metrics, such as the loan provision ratio and the clean capital adequacy ratio, have a substantial influence on the Bank's profit making possibility , according to the research.

K. Batu Tunay and Serhat Yüksel (2017) performed research with the goal of deperiod ining the impact of corporate governance on bank foreign ownership. Annual data from 65 developing nations was evaluated in this context for the years 2004 to 2013. In addition to this circumstance, this study employed seven explanatory factors to attain its goal. As a consequence of the investigation, it was discovered that there is a strong link among foreign bank activities and country governance levels. In this regard, it was discovered that corruption, political stability, rule of law, and legal regulation flexibility all have an impact on foreign bank activities. Furthermore, foreign bank activities are stronger in nations with low poverty, high political stability,

and a well-developed legal framework. On the other side, it has been deperiod ined that severe legal regulation has a detrimental impact on foreign bank operations, indicating that foreign banks prefer to join nations with more flexible legal laws. This study provides crucial information to developing nations regarding the elements that influence multinational banks' decisions to invest in developing countries. As a consequence of the findings of this study, the governments of these nations may be able to take the required steps to recruit foreign banks.

Sokol Ndoka and Manjola Islami (2016) conducted a study with the primary goal of deperiod ining whether there is a link among the management of credit risk and commercial bank profit making possibility in Albania. Return on Equity, Return on Assets, Non-Performing Loans Ratio, and Capital Adequacy Ratio are the main indicators used in this study. From 2005 to 2015, data was collected from the 16 banks that operated in Albania's banking system. The link among the four parameters and the profit making possibility of commercial banks in Albania is tested using statistical tests.

Their research aims to elucidate the link among corporate governance (GOV) and business innovation, according to Zoubida Samlal (2019). Is there any empirical evidence of how different corporate governance frameworks impact business innovation in Moroccan firms that are publicly traded?

The study used a closed-ended questionnaire with a fifth-degree Likert scale for a confirmatory quantitative investigation. The survey was issued to 54 publicly traded Moroccan companies, which were represented by senior management with a focus on finance and economics.

The study presents empirical data and insights into how corporate governance systems affect company innovation in publicly traded Moroccan enterprises. It implies that efficient corporate governance processes encourage and nurture company innovation.

Fatima Bellaali and Abdelhamid Al Bouhadi's study (2021) aim to look into the credit risk management processes utilized by Morocco's commercial banking business, as well as their impact on the banking sector. As a result, the study came to a number of conclusions, including the significance of using the market's method for delegating responsibilities into credit possibilities, which can be accomplished by expanding the bank's revenue strategies in an optimal manner and correct interoperability with market requirements, which enables the bank to use various sources of interest and fees given from other areas of service given by the Bank, rather than focusing solely on loan portability. In addition, the study stressed the importance of having a qualified expert within the Bank to handle extra macroeconomic research on return on equity (ROE).

Deepak Sharma (2021) conducted a study the goal of this study was to see how the management of credit risk affects bank profit making possibility in a sample of fifteen Indian public sector banks from FY2009 to FY2019. Return on assets and return on equity are used as dependent factors, whereas the management of credit risk indicators such as capital adequacy ratio, non-performing assets ratio, and leverage ratio are used as independent variables. The Reserve Bank of India's database and official website were used to gather secondary data. The researchers employed descriptive statistics, correlations, and multiple regressions in their research. The findings show that non-performing loans, which may expose banks to a lot of volatility, and the global financial crisis have a negative impact on bank profit making possibility. As a result, the study concluded that banks should improve their the management of credit risk techniques not just to increase revenue growth, but also to maintain a portfolio of high-quality assets and pay closer attention to non-performing loans..

CHAPTER TWO

PROFIT MAKING POSSIBILITY OF COMMERCIAL BANK AND CREDIT RISK MANAGEMENT

2.1. Commercial Banks Meaning and Definition

The period bank comes from the Italian word banco Hdesk/benchui, which was used by Florentine bankers during the Renaissance to perform transactions above a green tablecloth-covered desk. However, evidence of financial activity may be discovered dating back to antiquity. Moneylenders used to place up their booths on a long bench called a bancu in the middle of walled courtyards called macella, from whence the names banco and bank were derived. The job of a bancu merchant is that of a moneychanger. was to convert foreign coin into the Imperial Mint's legal tender, which was the sole legal tender in Rome. A bank, according to Walter L. (1998), is "a person or business that sets itself forth to take deposits payable on demand by cheque from the general public." According to Horace White, "a bank is a credit generating machine and a mechanism for assisting business." According to Prof. Kinley, a bank is "an establishment that grants to individuals such loans of money as may be necessary and safely made, and to which they entrust money when it is not required for use."

Commercial banks are regarded not just as money traders, but also as economic growth leaders. They are not just the country's treasure storehouses, However, the reservoirs of resources essential for economic advancement are equally important. They are critical to a country's economic development. A well-developed banking system is critical for a country's economic prosperity. B. Johnson and S. Sedaca (2004). Commercial banks are considered the backbone of the economy in underdeveloped nations such as Somalia. The following are some of the ways that commercial banks may help a country's economic development.

2.2. Bank's Risk Types

The management of credit risk is another significant part of this research. A quick overview of the many types of hazards connected with banks, as well as the return on assets derived from the risk management process, is offered in this section. The next part will go through these topics in further depth.

The likelihood of multiple events occurring can be characterized as risk. Different sorts of risk are associated with the various operations carried out in a bank. Risk may be divided into three categories when it comes to hazard management and banking: (i) manageable risk, (ii) hazard that is possible to be passed to others, and (iii) the potential for danger removed (Santomero, 1997).

As previously stated, all examples of hazards, market risk, and foreign currency risk are discussed by Bessis (2011). The following is a quick explanation of these dangers:

Credit or default risk: is the one of the most significant hazards a bank confronts, and it has a significant impact on its performance. When the actual return on an investment is completely different from the planned return, this is referred to as credit risk. It might refer to the risk of losing both the principle and the interest earned on the investment (Gestel, 2009). When a borrower fails to fulfill their loan obligation according to the periods of their contract, the lender faces credit risk. Credit risk has an impact on a bank's profit-making possibility, liquidity, and cash flow, which have been recognized as the leading reasons of bankruptcies and the largest danger with relation to the bank's performance (Van Greuning, 2009).

Liquidity risk or funding risk: This situation can occur if depositors remove cash abruptly, making it impossible to make more deposits. To avoid this, a financial establishment may have a portfolio of liquidity that may be swiftly transformed into the correct quantity of money, so reducing its risk of running out of money (Burton et al., 2015).

Interest rate risk is referred to by a decrease in net interest revenue at the financial institution (Bessis, 2011). It occurs when the interest rate fluctuates suddenly. As a result, interest costs outweigh interest earnings. A scenario comparable to this happens (Burton et al., 2015).

Mismatch risk: It occurs when assets and obligations have different maturities and interest rate reset dates (Bessis, 2011). Interest rate risk and liquidity risk are both included in mismatch risk. The discrepancy among the short-period deposit rate and the long-period lending rate over a particular length of time causes interest rate risk. Similarly, liquidity risk emerges when financial institutions are unable to meet their obligations due to a mismatch in maturity periods. Banks and financial organizations may prevent a scenario like this by borrowing at lower rates and lending at higher ones.

Market liquidity: also known as market price risk, is a risk that only applies to assets that are traded in small volumes. Market liquidity risk does not present for assets that are extremely liquid, such as Treasury bills or bonds.

Market risk: refers to the risk of potential losses as a result of adverse market price fluctuations, such as short-period foreign currency losses and long-period derivatives losses (Bessis, 2011).

Exchange rate risk: It is a risk that emerges when a financial institution keeps foreign currency and suffers losses as a result of a negative change in the exchange rate (Burton et al., 2015).

Credit risk: is the most important of all the hazards that banks face since it has a direct impact on the bank's profit making possibility.

When borrowers do not pay the bank interest on their loans, the bank loses interest income, resulting in a decrease in profit making possibility. Banks typically use secured mortgages and other recovery alternatives to secure the loan amounts they lend to borrowers. The loss of main amounts adds to the recovery load, and most of the time, the bank does not obtain the whole amount of the default, which has a direct impact on bank profit making possibility. The focus of this research is on credit risk in banks and how it affects commercial bank profit making possibility.

2.3. Bank Capital Standards: The Changing Basel Accord

As banks' risk management becomes more crucial, financial stability is becoming increasingly critical in modern economics. G10 Governors strongly support the Basel Committee in the event of a debt crisis in Latin America affecting the economy: "committed to stop the degradation of capital requirements in their banking sector and strive toward greater convergence in capital adequacy measurement."

Basel I:

On December 1987, G10 Governors approved the Basel Capital Accord and In July 1988, the funds were delivered to banks. There are two roles for the Accord. The first role is the promotion of the international financial system's soundness and stability. The second is to ensure fairness in bank competitions.

In the end of 1992, The Accord stipulated a minimum wealth percentage asset of 8% was implemented. The capital, in this Basel Accord, had two components, 1 and 2 capitals.

However, because of its simplicity and random nature, it has drawn a lot of criticism. One of them, for example, is solely responsible for assigning risk weights to various asset types.

1996 Amendment:

Basel I was focused mainly on the credit risks and in order to address other risk, To alter the Basel Convention and Committee released a document for review. The "1996 Amendment" was created as a result of this. The most essential component of this paper the permmsion to the commercial banks to use the internal benefit at risk models as biases in calculating capital to cover losses incurred as a result of market risks.

Basel II:

The Basel II is built on three pillars:

The First	Minimum Capital Requirement
The Second	Supervisory Review
The Third	Market Discipline

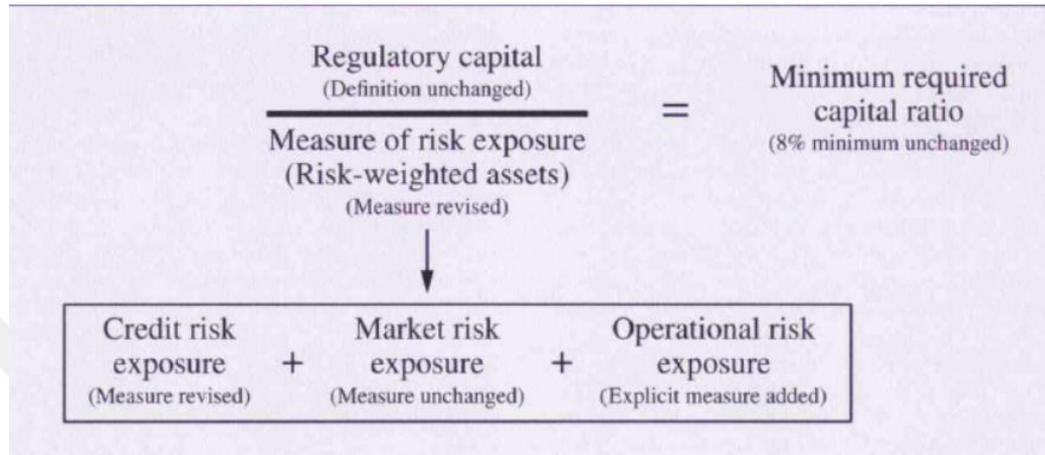


Figure 2. Under Basel II, the capital ratio is calculated.

Source: Ferguson, (2003).

2.4. Profit making possibility Of Commercial Banks

Because the theme of our the link among research and profit making possibility and credit risk management, profit making possibility is one of the major ideas in this study. Profit making possibility shows a bank's competitiveness and is used to assess managerial quality (Waifem, p.16). In this section we will discuss profit making possibility and two indicators of profit making possibility (ROE) and (ROA).

There are two categories that conclude the deperiod inates of commercial bank's profit making possibility, the first one contains those under board's control (internal deperiod inates) and the second one contains the control of management (external deperiod inates) (Komidou et.al, 2005). These credit management-related factors should be factored into decisions and internal policies that can be assessed using financial statements. On the contrary, external regulation effects on bank's decision. External variables are also taken into account in this study.

2.4.1 DuPont model:

In 1918 The DuPont technique was created by a Dupont engineer who discovered that the product of two typical computer ratios, total assets turnover and net profit margin, equals return on assets (ROA). Because of the elegance of (ROA) being modified by profit making possibility and efficiency measures, this method has been frequently employed for financial analysis. In the 1970s, there was a shift in the focus of financial research from (ROA) to (ROE) (Alimazari, 2012, p.86). We want to use this model in our research to find the most appropriate measures of commercial bank profit making possibility in Iraq.

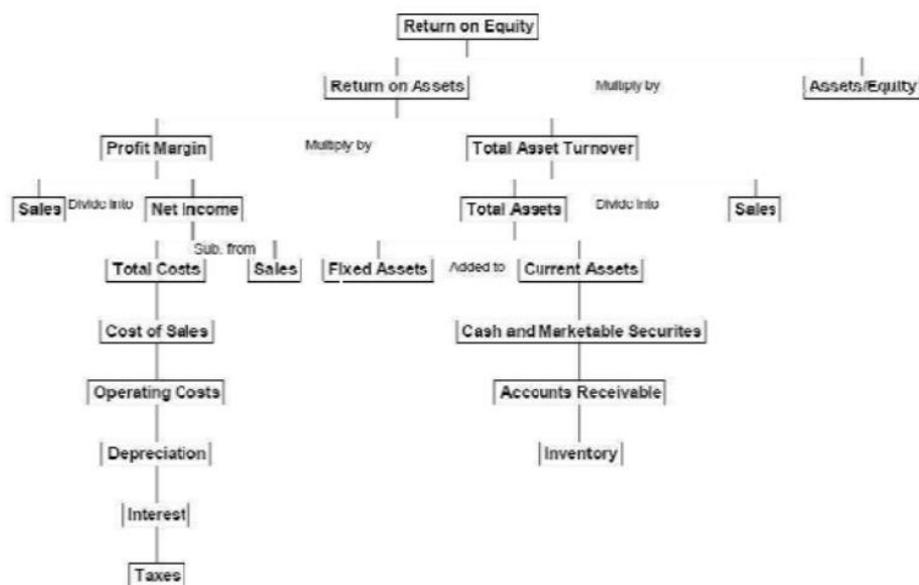


Figure 3. DuPont Model.

Source : Alimazari, (2012)

2.4.2 Bank profit making possibility indicators

Because bank profit making possibility is such an important component of the research, a detailed explanation of the best way to quantify it is provided. As previously stated, there are several metrics of bank profit making possibility, and the particular measure employed will be decided by the study's goal as well as the sample banks' practices. In this study, the metrics of return on asset and return on equity will be used as indicators of bank profit making possibility. Return on assets and return on equity, which are not only basic performance metrics.

Return on equity (ROE):

In the introduction we illustrated the hierarchy of ratios. In this section we will concentrate on a certain percentage, return on asset (ROA) and return on equity (ROE). Return on equity defines the value of the overall profit making possibility of the fixed income per dollar of equity. Its express as

$$ROE = \frac{Net\ Income}{Total\ Equity\ Capital}$$

This ratio is used to measure the quantity of the net income after taking the taxes which calculated for each dollar of equity capital for the bank's shareholders. (Marcia and Saunders, p.23, 2011).

Stockholders In general, a higher return on investment (ROI) is preferable. The rising rate of return on investment (ROI) suggests, however, that the risks are growing. A significant.

Return on equity (ROE) can be broken down into two pieces in order to detect possible issues.

$$ROE = \frac{Total\ Assets}{Total\ Equity\ Capital} \times \frac{Net\ Income}{Total\ Assets}$$

$$ROE = EM \times ROA$$

Where:

EM = Equity multiplier.

(ROA)= Return on assets.

Net income is the profit after tax.

Return on assets (RETURN ON ASSET (ROA)):

return on asset (ROA) is defined the ratio of net income to total assets, it measures how the profitable and efficient a bank's management is, based on the total assets.

In this step return on asset (ROA) may be broken down into the following aspects:

$$ROA = \frac{\text{Total Operating Income}}{\text{Total assets}} \times \frac{\text{Net income}}{\text{Total operating income}}$$

$$ROA = AU \times PM$$

Where:

AU: The interest and non-interest money made per dollar of total assets.

PM: Net profit as a percentage of total operating profit.

The aspects of return on asset (ROA) can also be divided into the following (Fathi, 2012, p.218)

$$ROA = \frac{NII - NIE}{TA} + \frac{II - IE}{TA} - \frac{Provisions}{TA}$$

II=	Referring to Interest Earnings
IE=	Referring to Interest Charges
NII=	Referring to Non-Interest Earnings
NIE=	Referring to Total Assets
TA=	Referring to Non-Interest Expense

We can state this equation as:

$$ROA = \text{Net Interest Margin} + \text{Non Interest Margin} \\ - \text{Provision to Total Assets}$$

Where we can restate return on equity (ROE) as:

$$ROE = EM \times (NETIM + NONIM - PROV)$$

NETIM=	Referring to Margin of Net Interest
NONIM=	Referring to Margin of the Non- Interest
PROV=	Referring to the Provision divided to Total Assets
EM=	Referring to the Equity Multiplier

2.5. Iraqi Banking Structure Characteristics

The Iraqi banking sector is poor since it is made up of just (77) local and international banks, and it contributes only 1.5 percent of the country's gross domestic product (GDP). It is apparent that this industry has been hampered by structural instability and upheaval, which has hampered its growth and participation in Iraq's reconstruction. If a diagnostic is right, it appears to be a remote probability that it will move to better its function within Iraq's planned economic development and raise its contribution to the composition.

In Iraq, there are (77) foreign banks, which are distributed as follows: Iraq's banking system Iraqi banking consists of seven state-owned banks. (24) Commercial banks, (11) Islamic banks, and (18) financial institutions that have been transformed to banks operate globally (17). The government banks' dominance over (85-90%) of government deposits (10% -15%) has left all Iraqi private banks with just those deposits. The MENA population has a low credit ratio of among 9% and 10%. (55 percent). The low credit is gross national product. If banks' capital and sound reserves aren't credited to the amount of (1.2), central bank instructions allow banks to award eight-fold capital and sound reserves. The availability of high liquidity for banks of up to 60%, indicating the sector's reluctance to spend its reserves and deposits in support of the national economy on the one hand, has a detrimental impact on bank profit making possibility and wastes potential investment possibilities.

Private banks have a capital adequacy ratio of more than 8%, which is higher than the CBE's limit of 12% and demonstrates a lack of investment in the sector's assets once again. There is a significant discrepancy among fixed interest rates and loans in Iraqi banks. Fixed deposit and savings interest rates range from 2 to 7%, while credit interest rates range from 10% to 15%, leaving the spread among the two rates at or over 8%. This is considerable when compared to the Middle East and North Africa (5 percent). This increase in interest rates will undoubtedly reduce the quantity of credit available; it will be a barrier to growth borrowing.

Throughout Iraq, there are (900) branches in central Kurdistan and a few large towns, and many people rely on various financial services. There are a modest number of banking units in periods of population. In Lebanon, the division serves around 41 000 people, whereas Iraq's population is believed to be over 37 million (Union Arab Banks Journal, 2014, Financial Stability Report in Iraq).

CHAPTER THREE

METHODOLOGY

3.1. Research Design

The study's aim is to examine the relationship among the management of credit risk and business bank profit making possibility in Iraq from 2011 to 2010. As a sample, we look at significant commercial banks in Iraq by total assets. The cause we chose large banks is that they possess a higher stage of openness and tougher rules than smaller banks. The majority there are a number of big banks listed, including increases the trustworthiness of the data they have disclose. As a result, when we employ such information, our research becomes more reliable. Large banks frequently publish their annual reports on their official websites, which we can access to learn more about the bank. they're more appropriate to the full trade banks in Iraq.

A number of research methods might be used to study business concerns. Investigations that are exploratory, descriptive, or explanatory can be categorized into three types based on how researchers ask their research questions and express their goal (Saunders et al., 2009, pp. 138 & 139).

While we begin by addressing the management of credit risk and commercial bank profit making possibility, our ultimate aim is to see if there is a link among the two and how it affects credit risk control.

Studies, questionnaires, and archival analysis are all part of a research strategy. These really are essentially superior research methods, and they should not be used together. The value of a research strategy is determined by how well it aids researchers in answering their research issues and achieving their objectives. This refers to s that the research topics and objectives drive the choice of research approach. Furthermore, the current information, the length of period necessary, and other resources all have an impact on the identification of the research plan. (Saunders and colleagues, 2009).

Our investigation will require an archiving method that includes data of administrative data. The information is gathered out of each bank's annual report,

which is a sort of recorded secondary data. As a consequence, we remember that historical method is very well matched to our inquiry. Other study approaches to yield on asset (ROA) that we presented have major differences from ours. We no longer use survey studies in our research, preferring instead to obtain data straight from yearly records. The best ratios are used as indications to rate the overall performance of chance management, notwithstanding the study's goal of valuing credit score risk control. The plan was prepared return on asset (ROA) focuses on control studies and organizational challenges, but the goal of our study is to look at the life of dating in terms of credit score managing risk and profit earning potential. To be applied in this study, the actions method return on asset (ROA) is just too excessive. Moreover, the motion approach emphasizes the researcher's engagement in the institution as a learner. However, since we are "outcasts" to those financial institutions, motion research are no longer a requirement here. Ethnography, on the other hand, is more suited to exploratory approach than deductive research like ours.

3.2. Research Method

Quantitative and qualitative studies are two types of research methods. Quantitative studies, as per Bryman & Bell (2007), emphasize the statistics series and analysis. Typically, quantitative studies use a deductive strategy to establish a link among concepts and studies that focus on putting concepts to the test. It embodies a perspective of social truth as an external, goal truth by combining the activities and norms of the herbal medicinal version in a positivist role. (Bryman & Bell, 2011, p. 28).

Qualitative research, on the other hand, places a greater emphasis on words than on data quantification; it give advantage to the inductive approach on asset (ROA) to the interaction among theory and study, intending to generate hypotheses. the scientific model's synthesis of practice and norms stresses the option of interpretivism, which relates to how people interpret the social reality.

In this thesis, we've chosen the quantitative method since we believe that trying out a notion is more important than generating one. To accept or refuse the hypothesis, we gathered data for four variabls (ROE), (ROA), (NPLR), and (CAR), each of which can be numerically defined. The data is compiled all at once from yearly documents of Iraq's largest goal six banks in period s of total assets. Other methods of data

collection, such as the use of a survey or an interview, are not considered in this study. As a consequence, quantitative data and statistical analysis keep the goal concept grounded in social reality. As a consequences, quantitative research is particularly well suited to this area.

3.3.Data Source and Collection

An investigation's foundation is the literature and data source. Literature sources are categorized into three categories to aid researchers in developing a thorough understanding of prior research.

To acquire the data, we received the whole annual and risk assessments (some banks provide their incidents with their financial statement) again for financial institutions we picked between 2007 and 2012, that I had for a long period. As well as tasks requiring physical strain. We created our personal "library" by combining data from financial records to calculate the (ROE), (ROA), (CAR), and (CAR) ratios (NPLR).

Data is gathered from each bank's yearly report. We collect the annual reports for information throughout our study for the years 2011 to 2020 this time period encompasses the financial crisis of 2008, which may be a one-of-a-kind period in economic history. Many researchers will have to treat it as a unique period and consider it on its own. However, the focus of our investigation is on whether or whether there is a link among the managment of credit risk and profit making possibility, rather than the exact correlation coefficient. The shock of the crisis may have a considerable impact on the coefficient of correlation among the management of credit risk and profit making possibility, but not on the link itself. Because our main goal is to see if there is a link among the management of credit risk and profit making possibility, we plan to include In our time, there have been moments of economic crises frame to see if there is one.

We need to acquire information on the variables we'll be using in order to perform our multivariate analysis. (ROE), (ROA), (CAR), (NPLR), The variables are the amount of money in the bank and the size of the bank we'll be looking at. All sample banks' websites were inspected in order to acquire data from yearly reports. The manual search began on the "investor's relationship" internet sites. We're looking

for bank "annual reports" or "financial results" on the "investor's relationship" website. We go at current documents from 2012 as well as archives from earlier years (2011-2020). After receiving each yearly report, we conducted a search using search tools on internet or by getting a pdf file "Non-performing loans," "non-performing loan ratio," "NPLs," "NPLR," "total loans," "capital adequacy ratio,"(CAR) "capital ratio," "return on equity (ROE)," "return on assets,"(ROA) "net income ratio," Total shareholder equity" and "Total Assets" are periods used interchangeably. We use annual reports that show the results of an entire group of banks rather than specific industries or branches.

Hypotheses:

Hypothesis 1:

Null Hypothesis:

There is no relationship among (CAR), non-performing loan ratio (NPLR), and commercial bank return on equity (ROE).

Alternative Hypothesis: There is a relationship between (CAR), non-performing loan ratio (NPLR), and commercial bank return on equity (ROE).

Hypothesis 2:

Null Hypothesis:

There is no relationship between the capital adequacy ratio (CAR), (NPLR), and (ROA) of commercial banks

Alternative Hypothesis:

There is a relationship between the capital adequacy ratio (CAR), (NPLR), and (ROA) of commercial banks.

3.4. Empirical study

Return on equity (ROE), (ROA), (CAR), (NPLR), and bank size will be used as independent variables, while OOE and (ROA) will be used as dependent variables. (CAR) and (NPLR) are the independent variables.

	Variable Name	Calculating Method
Dependent Variable	(ROE) means return on equity (ROA) means return on asset	Total equity Total asset
Independent Variable	(CAR) MEANS capital adequacy ratio (NPLR) means non-performing loan ratio (NPLR)	Total capital NPLs/ Total loans
Control Variable	Bank size (BS)	LNTA

Multivariable Regression Analysis:

In our research we are going to apply this regression models:

$$ROE_t = \beta_0 + \beta_1 CAR_t + \beta_2 NPLR_t + \beta_3 CAR_t * LNTA_t + \beta_4 NPLR_t * LNTA$$

$$ROA_t = \beta_0 + \beta_1 CAR_t + \beta_2 NPLR_t + \beta_3 CAR_t * LNTA_t + \beta_4 NPLR_t * LNTA$$

R^2 – Test

$$R^2 = 1 - \frac{\sum e_i^2}{\sum (Y_i - Y^-)^2}$$

The closer the estimate regression equation fits the data, the greater the R^2 . Where R^2 is the fraction of the variation in Y around Y that the regression equation can explain. R^2 is a number that ranges from 0 to 1, with the higher the value, the better the overall fit.

In the last empirical study, we will study Multicollinearity and Heteroskedasticity.

3.4.1.Results

Descriptive statistics

To take administer a quick look on the obtained We show the data subsequent table five which includes the basic statistics of the factors capital adequacy ratio (and other factors in our study of 20 trade banks in Iraq from 2011 to 2020. we assume that each one the variables follow a traditional distribution.

Table 1. Descriptive Statistics Of Variables Excluding Outliers

Variable		Min	Max	Std. dev.	Mean
(CAR)%	Overall	0.13	1.46	0.31	0.38
	Between	0.43	1.15	0.30	
	Within	0.53	1.16	0.14	
(NPLR)%	Overall	0.01	0.48	0.06	0.45
	Between	0.01	0.10	0.03	
	Within	-0.05	0.41	0.06	
(LNTA)%	Overall	10.7	14.33	0.88	11.9
	Between	11.2	12.78	0.53	
	Within	10.4	14.07	0.74	
(ROA)%	Overall	0.02	0.78	0.16	0.117
	Between	0.049	0.39	0.13	
	Within	-0.24	0.49	0.10	
(ROE)%	Overall	0.01	0.27	0.57	0.631
	Between	0.02	0.12	0.34	
	Within	-0.03	0.27	0.48	

There are four ratios among the variables in Table 1. The profit making possibility of banks is measured by (ROA) and (ROE), while the management of credit risk is represented by (CAR) and (NPLR). After removing the outliers, the total number of

observations for each variable is 60. The indicator with the biggest spread, according to the standard deviation, is (LNTA), which has a Overall variance of 0.88. The standard deviations of the other indices also are less than one. The difference in (LNTA) ratio among the highest and lowest values is about 4. The highest ratio is 14.33, while the lowest is 10.7, implying that sample banks in our study have a higher level of diversification in their (LNTA) ratio.

Hausman specification test

Hausman specification test can be used to choose between fixed effect and random effect models at the 5% level. The random effects model will be employed if the Hausman test is significant (P-Value > 5%). The random effect model is favoured in this investigation, as demonstrated by the Hausman test, with a p-value of 0.134, which is more than 5%. As a result, the random effect was employed in the study.

Hausman Test: H0: REM > FEM Ha: FEM > REM			
Model	Prob.(F-statistic)	Chi-sq statistic (χ^2)	Preferred model
ROA	0.134	85.56	Random model

Multicollinearity and Heteroscedasticity Test:

We did this analyze to our model before providing the multivariate analysis. The results of the multicollinearity test are presented in the following tables:

Multicollinearity test

VIF and Tolerance were used to solve multicollinearity issues of independent factors of commercial banks in IRAQ (capital adequacy ratio, non-performing loans, natural log of total assets of banks). Multicollinearity does not occur if the tolerance level is more than 0.10 and the VIF is less than 10.

Table 2. Collinearity statistics

Variable	Tolerance	VIF
CAR	1.22	0.022850
NPLR	1.34	0.004386
LNTA	1.15	0.004386

Because the tolerance level is more than 0.10 and the VIF value is even less than 10, the multicollinearity problem does not occur, as seen in Table 2. As a result, the model is devoid of multicollinearity issues..

Heteroscedasticity test

White's test for Ho: homoskedasticity

against Ha: unrestricted heteroskedasticity

chi2(9) = 46.17

Prob > chi2 = 0.0000

Cameron & Trivedi's decomposition of IM-test

Table 3. Heteroscedasticity test for ROE

Source	Chi2	df	p
Heteroskedasticity	81.11	9	0.0000
Skewness	27.25	3	0.0000
Kurtosis	2.38	1	0.1272
Total	110.74	13	0.0000

White's test for Ho: homoskedasticity

against Ha: unrestricted heteroskedasticity

chi2(9) = 20.44

Prob > chi2 = 0.0000

Cameron & Trivedi's decomposition of IM-test

Exhibit 4.2: Test for heteroscedasticity for (ROE)

Table 4. Heteroscedasticity test for ROA

Source	Chi2	df	p
Heteroskedasticity	20.44	9	0.0163
Skewness	8.86	3	0.0331
Kurtosis	1.43	1	0.2212
Total	30.73	13	0.0000

Correlation matrix analysis

Regression test for ROE without

Table.5. Matrix of correlation for the model 1((ROE)

	(CAR)	NOLR	(LNTA)	(ROE)
CAR	1.0000			
NPLR	-0.0558	1.0000		
LNTA	0.2894	-0.1476	1.0	
ROE	0.6862	-0.2077	0.0770	1.0000

We discovered that the greatest correlation among all factors in absolute value is 0.6862, which is really the correlation among CAR and ROE, in Tables of matrix of correlation of ROE. This indicates that a little adjustment in one of the observations or the number of observations causes the predicted coefficient values to alter dramatically.

Table 6. The Matrix of correlation for model 2 (ROA)

	(CAR)	NOLR	(LNTA)	(ROE)
CAR	1.0000			
NPLR	-0.7688	1.0000		
LNTA	0.0869	-0.2076	1.0	
ROA	0.5462	-0.3077	-0.077	1.0000

We discovered that the greatest correlation among all factors in absolute value is -0.7688, which is really the correlation among NPLR and ROE, in Tables of matrix of correlation of ROA. This indicates that a little adjustment in one of the observations or the quantity causes the predicted coefficient values to alter dramatically.

Regression Results

In Chapter 4, we constructed eight possible hypotheses in order to answer our study topic. We've run two regression analysis to see if those hypotheses are correct. The hypothesis' results are reported in the next section, and the original STATA table is supplied in Appendix 2.

Hypothesis 1:

Null Hypothesis:

There is no relationship between (CAR), non-performing loan ratio (NPLR), and commercial bank return on equity (ROE).

Alternative Hypothesis: There is a relationship between (CAR), non-performing loan ratio (NPLR), and commercial bank return on equity (ROE).

To test the first hypothesis, the following regression analysis was performed:

$$ROE_t = \beta_0 + \beta_1 CAR_t + \beta_2 NPLR_t + \beta_3 CAR_t * LNTA_t + \beta_4 NPLR_t * LNTA$$

Table 7. Results of regression 1

Variable	Coef.	Std.Err.	T	P>(t)	95% confidence interval	Intervals
ROE						
(CAR)	0.028	0.02	-1.12	0.26	-0.21	0.07
(NPLR)	-0.047	0.12	-0.39	0.69	-0.28	0.19
(LNTA)	0.06	0.01	-0.71	0.48	-0.03	0.11
Cons	0.027	0.11	1.01	0.31	-0.11	0.34
F(3,56) = 5.8621						
R² = 0.57						

Based on the results in the table six above The coefficient of determination (R^2) of Model 1 is about 57% which represents a good results to show the relationship between the CAR, NPLR, LNTA and ROE in the model, The significant and high value of the coefficient refers to the significant relationship among profitability and the indicators of credit risk measurement at the banks of Iraq. Besides, the F-statistic analyzes is 5.86 since the probability of zero is attached to the statistic F refers that this null hypothesis (H_0) can't be accepted.

Table 8. Results of regression 1 with random effect of LNTA

Variable	Coef.	Std.Err.	T	P>(t)	95% confidence interval	Intervals
ROE						
(CAR)	0.041	0.36	-0.12	0.909	-7.69	0.68
(NPLR)	-0.03	0.22	-1.20	0.236	-7.12	1.79
(LNTA)	-0.21	0.03	-0.67	0.507	-0.81	0.04
CAR* LNTA	0.043	0.02	0.82	0.13	-0.05	0.06
NPLR*LNTA	-0.023	0.21	0.24	0.24	-0.16	0.64
Cons	0.027	0.36	0.46	0.46	-0.46	1
F(5,54) = 7.231						
$R^2 = 0.72\%$						
Durbin-Watson stat=1.243						

Based on the results in the table seven above The coefficient of determination (R^2) of Model 1 is about 72% which mean there is a good influence of adding CAR* LNTA and NPLR*LNTA to show the relationship between the CAR, NPLR, LNTA and ROE in the model, The significant and high value of the coefficient refers to a significant relationship among profitability and the indicators of credit risk measurement at the banks of Iraq. Besides, the F-statistic analyzes is 7.231 since the probability of zero is attached to the statistic F refers that this null hypothesis (H_0) can't be accepted.

The p-value for (CAR) is 0.909, while (NPLR) is 0.23, according to the first regression analysis. Under the assumption that the level of significance is 5%, a p-value greater than 5% is necessary to reject the null hypothesis. As a result, the first part of null hypothesis 1, "there is no correlation among (CAR) ,(NPLR) and (ROE)," should be rejected, whereas the studying of the effect of (LNTA) on the relation between (C.A.R) ,(N.P.L.R) with (ROE)," must not be refused. This means we can preclude the probability that the correlation we've observed among (CAR) with (ROE) was happened intentionally. To put it another way, The coefficient value of CAR* LNTA (i.e. 0.43) refers to a percentage increase or decrease in CAR* LNTA of commercial banks result in high proportionate (i.e. 4.3%) increase or decrease in ROE of commercial banks in Iraq. From another side The coefficient value of NPLR*LNTA (i.e. -0.23) refers to a percentage increase or decrease in NPLR*LNTA of commercial banks result in high proportionate (i.e. -2.3%) increase or decrease in ROE of commercial banks in Iraq. The findings of multivariate analysis above illustrate that while the association among (CAR) ,(NPLR) and (ROE) is crucial, the connection among (CAR) ,(NPLR) and (ROE) regarding the random effect of (LNTA) is significant. On the natural log of total assets of banks (LNTA), a p-value more than 0.05 refers to us that we can rule out the possibility of a meaningful and stronger relationship among (CAR) ,(NPLR) and (ROE) with the random effect of LNTA.

Hypothesis 2:

Null Hypothesis:

There is no relationship between the capital adequacy ratio (CAR), (NPLR), and (ROA) of commercial banks

Alternative Hypothesis:

There is a relationship between the capital adequacy ratio (CAR), (NPLR), and (ROA) of commercial banks .

To test the second hypothesis, a second regression analysis was performed:

$$ROA_t = \beta_0 + \beta_1 CAR_t + \beta_2 NPLR_t + \beta_3 CAR_t * LNTA_t + \beta_4 NPLR_t * LNTA$$

Hypothesis 2 concerns the relationship among business banks' (CAR), (NPLR), and (ROA).

Regression test for ROA without the control variable LNTA

Table 9. Results for regression 2

. Variable	Coef.	Std.Err.	T	P>(t)	95% confidence interval	Intervals
ROA						
(CAR)	-0.20	0.06	-3.1	0.16	-0.34	0.7
(NPLR)	-0.10	0.32	-1.86	0.68	-1.25	0.45
(LNTA)	-0.31	0.02	-0.41	0.66	0.03	0.38
Cons	0.43	0.31	1.39	0.16	1.05	1.32
F(3,56) = 3.86						
R² = 0.64						

Based on the results in the table eight above The coefficient of determination (R²) of Model 2 is about 64% which represents a good results to show the relationship between the CAR, NPLR, LNTA and ROA in the model, The significant and high value of the coefficient shows a strong relationship among profitability and the indicators of credit risk measurement at the commerical banks of Iraq. Besides, the F-statistic analyzes is 3.86 since the probability of zero is attached to the statistic F refers that this null hypothesis (H0) can't be accepted.

Table 10. Results of regression 2 with random effect of LNTA

. Variable	Coef.	Std.Err.	T	P>(t)	95% confidence interval	Intervals
ROA						
(CAR)	0.061	0.94	-0.65	0.54	-0.21	1.28
(NPLR)	-0.084	0.58	1.86	0.16	-0.81	22.5
(LNTA)	-0.01	0.08	-0.01	0.99	-0.16	0.15
CAR* LNTA	0.052	0.07	0.39	0.69	-0.12	0.18
NPLR*LNTA	-0.0381	0.52	-1.98	0.04	-2.16	0.14
Cons	0.039	0.96	0.41	0.68	-1.46	2.32
F(5,54) = 3.37						
R² = 0.81						
Durbin-Watson stat=1.4654						

Based on the results in the table seven above The coefficient of determination (R^2) of Model 1 is about 81% which mean there is a good influence of adding CAR* LNTA and NPLR*LNTA to show the relationship between the CAR, NPLR, LNTA and ROA in the model, The significant and high value of the coefficient refers to a strong link among profitability and credit risk measuring measures in Iraqi banks. Furthermore, because the probability of zero is related to the statistic F, the F-statistic test is 3.37, indicating that the null hypothesis (H_0) can't be accepted.

The p-value for (C.A.R) is 0. 54, while (N.P.L.R) is 0.16, according to the first regression analysis. Under the assumption that the level of significance is 5%, a p-value greater than 5% is necessary to reject the null hypothesis. As a result, the first part of null hypothesis 2, "there is no correlation among (CAR) ,(NPLR) and (ROA)," should be rejected, whereas the studying of the effect of (LNTA) on the relation between (C.A.R) ,(N.P.L.R) with (ROA)," must not be refused. This means we can preclude the probability th.at the correlation we've observed among (C.A.R) ,(NPLR) with (R.O.A) was happened intentionally. To put it another way, The coefficient value

of CAR* LNTA (i.e. -0.52) refers if the percentage increase or decrease in CAR* LNTA of commercial banks result in high proportionate (i.e. -5.2%) increase or decrease in ROA of commercial banks in Iraq. From another side The coefficient value of NPLR*LNTA (i.e. -0.038) refers that a percentage increase or decrease in NPLR*LNTA of commercial banks result in high proportionate (i.e. -3.8%) increase or decrease in ROA of commercial banks in Iraq. The findings of multivariate analysis above illustrate that while the association among (CAR) ,(NPLR) and (ROA) is crucial, the connection among (CAR) ,(NPLR) and (ROA) regarding the random effect of (LNTA) is significant. On the natural log of total assets of banks (LNTA), a p-value more than 0.05 refers to s that we can rule out the possibility of a meaningful and stronger relationship among (CAR) ,(NPLR) and (ROA) with the random effect of LNTA.

CONCLUSION

The results do not support null hypothesis H1 and H2 about the effects of The management of credit risk on profit making possibility ($p < 0.05$), respectively. As a result, there is association among capital adequacy ratio (CAR) and commercial banks' return on equity (ROE) and non-performing loan ratio (NPLR) in Iraq, and a correlation among non-performing loan ratio (NPLR) and commercial banks' capital adequacy ratio (CAR) and return on asset (ROA) regarding the random effect of LNTA.

From the results obtained from the regression analysis for ROE in the table (6), the p-value for (C.A.R) is 0.26, (N.P.L.R) is 0.69 (LNTA) is 0.48 . Under the assumption that the level of significance is 5%, a p-value more than 5% is necessary to reject the first null hypothesis and in the table (7) The p-value for (C.A.R) is 0.909, while (N.P.L.R) is 0.23, where the assumption the level of significance is 5%, a p-value greater than 5% means the first hypothesis will be rejected and that's means there is correlation among (CAR) ,(NPLR) and (ROE), and there is an effect of (LNTA) on the relation between (C.A.R) ,(N.P.L.R) with (ROE).

Furthermore, and based on the results obtained from the regression analysis for ROA in the table (8), the p-value for (C.A.R) is 0.16, (N.P.L.R) is 0.68 (LNTA) is 0.66 , with the level of significance is 5%, a p-value greater than 5% means that we have to reject the null hypothesis ,and in the table (9) The p-value for (C.A.R) is 0. 54, while (N.P.L.R) is 0.16, with the level of significance is 5%, a p-value greater than 5% means that we have to reject the null hypothesis. and that's means there is correlation among (CAR) ,(NPLR) and (ROA), and there is an effect of (LNTA) on the relation between (C.A.R) ,(N.P.L.R) with (ROA).

According to the theoretical framework, capital adequacy ratio (CAR) stands for total capital in relation to the risk-weighted total of a bank's assets. As a result, the non positive number may signal that banks may limit their operations in order to maintain a better capital adequacy ratio (CAR), which might be adverse to bank development, limiting bank expansion and growth. Furthermore, this type of banking regulation has the potential to boost net interest margins or administrative expenses for banks (Samy & Magda, 2009, p. 72). Because of the slowed development, greater

administrative expenses, and a smaller net interest margin, business banks' profit making possibility may suffer. The capital adequacy ratio (CAR) may have a detrimental impact on the profit making possibility of economic banks throughout this phase.

In periods of the inconsequential results, they could be due to a sort II error. It's a blunder when someone fails to reject a theory that should, by definition, be rejected. This implies that our alternate theory is correct. Control and external control, as previously mentioned, are the determinates of economic bank profit making possibility. Factors such as the economic climate are among the external determinates of profit making possibility. As we've previously stated, our time horizon spans financial crisis times with significant implications for the Iraqi economy. During the financial crisis, system risks, which are uncontrollable by humans, played a significant impact in the profit making possibility of business banks. As a result, the variable return on equity (ROE) and return on asset (ROA) may be abnormally affected during such times. Another explanation for the insignificant connections could be this.

We all know that the non-performing loan ratio (NPLR) is a financial tool that depicts the standard of bank loans using a theoretical framework. The danger of a loan borrower defaulting or paying late is a risk that commercial banks face. The core business of economic The purpose of banks is to promote loans. Banks generate revenue. in a number of ways, including borrowing and depositing. When this occurs, NPL is considered a loss. Bigger non-performing loan ratio (NPLR)s imply higher losses, which reduces the amount of capital available to banks for future borrowing. As a result, bank investment efficiency suffers, which has a negative influence on profit making possibility. Reduced NON-performing loan ratio (NPLR), on the other hand, is linked to reduced risk and deposit rates, suggesting that it has a positive impact on bank operations. As a result, raising the non-performing loan ratio (NPLR) has a negative impact on commercial bank profit making possibility.

Recommendations

Our study's purpose was to look at the link among the management of credit risk and business bank profit making possibility in Iraq, as we mentioned at the start. This accomplished by combining information from the six banks' reports from 2011 through 2020. To examine the link among two abstract notions, we employed proxies. We used profit making possibility proxies return on equity (ROE) and return on asset (ROA), as well as the management of credit risk proxies (CAR) and (NPLR) and the random effect of (LNTA). we constructed four hypotheses and two regression tests to support the 10-year data. The constancy of such a link is the second aspect of our investigation. As a result, we employ six sub-periods to create higher regressions in order to see if the correlation coefficients fluctuate a much.

After doing a series of regression analyses, the study questions "What is the relationship among the management of credit risk and profit making possibility of economic banks in Iraq from 2011 to 2020?" should be addressed. We may conclude their found a link among the management of credit risk with profit making possibility based on the statistical evidence.

To begin, our empirical data reveal that there is substantial relationship among capital adequacy ratio (CAR) and return on equity (ROE) and capital adequacy ratio (CAR) and return on equity (ROE). This might be the result of a divisive theoretical prediction of a relationship among (CAR) and bank profit making possibility. The adequacies in our model modification might also be a factor for a good of extraordinary connections. Furthermore, the importance of systemic risks should not be disregarded during the financial crisis.

Second, we identified a negative relationship among (NPLR) and (ROE), as well as (NPLR) and (ROA). This matches the findings of the vast majority of prior research done in a single country. The higher the non-performing loan ratio (NPLR), the less capital banks have available to speculate with.

Third, the trend findings for the correlations show that all four factors have a changing association. The impact of the monetary crisis, which has increased the influence of economic factors on profit making possibility, might explain this.

as a result of this that there is a positive association among the management of credit risk and economic bank profit making possibility. In other words, the better the credit risk management, the higher the profit making possibility of the financial institution.

We may desire to make some recommendations to commercial banks when we've completed our research. Given the link among the management of credit risk and profit making possibility, we advise bank executives to devote more resources to credit risk management, particularly in managing (NPLs). In addition, managers should make more accurate assessments of the ability to repay when borrowing. We couldn't find a link among (CAR) and profit making possibility proxies, but it doesn't mean (CAR) isn't essential. It's still a vital factor to consider while managing the risks of commercial banking, and it's worth paying close attention to.

Theoretical and Practical Contributions

We were able to fill a lack in the prior study by examining the relationship among profit making possibility and the management of credit risk in Iraq. and that we test how profit making possibility measurements are laid low with the management of credit risk measures to provide bank managers and investors with a better understanding. When bank administrator, financial experts, investors, and supervisors make relevant judgments, all of this provides useful information.

Another benefit of our research is that businesses now have a better grasp of the influence of the management of credit risk on bank making profit possibility. Banks're expected to rethink how they capital management and allocation NPLs, at least until more research is done. It also gives supervisors an indication of whether or not the regulated ratio has been an impact on the profit making possibility of banks. Because NPLs ratios and profit making possibility indicators have a negative relationship, supervisors may need to take steps to enhance NPLs in order to help banks regulate them more effectively.

Suggestions for Further Research

One of the changes that might be made to the study method is the addition of additional indicators. Our model is based on past research that looked at the same problem but only looked at one country, as previously refers to d. Our model has a good R2 value supported data from Iraq, indicating that it match the data well. In our study, we use (CAR) and (NPLR) to show credit risk mnagement, as well as return on equity (ROE) and (ROA) to reflect making profit possibility. In addition to the indicators we utilized in the study, other metrics may be employed to demonstrate profit making possibility and credit risk management. as a result of, increasing the number of signals to confirm the relationship might be more appealing. Meanwhile, by combining the most relevant components, it may aid researchers in increasing the validity of the study model.

Another option to expand on current research is to conduct comparable research but in a different field. In Ethiopia, Ghana, and Kenya, Tefera (2011) and Kithinji (2010) separately developed this research. This topic is applied to Iraq in our research. As a result, expanding this thesis to other areas, such as international industry, could be more intriguing in order to learn more about the influence of the management of credit risk on bank making profit possibility. Furthermore, the outcomes of the same topic in various places do not appear to be the same. As a result, comparing similar studies and examining the differences among them is also beneficial.

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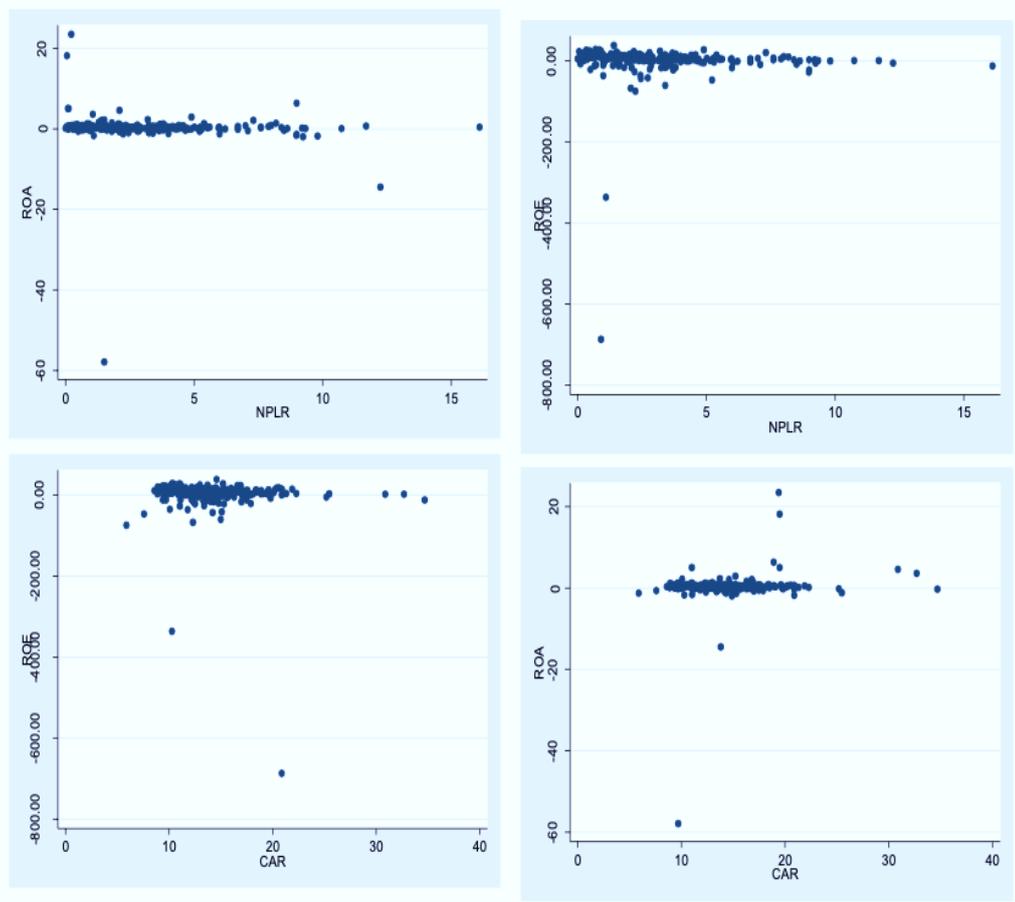
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APPENDIXES

APPENDIX 1:

Bank Name	Total Assets (Million Iraqi dinar) Dec. 31, 2020
Baghdad	250 000
Iraqi commercial	250 000
Iraqi Middle East Investment	250 000
Iraqi investment	250 000
United Investment	300 000
Al-Ahly of Iraq	250 000

APPENDIX 2: Scatterplots of variables including outliers



APPENDIX 3: Histograms for variables including outliers

