# The Impact of Credit Risk Management on Profitability in Commercial Bank of Syria from 2011 to 2015

المصرف التجاري السوري

**Commercial Bank of Syria**

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**Abstract**

Credit risk management (CRM) in banks has become more important not only because of the financial crisis that the world is experiencing nowadays but also the introduction of Basel II it's a crucial concept which determines banks' survival, growth and profitability. This study is limited to identifying the relationship between credit risk management and profitability of commercial bank of Syria from 2011-2015. In model, we define Return on assets (ROA) and Return on equity (ROE) as profitability indicators, while Non-performing loan ratio (NPLR), Loan loss provision ratio (LLPR) and Capital Adequacy Ratio (CAR) are taken as credit risk indicators. Furthermore, our study only uses the quantitative approach and focuses on the description of the outputs from SPSS, the data are collected from bank's annual reports published by Commercial Bank of Syria. In case, we have used descriptive statistics, correlation analysis some diagnostic tests for the multiple linear regression model assumption was presented. In addition, we have used regression model to do the empirical analysis. The regression models are estimated to test the significance and importance of credit risk management on profitability in Commercial Bank of Syria. The findings and analysis shows that credit risk management has an effect on profitability. The results shows that NPL, LLP and CAR has a strong positive relationship between each other's, but the relationships between independent and dependent variables are negative. Moreover, the results shows that credit risk in term of (NPL) has significant statistical impact on ROA. While credit risk in terms of (NPL, CAR) has significant statistical impact on ROE. We should mention that the capital adequacy ratio (CAR) grew dramatically over the entire crisis period to be 40.12% in 2015.

*Key words: Credit risk management, profitability, Return on assets, Return on equity, Non-performing loan.*

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## List of Abbreviations

| | |
|---|---|
| **CBS** | Commercial Bank of Syria |
| **CAR** | Capital Adequacy Ratio |
| **CRM** | Credit Risk Management |
| **NPL** | Non-performing Loan |
| **LLP** | Loan Loss Provision |
| **ROE** | Return on Equity |
| **ROA** | Return on Assets |
| **SPSS** | Statistical Package for Social Science |
| **BIS** | Bank for International Settlement |

# 1. CHAPTER 1

## 1.2. Introduction

Traditional banks usually attract deposits from different customers (companies and individuals) in return for granting them interest on these deposits to be employed in various investment channels in order to obtain returns from these investments and make profits. Granting credit is one of the main sources of income in commercial banks, the management of the risk related to that credit affects the profitability of the banks. Credit risk was defined by Basel (1999a) as "the potential that a bank borrower or counterparty will fail to meet its obligation in accordance with agreed term". Today credit risk plays an important role in the activity of financial and non-financial institutions. Almost for each decision managers and executives should calculate the expected risk and return. The severity of these credit risk did reached an alarming proportion as reflected in the increased of consumer credit defaults in the balance-sheet of financial institutions during and after the crisis.

The Syrian Crisis started on March 2011 till now. In general, it influenced and still the Syrian economy negatively and the whole banking sector specifically. The Syrian banking industry has been strained by the deteriorating quality of its credit assets as a result of the significant dip in equity market indices.

## 1.3. Problem Background

Banks today are the largest financial institutions around the world, with branches and subsidiaries throughout everyone's life. There are plenty of differentiations between types of banks. And much of this differentiation rests in the products and services that banks offer.[1]For instance, commercial banks hold deposits, bundling them together as loans, operating payments mechanism, etc.

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[1] Nelson, C.R. and G. W Schwert, 2006. Short-term Interest Rates as Predictors of Inflation on Testing the Hypothesis that the Real Rate of Interest is Constant.*American Economic Review*. 67, p. 478-86.

Commercial banking in virtually all countries has been subject to a great deal of regulations.[2]One of the regulations is the minimum capital commercial banks must keep absorbing loss if unexpected things happen. This kind of capital requirement is, in particular, conducted by Basel Committee which aims to enhance the key supervisory issue and improve the quality of banking supervision.[3]

Credit risk is an internal determinant of bank performance. The higher the exposure of a bank to credit risk, the higher the tendency of the banks to experience financial crisis and vice-versa. Among other risks faced by banks, credit risk plays an important role on banks' profitability since a large chunk of banks' revenue accrues from loans from which interest is derived. However, interest rate risk is directly linked to credit risk implying that high or increment in interest rate increases the chances of loan default. Credit risk and interest rate risk are intrinsically related to each other and not separable.[4]Increasing amount of non-performing loans in the credit portfolio is inimical to banks in achieving their objectives. Non-performing loan is the percentage of loan values that are not serviced for three months and above.[5] Due to the increasing spate of non-performing loans, the Basel II Accord emphasized on credit risk management practices. Compliance with the Accord means a sound approach to tackling credit risk has been taken and this ultimately improves bank performance. Through the effective management of credit risk exposure, banks not only support the viability and profitability of their own business, they also contribute to systemic stability and to an efficient allocation of capital in the economy.[6]

The direct credit facilities are still located on the pyramid of these banking investments in Syria. One of the biggest problem raised by the crises is the problem of non-performing loans. The suspension of a large number of customers of banks to

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[2] Cuthbertson, K. and Nitzsche, D., 2003. Long Rates, Risk Premia and the Over-Reaction / Hypothesis. *EconomicModelling*. Vol 20, pp 417-435, (2003).

[3] Bis.org. (2014). *Basel Committee on Banking Supervision*. [online]

[4] Boudriga, A., Taktak, N. B. and Jellouli, S. (2009). Banking supervision and nonperforming loans: a cross-country analysis. *Journal of financial economic policy,* 1 (4), pp. 286--318.

[5] Al-Khouri, R. (2011). Assessing the Risk and Performance of the GCC Banking Sector, *International Journal of Finance and Economics, ISSN 1450-2887, Issue65, 72-8.*

[6] Altunbas (2005): Mergers and Acquisitions and Bank Performance in Europe - The Role of Strategic Similarities. European Central Bank, working paper series, No.398

repay its obligations, the default by other customers and the decline of their work has contributed significantly to increase the risk of non-payment of their obligations, this results:   poor quality of loan, a widespread losses accompanied by non-performing loans and credit losses. Those loans  affect all the banking  sources and uses of funds, it affects  the amount of  banks  loan able funds  and the percentage of broken(unused) funds has increased   .which made the banks to implement   the decision by the ministry of finance   issued 29/1/2012 and  the legislations of the  Central Bank of the situation of classification of debt and the provision of provisions or allocations to address the cases of default and failure Payment. Consequently, banks have deducted provisions to meet these conditions as required by the instructions of the Central Bank of Syria. Banks stopped granting direct credit facilities as a result of current conditions in the economy and the return of part of the deposits to the banking channels, the banks faced a big problem in maintaining liquidity and pay the interest to their owners, while they cannot invest them to obtain credit interest to increase their profits.

Due to the role of credit risk on the profitability of commercial banks the main purpose of this research is to study to examine a relationship between credit risk management and profitability of Commercial Bank of Syria (CBS) over a period of five years (2011-2015).

## 1.4.    Aims and Objectives

The main purpose of this research is to examine the impact of credit risk management on Commercial bank of Syria Profitability Recently. Is there any type of relationship between Credit Risk management and the bank's profitability?

Given the foregoing, the specific aims and objectives of the dissertation would be to:

Examine the theoretical concept of credit risks, types, and banks' typical approach to the management of such risks

Examine both traditional and newer approaches to credit risk management

Identify credit risk exposures in banks and the impact of Syrian financial crisis

Understand the relationship between credit risks management measures (NPL, LLP, and CAR) and profitability measures (ROE and ROA) during the period of the study.

## 1.5.    Research Questions

The discussed background and problem formulation make us to have the following research question:

*How does the CRM affect the profitability of CBS during the period of 2011-2015?*

## 1.6.    Limitation

Many difficulties have been encountered during the research:

The difficulty of access to the annual reports of the Commercial Bank of Syria, as it is not published on the Internet or in any public place, which led to go to the Commercial Bank of Syria in order to obtain the financial statements and there are many difficulties encountered access to the person who responsible for the financial statements.

Annual reports are not clear and we found out a lot of mistakes in calculations which is time consuming.

## 1.7.    Research Variables

This study necessitates researching their credit risk disclosure, notes on financial statements within the annual reports of Commercial bank. Based on previous studies on credit risk management and profitability (Barth et al, 2004), it has been ascertained that the most effective method of measuring these is to evaluate the Return on Invested Equity and Return on Assets as the best form of ascertaining profitability, Non-Performing Loan, Loan Loss Provision and Capital Adequacy Ratio as the best form of measuring credit risk management. Multiple regression models would be utilized with both independent variables within the study.

Dependent variables: Profitability Indicators (ROE and ROA)

We have decided to use ROE and ROA as indicators of profitability in the regression analysis because it's usually used by banks with internally available information.

Independent Variables: Credit Risk Indicators (NPL,LLP,CAR).

We have chosen two independent variables namely NPL, LLP because these two are the indicators of Credit risk management which affect the profitability of banks. NPL, LLP and CAR in particular, indicates how banks manage their credit risk.

*Figure 1 Research Model*
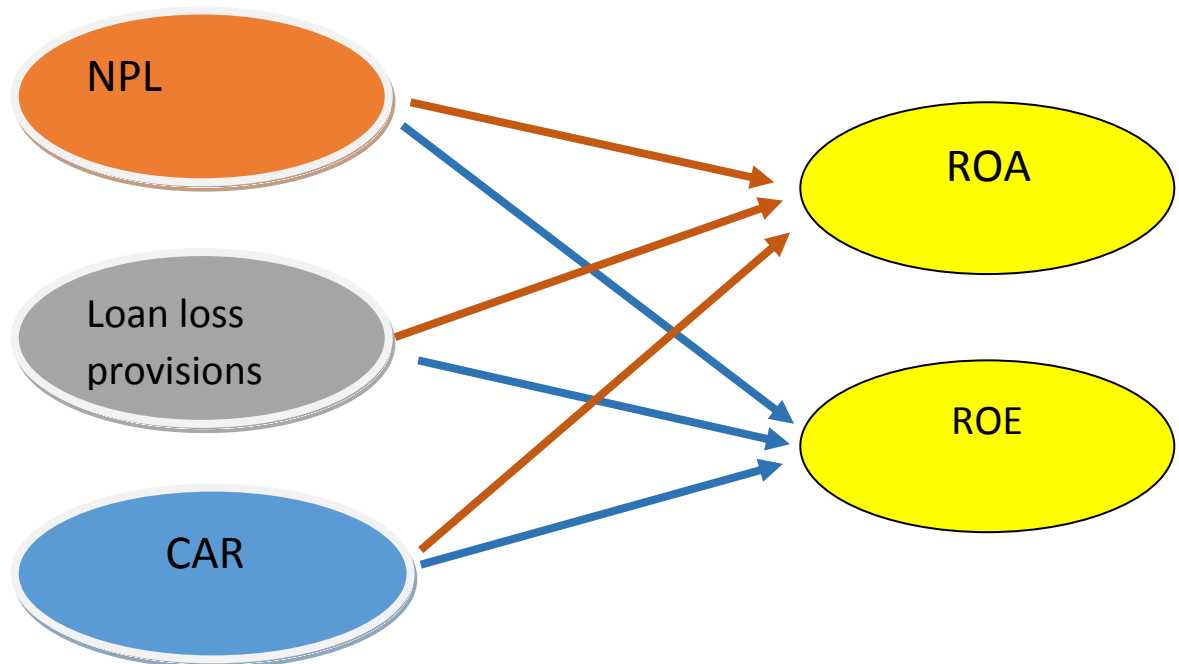
### 1.8. Research Hypothesis

#### 1.8.1. General hypothesis for Regression

##### *1.8.1.1.    Hypothesis 1*

**H0:** Credit risk (NPL, LLP, CAR) has no significant statistical impact on bank's ROA.

**H1**: Credit risk (NPL, LLP, CAR) has a significant statistical impact on bank's ROA.

##### *1.8.1.2.    Sub hypothesis*

1-  **H0**: Non-performing loan has no significant statistical impact on bank's ROA.

   **H1**: Non-performing has a significant statistical impact on bank's ROA.

2-  **H0:** Loan loss provision has no significant statistical impact on bank's ROA.

   **H1:** Loan loss provision has a significant statistical impact on bank's ROA.

3-  **H0:** Capital adequacy ratio has no significant statistical impact on bank's ROA.

   **H1:** Capital adequacy ratio has a significant statistical impact on bank's ROA.

##### *1.8.1.3.    Hypothesis 2*

**H0:** Credit risk (NPL, LLP, CAR) has no significant statistical impact on bank's ROE.

**H1**: Credit risk (NPL, LLP, CAR) has a significant statistical impact on bank's ROE.

##### *1.8.1.4.    Sub hypothesis*

4-  **H0**: Non-performing loan has no significant statistical impact on bank's ROE.

   **H1**: Non-performing has a significant statistical impact on bank's ROE.

5-  **H0:** Loan loss provision has no significant statistical impact on bank's ROE.

   **H1:** Loan loss provision has a significant statistical impact on bank's ROE.

6-  **H0:** Capital adequacy ratio has no significant statistical impact on bank's ROE.

   **H1:** Capital adequacy ratio has a significant statistical impact on bank's ROE.

### 1.9. Research Methodology

The researchers employed a quantitative method to estimate the impact of credit risk on profitability. These approaches are deemed appropriate for studying

credit risk and its impact on profitability as it gives the researcher more vivid space. A breakdown of this is seen in the third chapter of this research.

Which are a descriptive statistic, correlation analysis some diagnostic tests for the multiple linear regression model assumption was presented. The regression models are estimated to test the significance and importance of credit risk management on profitability.

## 1.10.   Research Approach

While there exist two main approaches to research namely; deductive and inductive methods,[7] the deductive approach would be employed in the proposed research given that the overarching objective is to examine the relationship between profitability and credit risks which requires correlation data sets. This methodological approach has followed the viewpoint of Saunders et al (2007)[8], who suggests that the deductive approach is more appropriate where numbers or correlation inputs are required as in the present study. The inductive approach is not suitable because the aim is not to explore the present issue in the scenario in which it occurred. Rather, the aim is to understand the relationship between the data sets which are purely quantitative elements.

To support the deductive approach, a regression analysis would be employed to sort and analyze data. As noted by Cohen et al (2003), regression is the method of analysis that is appropriate where a quantifiable variable is to be measured against its relationship with other factors. "Relationships may be nonlinear, independent variables may be quantitative or qualitative, and one can examine the effects of a single variable or multiple variables with or without the effects of other variables taken into account. Then we will use Pearson's correlation to show the correlation between variables.  The regression tests are very important to obtain a valid outcome

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[7] KOLAPO, T.F, AYENI, R.K and OKE, M.O (2012).  Credit risk and commercial banks" performance in Nigeria: a panel model approach.  *Australian Journal of Business and Management Research Vol.2 No.02 [31-38] | May-2012*
[8] Molyneux, P. and J. Thorton, (1992): "The determinants of European bank profitability", *Journal of Banking and Finance 16 (6), 1173-1178.*

for this study because they provide reliable information concerning the nature of relationship between some independent variables and dependent variables.

## 1.11. Sampling Method

This research would be based on one major commercial banks in Syria, namely Commercial Bank of Syria (CBS). These bank was chosen because Commercial Bank of Syria (CBS) is still the largest market share in Syria,[9]was also chosen because they are possessing a considerable amount of data which would be useful to conduct an in-depth analysis in the proposed research. And this would be crucial in explaining how the credit risk management practices of CBS bank had an effect on this outcome. Annual reports from 2011–2015 would be used, covering the entire period before, during the Syrian Crisis.

## 1.12. Data Collection and Analysis

This study is based on the primary data. Data were pooled for 5 years from 2011 to 2015 for the Commercial Bank of Syria. The primary data have been obtained from annual reports of Commercial Bank of Syria. We interviewed Mr. Yarob Ali, financial manager and financial auditor of CBS. The interview provides us with annual reports that used to produce regression analysis of this paper. In our research we mainly use secondary sources including scientific articles from journals, books from Damascus University library.

We use multiple regression analysis in our study to answer the main question general hypothesis: the relation of two dependent variables (ROA, ROE) to multiple independent variables (NPL,LLP, CAR). The regression outputs are obtained by using SPSS.

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[9] Ahmad, N.H. and Ariff, M. (2016).Multi-country Study of Bank Credit Risk Determinants, *International Journal of Banking and Finance, Syria* 5(1), 135-152.

## 1.13.  Organization of the study

The research is organized into five chapters. Chapter one contains the background of the study, Aim and Objectives, Research Questions, Research Variables, Research Hypothesis, Data Collection and Analysis, Study limitation, as well as the Organization of the study. Chapter two gives the literature review i.e. examining the theoretical background of the research topic. Chapter three explains in detail, the methodology employed for the research. The data collection techniques and the model used for the study, data presentation and analysis of the research findings would as well be dealt with in chapter four. Lastly chapter five would comprise of summary, conclusion, and recommendations.

## 1.14.  Literature

Literature and data source are the base for a research. The literature sources will help researchers to develop a good understanding of previous research and can be divided into three categories: primary, secondary and tertiary (Saunders et al., 2009, p. 68).

Saunders et al. (2009, p.67) has explained in his book "Primary literature sources are the first occurrence of a piece of work." They include published sources such as reports, some central and local government publications such as White Papers and planning documents, unpublished manuscript sources such as letters, memos and committee minutes. Secondary literature sources are the subsequent publication of primary literature. They include therefore books and journals. Tertiary literature sources are also referred to "search tools" and include indexes and abstracts as well as encyclopedias and bibliographies. They are utilized either to help to locate primary and secondary literature or to introduce a topic.

In our research, we mainly use secondary sources including scientific articles from journals, books from Damascus University library and data obtained from annual reports. The scientific articles are searched and collected from databases Emerald and Business Source Premier (EBSCO) and Investopedia.

For the data we need to collect, we have gathered all the annual reports and risk reports for Commercial Bank of Syria we have chosen from year 2011 to 2015, which was a time-consuming and effort-consuming work. We then have calculated ratio of ROE, ROA, NPLR, LLPR and CAR,   from the numbers we picked up from financial reports and made our own "database".

The majority of the articles used are peer-previewed and published in reputable journals, which provide a high quality of credibility of our research. However, what cannot be neglected is that the authors of the scientific articles might influence the content of their work by their own perception of the subjects they are studying. This could have a negative effect on the objectivity. To avoid such potential problem, this research strives to keep an objective side of the information with authors' endeavor. As to the correlation part, the data used to test the hypotheses comes from financial reports of commercial banks. The content and transparency of those reports are governed by standardized regulations, including IFRS and Basel Accords, which mean a strong evidence of credibility of their reports as secondary sources.

## 1.15.   Previous Studies

1. In terms of empirical results, Bourke (1989) states that the effect of credit risk on bank profitability appears to be clearly negative. This result may be explained by taking into account the fact that the more financial institutions are exposed to high-risk loans, the higher is the accumulation of unpaid loans, implying that these loan losses have produced lower returns to many commercial banks (Miller & Noulas, 1997).

2. Athanasoglou et al., (2005) find a negative relationship between credit risk and profitability. The sign of the coefficient indicates that the higher the credit risk assumed by a bank, the higher the accumulation of defaulted loans. In turn, the higher the level of loans in default, the greater the negative impact on bank profitability. In addition, Bourke (1989) finds an important positive relation between capital adequacy and profitability. He illustrates that the

higher the capital ratio, the more the bank will be profitable. Similarly, Molyneux and Thornton (1992) find that there is a significant relationship between capital ratio and net profit.

3. Poudel (2012) studied the factors affecting commercial bank performance in Nepal for the period of 2001 to 2012 and followed a linear regression analysis technique. The study revealed a significant inverse relationship between commercial bank performance measured by ROA and credit risk measured by default rate and capital adequacy ratio

4. Hosna et al. (2009) also found in his study of four Swedish banks covering a period of 2000 to 2008. The result showed that rate of non-performing loan and capital adequacy ratios was inversely related to ROE though the degrees vary from one bank to the other. Such inverse relationships between profitability performance and credit risk measures were also found in other studies (Achou and Tenguh, 2008; Funso et al., 2012; Musyoki and Kadubo.

5. Kargi, (2011) studied that Credit risk management maximizes bank's risk adjusted rate of return by maintaining credit risk exposure within acceptable limit in order to provide framework for understanding the impact of credit risk management on banks' profitability.

6. Marheg et al..., (2014) studied the factor effecting the profitability of Commercial Bank in Lattakia using multivariate analysis. The study found that there are internal and external factors that affect their profitability, and there are no statistically significant differences between public and private Commercial Bank in the internal and external factors.

7. Shhab Al Deen (2016) studied the Market share of Banking Facilities and their impact on profitability of the Jordanian Commercial Bank covering a period (2010-2014). The result showed that there a positive relationship between the market share on ROE and ROA. Also, there is a large relationship between ROA and ROE.

8. Gizaw et al ... (2013) studied the impact of credit risk on Profitability of 8 sample Commercial banks for 12 year period (2003-2014) using descriptive statistics and Regression model. The result showed that Credit risk measures: non-performing loan, loan loss provisions and capital adequacy ratio have a significant impact on the profitability of commercial banks in Ethiopia.

In conclusion, in our research we studied the impact of credit risk management on profitability in Commercial Bank of Syria because it is the first empirical studies in Syria that shows how credit risk can affect profitability in CBS during the crisis.

## 2. CHAPTER 2

## 2.2. Theoretical framework

### 2.2.1. Credit Risk Management CRM of Commercial Banks

#### 2.2.1.1. *Definitions of CRM*

Credit risk is defined as the potential failure of a counterparty to meet its contractual obligations. This standard should be applied to all activities posing a credit risk to the supervised entity.

Exposed to credit operations carried out by banks to many risks, some of which is linked to the nature of the banking business as well as other risks cannot be controlled but requires a predictable order, and there are many definitions dealt with credit risk, where some believe that credit losses is inevitable as a result of the process of lending,[10] and that each bank bears a degree of risk in granting credit and without exception to achieve each bank some loan losses when it fails to recover his loan,[11] and that credit risk means that a customer's ability to repay the loan at its maturity and divides These risks are to commercial risk and risk Friendly, if a customer is a person or a business called commercial risk but if the loan is granted for a project owned by the state or the state itself called sovereign risk.[12]

Notes from previous definitions that they focus on the existence of credit losses in each credit process and the reasons for such losses may be internal or external and that these losses are recognized when the customer stops making payments, the others believe that there are many sources of risk, including, due to natural hazards beyond the control of the bank including, due to changes in technology or consumer tastes, or as a result of competition or as a result of poor management or the vagaries of the business cycle,[13] which indicates the presence of

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[10]Davis, Steven I., Excellent in Banking, the Macimillan press, LTD, 2016.
[11]Hempel , Gerorge  H., Alan B. Coleman , Donald G. Simonson , Bank Management , 2nd ed. , Jone Wiley & Sons , 2014.
[12]Copper, Jone, The Management and Regulation of Banks, London, Macmillan publisher LTD., 2008.
[13]Read, Edward w., and others Commercial Banking, N.J: Prentice hall. Inc., 2001.

types of credit risks and causes leading to it, and based on the above can credit risk assessment as follows: [14]

1- **Professional risk (calculated risk):**

It is the credit process that affects the bank that grants it.

2- **Customer risk** is as follows:

- The risk of default is the worst type of risk as it entails non-payment of credit and its benefits.
- Credit risk is the risk of a default credit transaction resulting in a non-payment of credit to the customer for a longer period.
- The risk of bias is the complacency based on the credit process in the study of each credit accurately process both in the grant or treatment or follow-up phase, or laxity in obtaining real guarantees that the bank believes in the center or as a result of the low level of expertise based on the granting of credit.
- Risk of Activity: Risks associated with the nature of the activity, whether agricultural, industrial, commercial or service

3- **The risk of credit quality:**

(Credit - current accounts receivable - discount on bills of exchange, letters of guarantee, documentary credits).

4- **Technological risks:**

The risks associated with technical developments and the emergence of new inventions and the occurrence of fraud through them.

5- **Market risk:**

Risks related to market areas such as competition, recession, and inflation, changes in consumer attitudes.

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[14] Weaver, Samual C & Weston, J Fred . Strategic Financial Management . 13th Ed . Thomson South-Western . 2008.

6- **The risk of theft, embezzlement, and collusion.**

7- **Credit Policy Risk:**

These risks relate to the nature of the bank's credit policy, whether expansionary or concentration, as well as the extent to which this policy conforms to the general economic policy of the country.

8- **Risks of general conditions:**

These are risks arising from economic, political or social conditions.

### *2.2.1.2. Objective of CRM*

- To provide guidance on the requirement imposed on licensees by Rule 3(B).
- The management of credit risk is a critical element of a comprehensive approach to risk management and significant to the long-term success of any banking organisation.
- The objective of credit risk management is to maximise a bank's riskadjusted rate of return by maintaining credit risk exposure within acceptable parameters. Banks need to manage the credit risk exposure inherent in the entire portfolio as well as the risk in individual credits or transactions.

### 2.2.2. Credit Risk of Commercial Banks

### *2.2.2.1. Defintions*

A credit risk is the risk of default on a debt that may arise from a borrower failing to make required payments.[15] In the first resort, the risk is that of the lender and includes lost principal and interest, disruption to cash flow, and increased collection cost. The loss may be complete or partial. In an efficient market, higher

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[15]"Principles for the Management of Credit Risk - final document". *Basel Committee on Banking Supervision*. BIS. September 2000. Retrieved 13 December 2013. Credit risk is most simply defined as the potential that a bank borrower or counterparty will fail to meet its obligations in accordance with agreed terms.

levels of credit risk will be associated with higher borrowing costs.[16] Because of this, measures of borrowing costs such as yield spread can be used to infer credit risk levels based on assessments by market participants.[17]

Losses can arise in a number of circumstances,[18] for example:

- A consumer may fail to make a payment due on a mortgage loan, credit card, line of credit, or other loan.
- A company is unable to repay asset-secured fixed or floating charge debt.
- A business or consumer does not pay a trade invoice when due.
- A business does not pay an employee's earned wages when due.
- A business or government bond issuer does not make a payment on a coupon or principal payment when due.
- An insolvent insurance company does not pay a policy obligation.
- An insolvent bank won't return funds to a depositor.
- A government grants bankruptcy protection to an insolvent consumer or business.

To reduce the lender's credit risk, the lender may perform a credit check on the prospective borrower, may require the borrower to take out appropriate insurance, such as mortgage insurance, or seek security over some assets of the borrower or a guarantee of a third party. The lender can also take out insurance against the risk or on-sell the debt to another company. In general, the higher the risk, the higher will be the interest rate that the debtor will be asked to pay on the debt. Credit risk mainly arises when borrowers are unable to pay due willingly or unwillingly.

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[16]Simkovic, Michael (2016). "What Can We Learn from Credit Markets" *Proceedings of the 93rd Annual Meeting of the American Law Institute*. SSRN 2782844

[17]Michael Simkovic (2016). Adler, Barry, ed. *Making Fraudulent Transfer Law More Predictable, in Handbook on Corporate Bankruptcy*. Edward Elgar. SSRN 2775920

[18]Simkovic, Michael; Kaminetzky, Benjamin (2011). "Leveraged Buyout Bankruptcies, the Problem of Hindsight Bias, and the Credit Default Swap Solution". *Columbia Business Law Review*. 2011: 118. SSRN 1632084

### 2.2.2.2. *Credit risk Indicators:*

**Non-Performing Loans**

Non-Performing Loans or Bad debts charging fees and receiving interest is all in a day's work for the average banker. But things occasionally turn ugly when a client can't meet their repayments and a debt goes bad. And when you're dealing with a net interest margin of less than 2%, it doesn't take many bad loans to wipe out a hefty chunk of your profit.

$$\text{NPLR} = \frac{Non-Performing\ Loan}{Total\ Loans}$$

**Loan loss provision**

Loan loss provision is an expense set aside as an allowance for uncollected loans and loan payments. This provision is used to cover a number of factors associated with potential loan losses including bad loans, customer defaults and renegotiated terms of a loan that incur lower than previously estimated payments. Loan loss provisions are an adjustment to loan loss reserves and can also be known as valuation allowances.

Loan loss provisions are constantly made to update estimates and calculations based on statistics for the bank's customer defaults. These estimates are calculated based on average historical default rates by different levels of borrowers. Credit losses for late payments and collection expenses are also included in loan loss provision estimates and are calculated using a similar methodology, which takes into account the previous payment statistics of a bank's credit clients. The industry standard for loan loss reserves is an average 2 to 2.5% of a bank's total outstanding loan receivables.

Overall, by setting aside loan loss reserves and constantly updating estimates through loan loss provisions, banks can ensure they are presenting an accurate

assessment of their overall financial position. This financial position is often released publicly through the bank's quarterly financial statements.

$$LLPR = \frac{Loan\ Loss\ Provision}{Total\ Loans}$$

**Capital Adequacy Ratio**

The capital adequacy ratio (CAR) is a measure of a bank's capital. It is expressed as a percentage of a bank's risk weighted credit exposure. Also known as capital-to-risk weighted assets ratio (CRAR), it is used to protect depositors and promote the stability and efficiency of financial syrstem around the world. Two types of capital are measured: tier one capital, which can absorb losses without a bank being required to cease trading, and tier two capital, which can absorb losses in the event of a winding-up and so provides a lesser degree of protection to depositors.

$$CAR = \frac{Tier\ 1\ Capital + Tier\ 2\ Capital}{RiskWeightedAverage}$$

### *2.2.2.3.    Causes of Credit Risk:*

Companies should think of credit risk to make their business larger. To manage this, the risk manager should know the cause of credit risk. Credit risk management is the responsibility of the sales and account receivable departments.[19]

- The Nature of Credit Risk:

Credit risk arises when someone you deal with defaults on his or her obligations to you. Companies have to accept degree of credit risk as part of their regular daily activities. A company will not be able to grow its own business without borrowing money investing profits or selling their goods or services.

This risk is not well understood because it is managed as part of the sales and customer relationship processes. Companies are interested in other strategies and

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[19] Afriyie, H. O. and Akotey, J.O. (n.d). *Credit Risk Management and Profitability of Selected Rural Banks in France*. Catholic University College of France.

leaving customer credit risk at the subsidary level. Treasury should put trading limits on the banks it deals with but the total exposure to customers through the trading subsidiaries may be less defined.[20]

Credit risk does not only refer to counter parties who go bankrupt and cannot meet any repayment terms, but it also refers to the risk of late payment and part-payment. Credit risk is the risk that a counter party's actions negatively affect the company's cash flow.

- Exposure versus risk

All companies expose themselves to a certain amount of credit risk but a credit exposure is different from credit risk. When a company enters into a contract with another party, it is assuming a credit exposure. This exposure is what a company can lose if the counter party defaults on its obligations, by failing to pay anything in settlement of the account.

However, the risk that the counter party will default differs from counter party to counter party and it is the key to managing credit risk. A company may have a contract with the French Government, worth a big amount of Euros. This company assumes a high level of counter party exposure because of the value of the contract. A company may think that the credit risk is low, as the French Government is considered to be credit worthy. At the same time, it may also agree a smaller contract with an unknown company in Eastern Europe. A though the exposure is relatively small, the actual credit risk is likely to be higher because the counter party has very little credit history[21]. These two example have highlighted the extreme position in managing credit risk.

For some companies, it is difficult to identify the credit risk because the counter parties sit in between these two extremes.

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[20] Ara, H., Bakaeva, M. and Sun, J. (2009). *Credit Risk Management and Profitability in Commercial Banks in Sweden.* Master thesis. University of Gothenburg.

[21] Chen, K. and Pan, C. (2012). An Empirical Study of Credit Risk Efficiency of Banking Industry in Taiwan, *Web Journal of Chinese Management Review, 15(1), 1-16.*

- Time period:

The second problem is that credit risk can exist for long periods of time, relative to other financial risks managed by the company. Many ways for managing other financial risks will expose the company to credit risk. For example, using a derivative contract to manage currency risk will manage the currency exposure, but only for as long as the counter party continues to respect its obligations under that contract. So when a company has entered into an agreement with another party, the question of credit risk needs to be managed until the contract has been fulfilled.

In a derivative contract a bank is the counter-party. However, the company will also have relationships with both the suppliers and the customers. These relationships will usually be ongoing. The difficulty to manage the credit risk of these different relationships is that they will change over time.[22]

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[22] Coyle, B. (2000). *Framework for Credit Risk Management,* Chartered Institute of Bankers, United Kingdom

### 2.2.3. Regulations

#### *2.2.3.1.    The Role and Regulations of Central Bank of Syria*

During the last two decades, the banking sector has experienced a worldwide major transformation in its operating environment. In the Syrian Arab Republic, after 40 years of absence, the role of Central Bank of Syria (CBS) in the economy has been revived by issuing the Basic Monetary Law No.23 for the year 2002, which was considered as a key turning point in the history of monetary policy in Syria. Besides its role in reactivating the Money and Credit Board, the highest monetary authority in Syria, Law No.23 has taken the first step toward CBS autonomy.

The central bank has not issued special resolutions for the requirements of the third pillar of  Basel 2 but it asked all the banks working in the Syrian Arab republic through its circulation No.2913 date 16/6/2009 to the commitment to all terms of Basel 2.[23]

The measurement of credit risks and reports system in the bank has two sides first, it covers the supervision requirements and the second fulfills the interior bank needs.

The bank defined its requirement through the following resolutions:

-Resolution No. 395 date 2008 and its modifications covers the concentrations on the level of a dealer or a connected group of dealers. It puts limits for these concentrations and asks to write monthly reports about these big violations of the central bank.

-The resolution 501 date 2009 regulates the investment activities of the bank and put limits to the purses of investment and the exposure to certain sides. Through this resolution it is needed to inform about these purses and exposures of the central bank monthly.

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[23] Central Bank of Syria (2015). Regulation of Disclosures of pillar 3 - Basel [ online] Available at : www.byblosbank.comwww.byblosbank.com/Library/Files/Syria/PDFs/Basel-2-Pillar-3-Disclosures-31-12-15.pdf

-Resolution 597 date 2009 and its modifications within the two resolution 650 date 2010 and 902 date 2012 which put bases in order to add the given credit facilities and how to calculate the supplies and the reserves which should be made

- The Monetary and Credit Council issued Resolution No. 597 approving the instructions and models for the classification of risks and the composition of their provisions. The banks are required to apply the resolution of the classification of debts which are below the level of risk to increase the number of days from 90 to 179, from 180 to 359 and bad debts of 360 days or more.

### 2.2.3.2.    Basel Committee and its Regulations

### 2.2.3.2.1.   Basel 1, 2 and 3, and their implications for capital adequacy[24]

#### 2.2.3.2.1.1.    Basel 1

In July 1998, following a series of efforts and meetings, the Basel Committee presented its first recommendations on capital adequacy, known as the Basel I Accord. After conducting research and testing on banks, a global ratio of capital adequacy was based on capital adequacy to total assets by risk in a weighted manner. This percentage was estimated at 8%. The committee recommended applying this percentage from the end of 1992 to be implemented gradually over three years starting from 1990. These recommendations were based on proposals made by Cooke, then the president of this Commission, so named after the previous ratio of capital adequacy by the Basel, or the proportion of Cook

The Basel Committee was divided capital into two groups or two tranches, namely:

1- Core capital consists of: (paid-up capital + reserves + retained earnings)

[24] BCBS. (2011). Basel III: *A global regulatory framework for more resilient banks and banking systems.* [online] Available at: https://www.bis.org/publ/bcbs189.pdf [Accessed: 24 Feb 2014]

[24] Basel Committee on banking Supervision (1999): "*Principles for the Management of Credit Risk*", CH – 4002 Basel, Switzerland Bank for International Settlements.

2- Supporting capital consists of: (undeclared reserves + reserves of revaluation of total assets + provisions to meet the risks of any undefined risk + support loans + other capital instruments)

As it committed to the Basel Committee to abide by the following capital requirements:

1- The head of supplementary capital does not exceed the basic capital.
2- That the percentage of loans obtained by the Bank from shareholders within this framework not exceed 50% of the basic capital.
3- General provisions should not exceed a maximum of 2%, and then be set at 1.25 of the total assets and contingent liabilities weighted risk.

"The countries of the world are divided into two groups in terms of credit risk weights, the first group is low risk, and the OECD countries include two countries: Switzerland and Saudi Arabia, or the second group includes the rest of the world, from the countries of the first group ".

The risk weights for assets are calculated as follows:

Weighted risk weights for assets by Basel ratio

| The degree of risk | Asset quality |
|---|---|
| 0% | Cash + liabilities from central governments, central banks, cash collateral liabilities and securities issued by governments + required or guaranteed by governments and central banks of the OECD countries. |
| 10 to 50% | Liabilities from local public sector entities (as determined nationally) |
| 20% | Liabilities from international development banks and banks of OCDE countries + cash on the way. |
| 50% | Loans secured by real estate mortgages and occupied by their owners. |
| 100% | All other assets, including commercial loans + liabilities from the private sector + liabilities from outside the OCDE countries, with a maturity of more than one year + liabilities from public economic companies + contributions to other companies + all other assets. |

Risk weights for contingent liabilities (off-balance sheet commitments) are calculated as follows:

For these liabilities, the risk weighting factor is charged to the off-balance sheet liability in the weighting factor of its original contingent liability in the balance sheet assets. The weights for extra budgetary commitments are as follows:[25]

Weighted risk weights for extra budgetary elements

| Weights risk | Asset quality |
|---|---|
| 20% | Items related to short-term self-liquidation risks. |
| 50% | Items related to good performance transactions (letters of guarantee, execution of contracts or deliveries). |
| 100% | Similar items for loans (such as general loan guarantees). |

Thus, capital adequacy under Basel I is as follows:

$$CAR\ (1988) = \frac{Tire\ 1 + Tire\ 2}{RWA}$$

Amendments to the Basel Convention 1:

After taking this percentage, the banks decided to reconsider their capital adequacy calculation against the various risks they were exposed to after the spread of the use of modern financial instruments such as derivatives. Therefore, the Basel Committee issued a special agreement to calculate capital adequacy to face market risks after the agreement the first concerns credit risk only in 1996, and this agreement is an amendment to the 1988 Convention.

Although these amendments maintained 8%, they changed the components of this ratio, allowing banks to issue two-year loans to enter the third tranche of capital to meet part of their market risk, which must be subject to the following conditions:

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[25]Drehman, M., Sorensen, S. &Stringa, M. (2008). The Integrated Impact of Credit and Interest Rate Risk on Banks: An Economic Value and Capital Adequacy Perspective", *Bank of England Working Paper No.339*

1- To be in the form of supporting loans with maturity of not less than two years and not exceeding 250% of the bank's capital from the first tranche.

2- To cover market risks only, including foreign exchange risk.

3- The elements of the second layer may be replaced by the third tier of capital within the said limit.

4- The first tranche of capital ≥ the second tranche + the third tranche

When calculating the total capital ratio, a numerical link is established between the credit risk and the market risk by multiplying the market risk by 12.5 (on the basis that 100 divided by 8 is the minimum capital adequacy ratio of 12.5) and adding the result to total risk weighted assets.

$$\text{CAR (1988)} = \frac{Tire\ 1 + Tire\ 2 + Tire\ 3}{RWA + Marketrisk * 12.5} \geq 8\%$$

### 2.2.3.2.2. Basel II

After several years of discussions and experiences, the members of the Basel Committee reached a new framework and a new vision for calculating capital adequacy under the name of Basel II in 2004. This agreement is based on three pillars: Namely minimum capital, supervisory review, and market discipline.

Basel II differs from Basel (1) as taking into account risk factors in bank budgets.

- Basel II objectives:

The Basel Committee issued the Basel II Agreement to achieve a number of objectives, including the following:

1- Increase the safety, safety and durability of the global financial system

2- Incorporate various new risks that were not previously taken into account and find new models for solvency testing that are more suitable for application at all levels.

3- The main objective of the Basel II Agreement is to strengthen the strength of the financial position of banks worldwide by ensuring that the measurement of capital

requirements does not represent a source of imbalance in competition among large international banks. On risk management through sensitive capital requirements for the risks they face.

4- The Basel II aims to achieve a comprehensive and integrated approach to risks and hedging.

- Basel II main pillars:

1. Minimum Capital Requirements:

The agreement sets minimum regulatory capital requirements, i.e., the size to be secured to cover risks, which is 8% of total risk weighted assets. However, the new framework is more comprehensive in addressing the risks to banks. The new proposal introduces simple and complex methods and approaches for risk measurement methods. The Basel Committee has classified the risks to banks into three main groups: credit risk, and market risk. On this basis, the capital adequacy ratio is calculated as follows:

$$\text{CAR (1988)} = \frac{Tire\ 1 + Tire\ 2 + Tire\ 3}{CreditRisk + MarketRisk + OperationRisk} \geq 8\%$$

2. Supervisory Review:

Is the follow-up to supervisory authorities for capital adequacy and control, and is based on four main principles:

- Principle 1: Banks should undertake a comprehensive assessment of the risks they face and find adequate ratios that fit the size and nature of these risks.
- Principle 2: Supervisors review and evaluate the banks' internal estimates of capital adequacy and their ability to ensure their compliance with capital ratios and take control measures in cases where this is required.
- Principle 3: Observers should expect banks to achieve levels of capital higher than minimum levels to be maintained and that these observers have the ability to require banks to provide any additional capital requirements."

- Principle 4: Early intervention in the case of a decrease in the capital of the bank from the minimum levels to be retained and entitled to take remedial measures to avoid the shortcomings of the bank so that the capital ratios required quickly.

3. Market discipline:

The objective of market discipline is the obligation of banks to publish data on risk assessment methods in accordance with market conditions, which confirms the role of the market in risk assessment. Accordingly, the Basel Committee seeks to enhance transparency and disclosure. It is worth noting that to achieve effective market discipline, Can be relied upon so that the parties to the market can assess the performance of the institutions, their efficiency and their risk management capacity. In its recommendation, the Basel Committee stressed the need to inform market participants of the adequacy of private funds To the Bank's risk as well as internal control approaches used by banks.

- Differences between Basel 1 and Basel 2:

The following table shows the most important developments in the international banking control standards according to Basel II compared to Basel 1.

| Basel I | Basel II |
|---|---|
| 1. Adopting one risk mechanism to calculate minimum capital adequacy requirements. | 1. It is based on three pillars: Minimum Capital Requirements, Supervisory Review and Market Discipline. |
| 2. Scope of application is limited to banks only. | 2. A wider scope of application includes financial and banking holding companies that include the budgets of their subsidiaries, as well as the inclusion of the agreement to investment and insurance companies that perform the function of accepting deposits or opening credit. |
| 3. Basel I criteria set a ratio of 8% of the ratio of capital to total risk weighted assets. These risks include credit risk and market risk. | 3. Basel II standards maintained the same ratio but added operational risk to credit risk and market risk. |

- Criticism of Basel II:

There have been many criticisms of Basel II, especially after the global crisis. The most important of these criticisms are:[26]

1- The imposition of the Basel II capital adequacy criterion forced banks to hold high rates of profit to increase the capital base, which negatively affected the distribution of dividends to shareholders.

2- International credit rating institutions may not be able to accurately assess credit risk to the private sector in economies.

3- The process of capital increase is expensive and this negatively affects competition against other financial institutions that provide banking services but are not subject to the rules of this standard.

4- The high cost of financing leads to higher cost of banking services provided, as well as the possibility of losses as a result of the forced liquidation of some assets before maturity to reduce the portfolio of total assets.

5- The major countries may stop lending to poorer countries as a result of rising lending risks and thus maintain large capital to meet these risks.

6- The agreement requires modern technologies that are not available in most banks in developing countries, which will limit their application to developed countries.

Although the Basel II framework aims at unifying and simplifying ways to calculate capital requirements and making them more equitable, it links the fate of the banking sector with a group of rating agencies which are sometimes not subject to any regulatory body and cannot be assured of their neutrality because they are paid by banks Assess them.

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[26] Bis.org. (2014). *Basel Committee on Banking Supervision*.

### *2.2.3.2.3. Basel III*

The Basel III agreement is intended to strengthen the strength and rigidity of the banking system, which has become increasingly fragile following the 2008 global financial crisis. The text of the agreement is based on five main axes that will enhance the integrity of the banking system.[27]

Basel III consists of five main axes:

1- The first focuses on the importance of improving the quality, structure and transparency of the capital base of banks, and makes the concept of basic capital limited to the subscribed capital and undistributed profits, in addition to the unrestricted capital instruments, Losses as they occur. The supporting capital may in turn be limited to capital instruments that are restricted for at least five years and are capable of bearing losses before deposits or before any third-party liabilities to the Bank. Basel III eliminated all other capital components that were acceptable pursuant to previous agreements.

2- The second axis: provides for the coverage of borrowers' risk arising from derivatives, debt financing and repo transactions by imposing additional capital requirements for such risks, as well as for losses arising from revaluation of financial assets in the light of market price fluctuations.

3- Third: A new ratio measures the capital multiplier, which is the rate of leverage, which is calculated by dividing the total risk within and outside the budget on the capital in the narrow sense mentioned in the first axis.

The financial leverage is calculated as follows:

$$\text{FL} = \frac{Tire\ 1}{Debt} \geq 3\%$$

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[27] BCBS. (2013). *Basel III: The Liquidity Coverage Ratio and liquidity risk monitoring tools.* [online] Available at: https://www.bis.org/publ/bcbs238.pdf [Accessed: 24 Feb 2014]

4- The fourth axis: directing banks to a system aimed at separating the lending operations carried out by banks completely from the economic cycle because naturally in the case of growth and prosperity banks are active significantly in the financing of economic activities, but in the case of economic stagnation lending activity is declining, Prolong the recession.

5- Fifth axis: It falls under the new criteria for the management and control of the risks of bank liquidity because of its importance in the light of financial crises, and it came in two ratios of the liquidity ratio of the first proportion in the short term and the second in the medium and long term, and are calculated as follows:

**Liquidity coverage ratio** $= \dfrac{Ratio\,of\,high\,liquidity\,assets}{Net\,cash\,flow\,during\,30\,days} > 100\%$
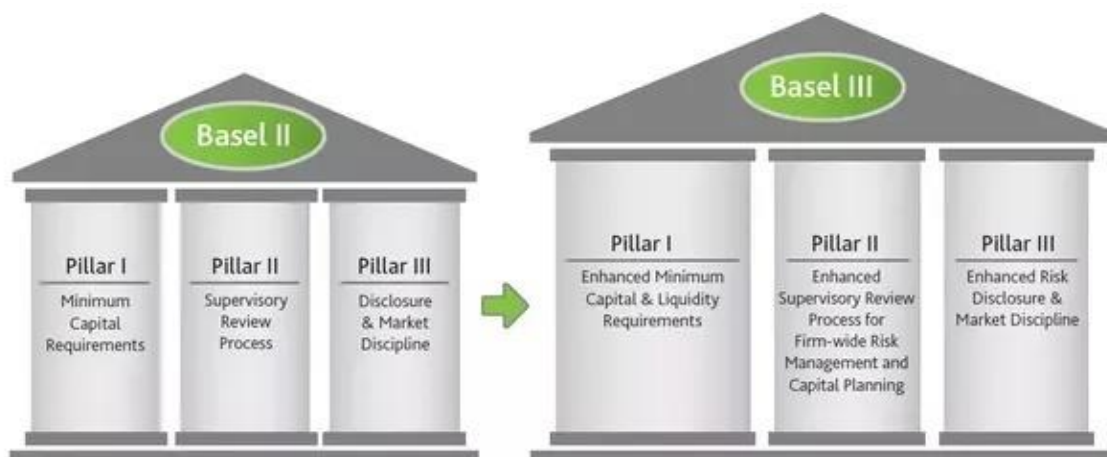
### 2.2.4.  Profitability of Commercial Banks

Profitability is an indicator of banks' capacity to carry risk and/or increase their capital. It indicates banks' competitiveness and measures the quality of management (Waifem, p. 16). Profitability is one of the key concepts in our research. This is due to the topic of this research is about the relationship between the profitability and credit risk management. Clear explanation to the profitability of commercial banks is crucial for readers to understand the research procedure and meanings. In this section, we will involve a specific discussion of profitability and three indicators (ROE, ROA) of profitability that evaluate the efficiency of the bank's management.

#### *2.2.4.1.  Profitability Indicators*

**<u>ROA</u>**

Return on assets (ROA) is an indicator of how profitable a company is relative to its total assets. ROA gives an idea about how the management efficiency in using its assets to generate earnings. Calculated by dividing a company's net income by its total assets, ROA is displayed as a percentage. Sometimes this is referred to as "return on investment". The higher the percentage the better, because that means the bank is doing a good job using its assets to generate income.[28]

$$\text{ROA} = \frac{Net\ Income}{Total\ Assets}$$

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[28]Angbazo, L. 2011. "Commercial bank interest margins, default risk, interest rates, and off –balance sheet banking". Journal of Banking and Finance, 21, 55-77

## ROE

Return on equity (ROE) is the amount of net income returned as a percentage of shareholder's equity. Return on equity measures a corporation's profitability by revealing how much profit a company generates with the money shareholders has invested.[29]

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

## Net Income

Net income (NI) is a company's total earning (or profit); net income is calculated by taking revenue and subtracting the costs of doing business such as depreciation, interest, taxes and other expenses. This number appears on a company's income statement and is an important measure of how profitable the company is over a period of time. It also refers to an individual's income after taking taxes and deductions into account.

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[29]Berger, A. N. 2010. "The Relationship between Capital and Earnings in Banking, Journal of Money, Credit and Banking". Vol. 27, no. 2, pp 432-456.

### 2.2.5. The Commercial Bank of Syria

#### *2.2.5.1.  Brief*

The Commercial Bank of Syria is the largest banking institution in Syria and accounts for a wide range of banking activity in Syria. Its share of the total balance sheet of the entire banking sector is estimated at 80% and accounts for more than 70% of the local deposit and lending activity.

Like any commercial bank, the Commercial Bank of Syria grants customers traditional banking facilities such as current accounts of all types, documentary credits, advances, guarantees, and loans. In addition, it expanded its personal services, adding retail loans such as modern and used car loans and housing loans. Whether by the Syrian commercial or in cooperation with other public or private bodies, including the service of the settlement of salaries of employees in the state and the private sector.

The Commercial Bank of Syria was established in early 1967 to serve the Syrian economic and commercial activity. The Commercial Bank of Syria was established by Legislative Decree No. 913 of 29/10/1966 on the merger of the banks of the Arab East, Arab Unity, omaya, Syria and overseas as of 1/1/1967.

The capital of the bank amounted to 150 million Syrian pounds, and under Legislative Decree No. 35 of 2006, the capital of the bank was raised to 70 Syrian billion pounds.[30]

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[30]Commercial bank of Syria's financial reports.

### 2.2.5.2.　Credit Risk Policies Adopted by Commercial Banks in Syria

CBS follows the expert system[31] in order to provide the necessary data to make the right decision by evaluating the creditworthiness through credit risk analysis. In an expert system, the credit decision is left to the local or branch lending officer. Implicitly, this person's expertise, subjective judgment and weighting of certain key factors are the most important determinants in the decision to grant credit. The potential factors and expert system a lending officer could look at the infinite; however, one of the most common expert system, the five "Cs" of credit, will yield sufficient understanding. The expert analyzes these five key factors, subjectively weights them, and reaches a credit decision:

**1-Character:**

Character is a measure of the reputation of the firm, it's the general impression the customer makes on the prospective lender or investor. Banks want to know that you are trustworthy and aren't involved in any ethically questionable activities. Most of this assessment comes from lenders being involved in the community and understanding the history of clients. Sometimes, lender will reach out to other banks, customers or suppliers and onsite visits. The lender will form a subjective opinion as to whether or not the company is sufficiently trustworthy to repay the loan or generate a return on funds invested in the company

**2-Capacity:**

It measures the ability of a company to pay its debt service obligations. Analyzing capacity traditionally comes down to looking at historical and projected cash flows. Typically a lender will review the past 3-5 years of financial statements and tax returns in order to determine a cash flow figure, which will depend on the context but is typically defined as Earnings before Interest, Taxes, Depreciation, and Amortization (EBITDA). To arrive at a dollar amount that's available to service the debt.

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[31]Saunders, A. (1999). *Credit Risk Measurement.* Canada.

### 3-Capital:

Ensures that the owners of the company have sufficient "skin in the game". The more capital there is, the higher the chance that the owners will do everything in their power to not fail. Having sufficient capital also ensures that there is a "cushion" in case the company's cash flows turn negative for a season.

While there is no magic number, this is typically quantified using the debt-to-equity ratio, and is usually no higher than 3 times.

### 4-Collateral:

If the borrower default, a banker has claims on the collateral pledged by the borrower. The greater the priority of this claims and the greater the market value of the underlying collateral, the lower the exposure risk of the loan. Collateral gives lenders extra assurance that their loan won't go bad if the borrowing company doesn't operate as expected. Also it consider as secondary sources for repayment of the loan.

### 5-Conditions:

Address the economics of client industry and the larger macroeconomic environment. Bank will want to ensure that Client Company has competitive advantages and will not be adversely affected by industry trends.

# 3. CHAPTER 3

## 3.2. Methodology

### 3.2.1. Research Characteristics

*Table 1the data of below is taken from Syrian Commercial Bank annual reports:*

| | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|
| **Non-performing loan** | 11,898 | 18,725 | 28,420 | 48,938 | 65,260 |
| **NPL Ratio** | 3.48% | 5.87% | 7% | 12% | 13% |
| **loan loss provisions** | 5,714 | 9,456 | 15,968 | 19,135 | 25120 |
| **LLP Ratio** | 1.67% | 3% | 3.93% | 4.69% | 5% |
| **Total Loan** | 3420 | 3190 | 4060 | 4080 | 5020 |
| **Net Income** | 31,076 | 34,611 | 62,887 | 31,679 | 36,854 |
| **Total Assets** | 712,897 | 717,019 | 940,187 | 1,067,227 | 1,345,963 |
| **Total Equity** | 115,742 | 139,842 | 194,646 | 212,873 | 287,652 |
| **ROE** | 26.85% | 24.75% | 32.31% | 14.88% | 12.81% |
| **ROA** | 4.36% | 4.83% | 6.69% | 2.97% | 2.74% |
| **CAR** | 27.20% | 31.50% | 31.50% | 39.18% | 40.12% |
| | Millions Syrian Pounds | Millions Syrian Pounds | Millions Syrian Pounds | Millions Syrian Pounds | Millions Syrian Pounds |

Source: Authors calculations using SPSS
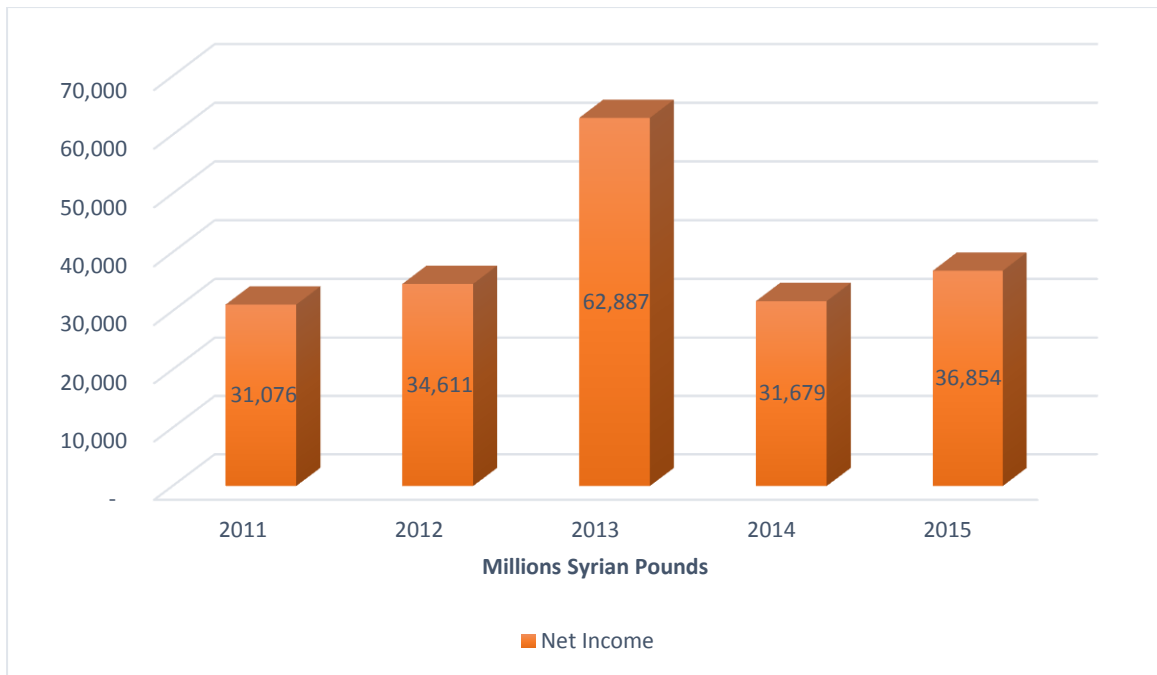
*Figure 2 CBS Net Income*

*From the table above, we see how the highest year by net income was 2013 with 63 billion Syrian pounds and the lowest net income was in 2014.*
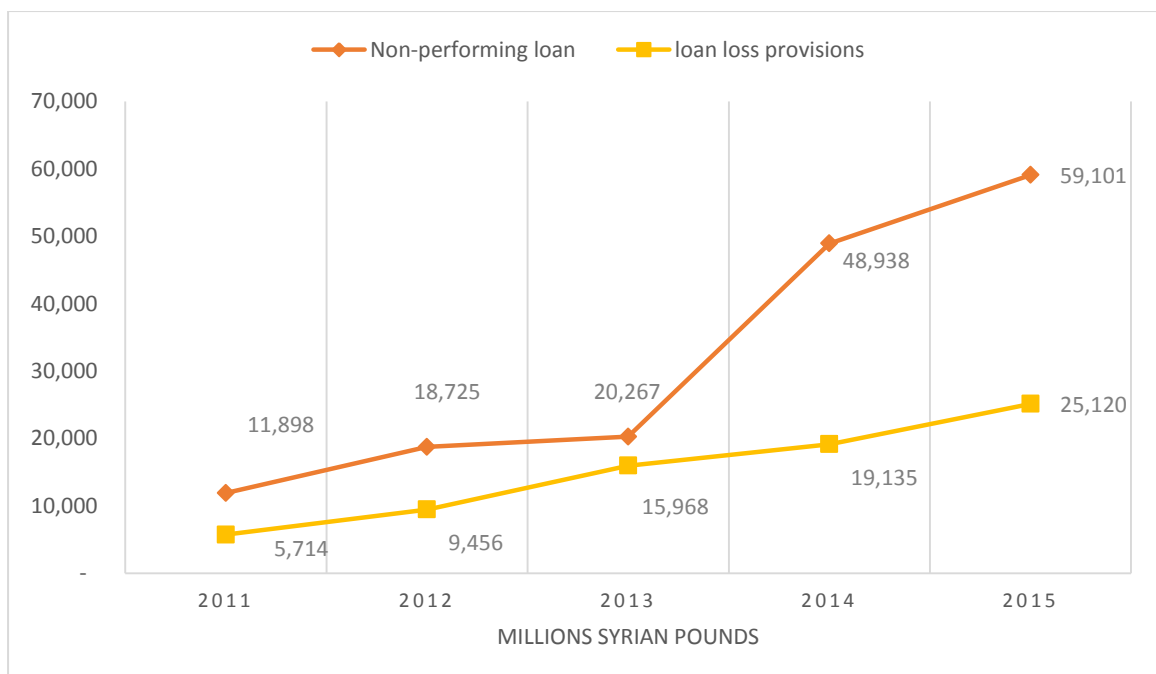


*Figure 3 CBS Non-performing loan and Loan loss provision*

If we look closer to the table above we see how the non-performing loan was increasing from 12 billion Syrian pounds in 2011 to 59 billion Syrian pounds by 2015 on the same level with loan loss provisions from 6 billion Syrian pounds to 25 billion Syrian pounds.
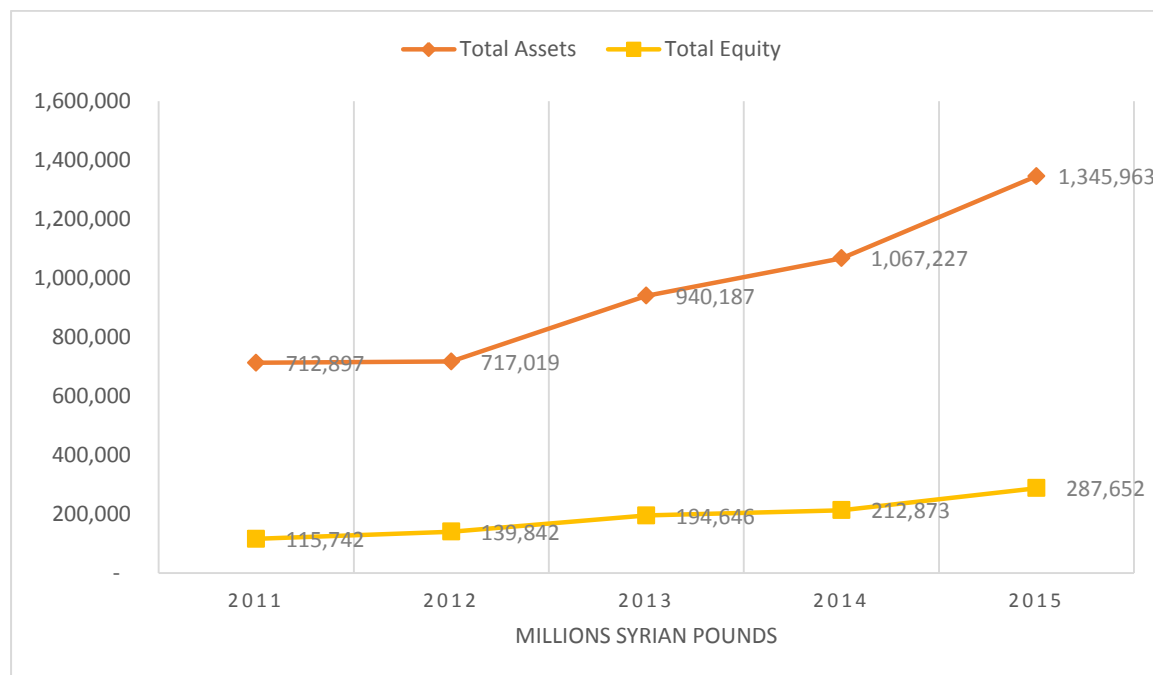


*Figure 4 CBS Total Assets and Total Liabilities*

Total assets were increasing from 713 Billion Syrian pounds on 2011 to 1.3 trillion Syrian pounds on 2015, but the total equity was not at the same level with lower increasing from 116 billion Syrian pounds on 2011 to 287 billion Syrian pounds on 2015.

*Figure 5 CBS Profitability ratios*

As we notice that all the rations are decreasing in the period between 2011-2015 and that's maybe for many reasons such as Syrian crisis and bad management of the bank.

### 3.2.2. Research data and method

For testing the hypothesis we use:

**A correlation coefficient**

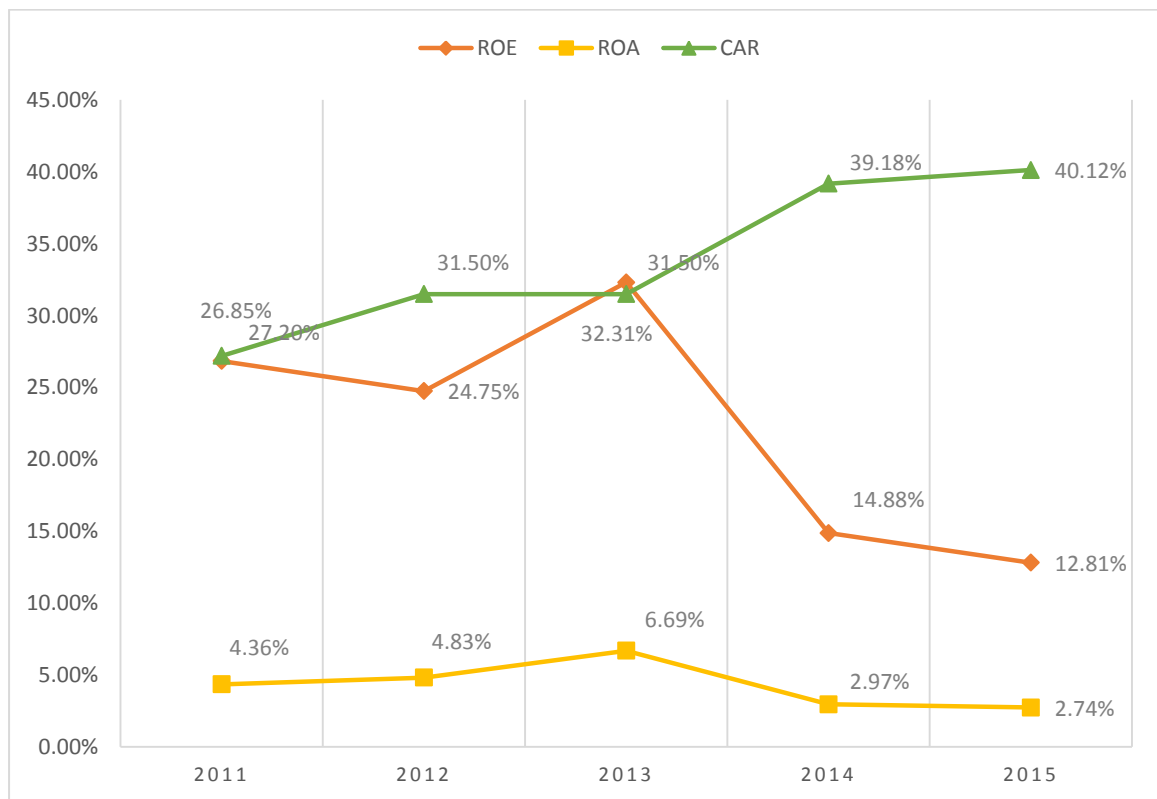Which is correlation measure of the degree to which changes to the value of one variable predict the change to the value of another. When the fluctuation of one variable reliably predicts a similar fluctuation in another variable, there's often a tendency to think that means that the change in one causes the change in the other. However, correlation does not imply causation.

**Multiple Regression analysis**

Is a correlation process for estimating the relationships among variables, it includes many techniques for modeling and analyzing several variables, when the focus is on the relationship between a dependent variable and more than one independent variables (or 'predictors'). More specifically, regression analysis helps one understand how the typical value of the dependent variable (or 'criterion variable') changes when any one of the independent variables is varied, while the other independent variables are held fixed. The model is based on the Ordinary Least Square, which generally takes the form of:

$$Y_1 = \beta_0 + \beta_1 X_1 + \beta_2 \ X_2 + \varepsilon_1$$

$$Y_1 = Dependent\ Variable$$

$$\beta_0 = the\ slope\ intercept$$

$$X_1,\ X_2 = Independent\ Variables$$

The multiple regression table shows those symbols that refer to:

F-statistics: to test the validity of linear regression and indicating a good overall fit of the model

T-Test: to measure the impact of independent variables on dependent variable.

R Squared: is a statistical measure of how close the data to the fitted regression line (measure a goodness of fit of the model and explain percentage of the variation).

Adjusted R-Squared: is a modified version of R squared that has been adjusted for the number of predictors in the model. It increases only when a predictor improves the model by less than expected by chance.

Beta Coefficient: is a measure of how strongly each predictor variable influences the creation (dependent) variable.

R: measures the strength and the direction of a linear relationship between two variables.

P-value (sig): tests the null hypothesis that coefficient is equal to 0 (no effect) a low sig (<0.05) indicates that you can reject the null hypothesis and vice versa.

### 3.2.2.1.   *Correlation test for Independent variables*

*Table 2 Correlation test for the relationship between Independent variables:*

**Correlations**

| | | Non-performing loan | loan loss provisions | CAR |
|---|---|---|---|---|
| Non-performing loan | Pearson Correlation | 1 | .950[*] | .825 |
| | Sig. (2-tailed) | | .013 | .086 |
| | N | 5 | 5 | 5 |
| loan loss provisions | Pearson Correlation | .950[*] | 1 | .952[*] |
| | Sig. (2-tailed) | .013 | | .013 |
| | N | 5 | 5 | 5 |
| CAR | Pearson Correlation | .825 | .952[*] | 1 |
| | Sig. (2-tailed) | .086 | j.013 | |
| | N | 5 | 5 | 5 |

*. Correlation is significant at the 0.05 level (2-tailed).

The table above shows the Pearson's correlation coefficient which test the relationship between independent variables (credit risk indicators). It indicate that the correlation between NPL and LLP explain 95% that means there is a strong positive relationship between NPL and LLP. While the correlation between NPL and CAR explain 82.5% which there is a strong positive relationship between NPL and CAR.

Also, we noticed that the correlation between CAR and LLP explain 95.2% that means there is a strong positive relationship between CAR and LLP.

### *3.2.2.2.* *Testing Hypothesis*

### *3.2.2.2.1. Correlation analysis*

Table 3 Correlations test for hypothesis 1

**Correlations**

|  |  | ROA | ROE | Non-performing loan | loan loss provisions | CAR |
|---|---|---|---|---|---|---|
| ROA | Pearson Correlation | 1 | .953<sup>*</sup> | -.650 | -.381 | -.112 |
|  | Sig. (2-tailed) |  | .012 | .235 | .527 | .857 |
|  | N | 5 | 5 | 5 | 5 | 5 |
| ROE | Pearson Correlation | .953<sup>*</sup> | 1 | -.839 | -.634 | -.385 |
|  | Sig. (2-tailed) | .012 |  | .076 | .250 | .523 |
|  | N | 5 | 5 | 5 | 5 | 5 |
| Non-performing loan | Pearson Correlation | -.650 | -.839 | 1 | .950<sup>*</sup> | .825 |
|  | Sig. (2-tailed) | .235 | .076 |  | .013 | .086 |
|  | N | 5 | 5 | 5 | 5 | 5 |
| loan loss provisions | Pearson Correlation | -.381 | -.634 | .950<sup>*</sup> | 1 | .952<sup>*</sup> |
|  | Sig. (2-tailed) | .527 | .250 | .013 |  | .013 |
|  | N | 5 | 5 | 5 | 5 | 5 |
| CAR | Pearson Correlation | -.112 | -.385 | .825 | .952<sup>*</sup> | 1 |
|  | Sig. (2-tailed) | .857 | .523 | .086 | .013 |  |
|  | N | 5 | 5 | 5 | 5 | 5 |

*. Correlation is significant at the 0.05 level (2-tailed).

Source: Authors calculations using SPSS

**1-** There is a moderate negative relationship (-65%) between Non performing loan and bank's ROA

**2-** There is a weak negative relationship (-38.1%) between loan loss provision and bank's ROA.

**3-** There is a weak negative relationship (-11.2%) between capital adequacy ratio and bank's ROA.

**4-** There is a strong negative relationship (-83.9%) between non-performing loan and bank's ROE.

**5-** There is a moderate negative relationship (-63.4%) between loan loss provision and bank's ROE.

**6-** There is a weak negative relationship (-38.5%) between capital adequacy ratio and bank's ROE.

Finally, we noticed that there is a strong positive correlation between profitability indicators (ROA and ROE).

### 3.2.2.2.2. Regression Analysis Results

Hypothesis 1

**H0:** Credit risk has no significant statistical impact on bank's ROA.

**H1:** Credit risk has a significant statistical impact on bank's ROA.

Sub Hypothesis:

**H0:** NPL has no significant statistical impact on ROA.

**H1:** NPL has significant statistical impact on ROA.

**H0:** LLP has no significant statistical impact on ROA

**H1:** LLP has significant statistical impact on ROA

**H0:** CAR has no significant statistical impact on ROA

**H1:** CAR has significant statistical impact on ROA

*Table 4 Regression test for hypothesis 1*

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-----|----------|-------------------|----------------------------|
| 1 | 1.000[a] | 1.000 | .999 | .06110 |

a. Predictors: (Constant), CAR, Non-performing loan, loan loss
provisions

As we observe from the previous table that the value of the **R** is **100%** which is positive and we can say that there is a strong direct relation between the **credit risk** and **bank's ROA**, and the **R-square** is suggesting that the independent variables in the model explain **100%** of the variation on ROA.

**ANOVA**[a]

| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 10.194 | 3 | 3.398 | 910.086 | .024[b] |
| | Residual | .004 | 1 | .004 | | |
| | Total | 10.197 | 4 | | | |

a. Dependent Variable: ROA

b. Predictors: (Constant), CAR, Non-performing loan, loan loss provisions

The previous table shows that the value of (F) is (910.086) and the statistical significance (Sig.) is (024) so it is lower than the level of significant (0.05), which gives the model a high authority to measure the impact of change in the independent variables on profitability (ROA). And that makes us accept the hypothesis that said **Credit risk has a significant statistical impact on bank's ROA**.

**Coefficients**[a]

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | .489 | .545 | | .898 | .534 |
| | Non-performing loan | -.952 | .042 | -2.432 | -22.672 | .028 |
| | loan loss provisions | 1.576 | .233 | 1.340 | 6.774 | .093 |
| | CAR | .167 | .030 | .617 | 5.625 | .112 |

a. Dependent Variable: ROA

Source: Authors calculations using SPSS

The previous table shows that there is a statistically significant impact of NPL indicator at a significance level (0.05) on ROA. Which has a t-value (-22.672) and combined with sig. of (.028), which is lower than the level of significant (0.05). So that ROA is effected by NPL. Also, the results shows that no statistically significant impact of LLP and CAR on ROA because it is more than significance level (0.05).

And the Multiple Linear Regression Equation =

$$\textbf{Return on Assets (ROA)} =$$

$$.489 - .952 \textbf{ NPL} + e$$

However, NPLR which measure the extent of credit risk default sustained by the bank showed a statistically significant large negative effect on profitability measured by ROA, which means an increase in NPL by 1 result a decrease on ROA by -952.

Hypothesis 2

**H0**: Credit risk has no significant statistical impact on bank's ROE.

**H1**: Credit risk has significant statistical impact on bank's ROE.

*Table 5 Regression test for hypothesis 2*

### Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------|----------|-------------------|----------------------------|
| 1 | 1.000[a] | 1.000 | 1.000 | .00060 |

a. Predictors: (Constant), CAR, Non-performing loan, loan loss provisions

As we observe from the previous table that the value of the **R** is **100%** which is positive and we say that there is a direct relation between the **Credit risk** and **bank's ROE**, and the **R-square** is suggesting that the independent variables in the model explain **100%** of the variation on **ROE.**

### ANOVA[a]

| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
|-------|------------|----------------|-----|-------------|---------------|-------|
| 1 | Regression | 272.020 | 3 | 90.673 | 254119395.200 | .000[b] |
| | Residual | .000 | 1 | .000 | | |
| | Total | 272.020 | 4 | | | |

a. Dependent Variable: ROE

b. Predictors: (Constant), CAR, Non-performing loan, loan loss provisions

The previous table shows that the value of (F) is (254119395.200) and the statistical significance (Sig.) is (.000) so it is lower than the level of significant (0.05), which gives the model a high authority to measure the impact of change in the independent variables on profitability (ROE). ). And that makes us accept the hypothesis that said **Credit risk has a significant statistical impact on bank's ROE**.

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | 1.747 | .005 | | 328.034 | .002 |
| | Non-performing loan | -3.303 | .000 | -1.633 | -8046.429 | .000 |
| | loan loss provisions | .008 | .002 | .001 | 3.598 | .173 |
| | CAR | 1.345 | .000 | .962 | 4628.530 | .000 |

a. Dependent Variable: ROE

Source: Authors calculations using SPSS

The previous table shows that there is a statistically significant impact of NPL and CAR indicators at a significance level (0.05) on ROE. Which has a t-value (-8046.429, 4628.530) and combined with sig. of (.000, .000) respectively, which is lower than the level of significant (0.05). So that ROE is effected by NPL and CAR .Also, the results shows that no statistically significant impact of loan loss provision ROE because it is more than significance level (0.05).

And the Multiple Linear Regression Equation =

## Return on Equity (ROE) =
## 1.747 -3.303 **NPL**+ 1.345 **CAR**+ e

With respect to profitability measured by ROE which indicates how far the owners earned from their investment in Syrian commercial bank, NPL and CAR showed a significant effect on ROE also (increase by 1 in NPL leads to decrease in ROE by -3.303, increase by 1 in CAR leads to increase in ROE by 1.345 respectively)

**The results of multiple linear regression shows that the credit risk has significant statistical impact on ROA and ROE.**

# 4. CHAPTER 4

## 4.2. Discussions of Results

### 4.2.1. Hypothesis result

**1- Credit risk has a significant statistical impact on bank's Profitability**

**2-** Credit risk (NPL) has a significant statistical impact on bank's ROA.

**3-** Credit risk (NPL,CAR) has a significant statistical impact on bank's ROE.

# 5. CHAPTER 5

## 5.2. Conclusions and Recommendations

### 5.2.1. Conclusion

This research studies the impact of credit risk management on the profitability of commercial bank of Syria during the period 2011-2015. To analyze the relationship between credit risk indicators and profitability indicators, we used annual reports gathering from commercial bank of Syria. However, Study found that credit risk measures: NPL, LLP, CAR have a significant impact on the profitability of commercial bank of Syria. Finally, banks cannot eliminate credit risk but they can minimize it through efficient credit risk management.

### 5.2.2. Recommendations

1- Policies already put in place for management and measurement of credit risk should be reviewed from time to time to ensure its effectiveness i.e. should be policy consistency.

2- Assessment and continuous monitoring of counterparty and portfolio to know when loan is becoming non-performing.

3- There should be system established for presentation of information about the bank's exposure to credit risk and its management and control over such credit risk in time.

4- The bank should publish its financial reports on its official website to help others to accesses into information easily.

5- CBS can apply this model to measure the impact of credit risk in terms of (NPL,LLP.CAR) on ROA and ROE.

6- CBS must corporate with Audit Company to avoid mistakes in its annual reports and calculations.

7- CBS should apply an advance model of effective credit risk management during the crisis (Stress Testing) because annual reports shows that ratios were decreasing after 2013 to became half of the ratio in 2015.

### 5.2.3. Development proposals

1. Dependence of Risk Directorate to the Board of Directors to enhance its independence

2. Continue to develop electronic banking systems

3. Building a customer information base in coordination with the Central Bank of Syria and other banks to exchange information within the Bank Secrecy Law through the Banking Risks Department at the Central Bank.

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