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Corporate Governance and Credit Risk in the Iranian Banking Industry

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The primary purpose of this research is to investigate the impacts of corporate governance on credit risk in the Iranian banking industry. The sample consists of 20 banks listed on the Tehran Stock Exchange during 2011-2016, using panel data. In this research, credit risk and corporate governance are the dependent and independent variables, respectively. The meta-synthesis method was used for compiling a checklist of corporate governance indicators. Then, the content analysis method was applied for measuring the corporate governance index; i.e., the number of dimensions disclosed on the total number of disclosable dimensions. The results indicate that after adjusting the control variables namely the size, the financial leverage, the ratio of capital adequacy, the GDP and inflation, there is a significant negative relationship between corporate governance quality and the credit risk, which means more effective corporate governance will reduce information asymmetry, increases the clarity and stakeholder confidence, and finally reduces banks' credit risk. Accordingly, the final recommendation is to reduce credit risk by improving the mechanisms of corporate governance in the Iranian banking industry.

Keywords: Banking Industry, Credit Risk, Corporate Governance, Tehran Stock Exchange
JEL Classification: G21, G32, G34

1 Introduction

The increasing complexity of the business in different areas and the multiplicity of factors affecting the operation make banks face a variety of risks (Abdallah et al., 2015). Generally, banks have two main functions in macroeconomics: i) equip and allocate resources (Saunders and Cornett, 2008;

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Deangelo and Stulz, 2015) and ii) manage and control the risk (Saunders and Cornett, 2008). Banks and financial institutions, due to the nature of their activities face serious risks, with the most important one being the credit risk.

Nowadays, one of the most critical challenges for the banks is reduced transactions of these institutions. It can be the source of many financial and monetary crises, negatively affect banks, have various economic problems, and on a larger scale affect the nations (Mehrara et al., 2008). In this regard, the basic pre-assumption in the establishment of proper corporate governance is the establishment and correct functioning of internal control systems in banks. Strong corporate governance in banks is the most important prevention tool for corruption. With the weakness of corporate governance, financial corruption increases. As a result, direct domestic and foreign investment reduces, government expenses rise, and economic growth declines. In a sample definition, corporate governance is a set of rules and regulations that solve the potential conflict between executives and shareholders, particularly for banks, where owners support risky capital strategies to increase their stock value. In another definition, corporate governance management attempts to resolve the conflict between all the stakeholders in the organization. This definition is based on the theory of stakeholder. According to this theory, any person or group that affects the firm's performance or affected by the firm's performance is considered as stakeholders such that during the decision-making manager of the organization must consider the conflicting interests of all these groups (Selgi, 2018).

Factors affecting the performance and profitability of the banking system include the fields of interest for academic researchers, bank system managers, monetary observers, and economic activists (Athanasoglou et al., 2005). The emphasis on explaining the factors affecting the profitability of the banking system is because the backbone of the financial system in many countries is the banks (Baral, 2005).

In spite of various research and innovations conducted on credit risk control and monitoring, this type of risk is still one of the most critical factors of the banks' bankruptcy in most countries. About 70%-80% of the right-hand side of the banks' balance sheet is related to credits, and its fate is interwoven with the outcome of banks. The status of bank credits ultimately affects the bank's financial position, balance sheet, profit and loss statement, and cash flow. After the recent financial crisis, the debate of corporate governance has found considerable importance; and the role of corporate governance is essential in several aspects. First, the establishment of corporate governance causes the scarce resources in the economy to be used efficiently. Second,

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resources are allocated to efficient investments. Third, corporate governance helps managers focus on the improvement of firm performance. Fourth, corporate governance helps the chief executive officer or board of directors select the best tool to control scarce resources. Fifth, the corporate governance forces institutions to accept regulations (Taghavi et al., 2012).

Considering the above mentioned materials and the importance of this research, it can be said that in Iran, the debate of how to prevent from crisis has received lots of attention from financial researchers, especially in the banking industry, given the financial and banking crises in recent years which have caused many problems for financial institutes, companies, and banks. Accordingly, the corporate governance is one of the tools which have extremely taken the attention of technicians, and researchers have tried to prevent from banking and financial crises in banks and financial institutions as much as possible by identifying its mechanisms and solutions and creating proper corporate governance and its expansion in banks. It is noted that the use of corporate governance mechanisms to reduce credit risk in banks has received attention from the Central Bank of the Islamic Republic of Iran more than before, and by presenting a variety of guidelines, circulars, and templates, the Central Bank has made attempts to strengthen the culture of corporate governance in banks and play its pivotal role in optimization of structures and making efficient banking network. Additionally, as most Iranian companies have weaknesses in the components of the audit committee, internal audit, and internal controls, in order to direct wandering capitals inside the country and encourage external capitals, and finally, transit from developing economy to developed economy, it is required to pay more attention to the corporate governance category and its mechanisms, especially in the financial sector of the country, including state-run banks which are transferring to the private sector and newly established private banks because their financial health during financial crises is in the forefront of affectivity, and this confirms the rate of their undeniable need to the subject of this research. Moreover, in Iranian banks, limited studies have been conducted concerning corporate governance. Notably, the effect of corporate governance on the banks' credit risk has been overlooked. Accordingly, the current research seeks to investigate the relationship between corporate governance and the credit risk of banks listed at the Tehran Stock Exchange.

This research is important from different aspects: first, investigating the ability to replace corporate governance mechanisms as a method to manage the risk of banks; second, given the legal environment, different governance structures and requirements, the evidence related to other countries (often

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developed countries) cannot be precisely generalized to Iran. Third, corporate governance mechanisms and their functions are the subjects proposed in the current conditions of Iran that need further research in the area of credit risk in the banking industry. Therefore, this study helps expand the literature in this area. Finally, considering that so far no research has investigated the credit risk and its relationship with corporate governance, and the result is not clear; therefore, the response to the research question is important for researchers, compilers of reporting requirements, and stakeholders.

The present paper is structured into six sections. After the introduction, in the literature review section, theoretical foundations of corporate governance and credit risk in the Iranian banking industry are presented. Thereafter, a review of theoretical foundations and empirical studies will take place in the background of the research. In the research methodology section, the proposed methodology is presented, and in the next section, the proposed model and data sources are introduced. Subsequently, the estimation method and finding analysis are provided. Finally, summaries, conclusions, and suggestions are presented.

2 Theoretical Foundations

Risk is an inherent phenomenon in many human activities. Today, organizations are exposed to different risks because of complexity involved in their operations, changes in organizational structures for more compatibility, and particularly the expansion of competitions at the global levels. Banks, financial, and credit institutions are no exception to this rule. The diversity and complexity of banking activities have increased because of the globalization, integration of financial markets, and the significant growth of financial knowledge (Mirghafouri and Amin Ashuri, 2015).

Credit risk due to its connection with the operational activities of the banks is among the most critical risks existing in the banking system, and most of the time, the harm related to the credit risk is more than the other risks (Ahmadi et al., 2016). The credit risk is defined as the probability of non-repayment or delayed payment of the debt by the customer (Glantz, 2003). The level of credit risk depends on the quality of the bank assets, which in turn depends on non-current demands, health, and profitability of the bank recipients' facilities (Baral 2005).

The development of accountability and corporate social responsibility management at the beginning of the 21st century has led to the emergence of corporate governance issues. According to the recent financial crises, the risky behavior of banks affects the economic and financial sensitivity and fragility.

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In this connection, national and international legal authorities are looking for a way to form the risk of banks. Therefore, the interaction between corporate governance mechanisms with capital laws is an essential issue in creating the risky behavior of banks (Leaven and Levine, 2009; Chalermchatvichien et al., 2014).

The investigation of the existing literature shows that there is no agreed-upon definition of corporate governance. It can be said that the current definitions of corporate governance are in a broad spectrum. Limited views are on one side of the spectrum and broad perspectives on the other side. In the limited views, corporate governance is limited to the relationship between the company and stakeholders. It is an old pattern that is expressed in the form of representative theory. On the other side of the spectrum, the corporate governance can be regarded as a network of relations that exist not only between the company and their owners (stakeholders) but also between the company and a large number of their beneficiaries, including employees, customers, sellers, bondholders, etc. Such a view is seen in the form of the beneficiaries' theory. Generally, corporate governance is a set of rules, regulations, institutions, and methods that determine how and in favor of whom the companies are managed (Vazifehdoust et al., 2016).

Considering the relationship between the subject matter of this research with Iran's commercial banks, the global bank defines corporate governance as a set of relationships between management, the board of directors, stakeholders, and other beneficiaries of the company. Additionally, corporate governance provides a structure through which the companies' goals are formulated, and the tools to attain these goals, as well as the way of monitoring the managers' performance are determined (Tabaeizadeh Fesharaki et al., 2018).

Effective procedures of corporate governance for the proper functioning of the capital market and the whole economy of a country are vital and necessary for attracting and maintaining public trust. Poor corporate governance will possibly lead to the negation of market trust; and thus withdrawal of resources, a liquidity crisis, and falling prices. Firms, in addition to being responsible for stockholders, are responsible for the investors and other members. The purpose of corporate social responsibility, alliance, and continuity among the activities and values of the organization are reflected in the interests of all stakeholders in politics and the organization’s performance (Hajiha and Sarafraz, 2014). Findings of the International Audit Practices of Pricewaterhouse Coopers (PwC) in 2002 show that nearly 70% of international executives believe that dealing with corporate social

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responsibility plays a vital role in the profitability of related companies (Khan, 2010). However, unlike all the mentioned changes, the banking system is the primary financing source of economic activities in many countries and plays a central role in the transfer of resources from savers to investment units.

In the previous studies, the effect of corporate governance on variables such as the value and performance of the company, stock return, cost of common stock issuance, cost of debt securities issuance, capital structure, profit management, etc., has been scrutinized. In the following, some of these studies are reviewed.

3 Literature Review

So far, many studies have been conducted in the field of credit risk and its influencing factors. Previous studies have generally identified and ranked the legal and real clients of the applicant for banking facilities from the perspective of the credit risk and less on corporate governance index and credit risk. Kabir Hassan et al. (2019) evaluated liquidity risk, credit risks, and stability in conventional and Islamic banks and concluded that liquidity risk has a negative and meaningful relationship with credit risk and stability. Finally, they showed that Islamic banks are better at risk management than conventional banks.

Kalu et al. (2018) evaluated the relationship between credit risk management techniques and the financial performance of microfinance institutions. Besides, they gathered the initial information using a questionnaire and secondary data from the annual reports of microfinance institutions. Eventually, they showed that identification and evaluation of credit risk have a positive and significant relationship with financial performance, while credit risk monitoring and credit risk reduction have a positive and significant relationship with financial performance.

Ali et al. (2018) studied whether the quality of corporate governance affects the risk of default, emphasizing the role of growth opportunities and stock liquidity. They found that companies with more effective corporate governance have a significant relationship with more growth opportunities.

Switzer et al. (2017) examined the relationship between default risk and corporate governance in financial firms for 28 countries outside North America during the crisis and after the financial crisis. They showed that reduced risk of default helps to return the stock market in the post-crisis period. Moreover, they reported that both internal governance variables (i.e., institutional ownership, board composition, and the dichotomy of managing

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director) and the external regulatory factors have significant impacts on the default risk.

Calomiris and Carlson (2016) studied the relationship between corporate governance and risk management in unprotected banks. They showed that the formal governance structure that has been selected internally creates a higher risk and has a higher effect on capital for risk management, but applies less managerial rights.

Chen and Lin (2016) investigated the role of corporate governance on the relationship between credit risks, interest rates, and liquidity. They concluded that credit risks, interest rates, and liquidity are linked together and can reduce the interaction between them using corporate governance and laws. They also stated that ownership affects the risk appetite of the bank. They also showed that credit risks, liquidity, and interest rates have an internal connection, and as a result, banks should pay attention to the simultaneity of these risks in risk management activities relating to their corporate governance.

Rose (2016), examined whether the presence of weak corporate governance features leads to more credit risk acceptance. He investigated the Danish banks in the year before the 2007 financial crisis and showed that increasing the remuneration of the board would increase the bank's credit risk. On the other hand, increasing the number of board members will reduce credit risk and make a stronger control system and a better balance.

Aebi et al., (2012) examined to know whether the corporate governance mechanisms associated with risk management, like the existence of an excellent director, affect the risk of bank performance during the financial crisis. They showed that when the superior director of risk reports the board of directors directly, banks experience the stock returns and a much higher return on equity. In contrast, corporate governance indicators (i.e., ownership of the director, board size, and independence of the board of directors) mostly do not have a meaningful relationship or adverse effect on the bank's performance during the crisis. These results highlight the importance of risk management in the bank.

In Iran, Selgi (2018) investigated corporate governance and risk management through evidence from Iranian banks and reported the positive relationship of corporate governance indicators with capital adequacy ratio and deposit cost of coverage ratio. He also revealed a non-linear relationship between ownership concentration and risk indicators.

Mehrabanpour and Miri Chimeh (2018) studied the impact of corporate governance index on the cost of capital and the risk of companies. They concluded that there is a negative and significant relationship between

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corporate capital cost and corporate governance index. Besides, they reported a positive and meaningful relationship between the companies' predicted systematic risks with the corporate governance index. This conclusion is confirmed that companies with governance mechanisms, shareholder-oriented tolerate the more systemic risk that shows, good corporate governance might lead to high risk instead of preventing any increase in risk.

Namazi and Ebrahimi Meymand (2016) examined the impact of corporate governance mechanisms on risk disclosure. They showed that ownership of institutional shareholders has a positive and significant impact on the level of disclosure and the ownership of five major shareholders, the number of non-executive directors and the dichotomy of the CEO's duties has a negative and significant impact on the level of disclosure.

Nikbakht and Taheri (2014) examined the relationship between corporate governance mechanisms and systematic risk. They identified that there is a significant relationship between the percentage of institutional shareholders that is considered among the elements and mechanisms of corporate governance and systematic risk. Moreover, they reported an inverse linear relationship between the percentage of members of non-executive directors and the systematic risk at the overall level.

4 The Model/Methodology

According to theoretical foundations and research background, the research hypothesis of this study is "Corporate governance has a significant negative effect on bank credit risk". Methodologically, this research is applied research from the viewpoint of purpose and an ex post facto research from the viewpoint of the time dimension. The data used in this study were collected from the databases of the Tehran Securities and Exchange Organization and the central bank website. Also, Excel and E-views software packages were used for classifying, summarizing, and presenting information in the form of tables and analyzing data.

4.1 Statistical Population and Sample

The statistical population includes all the banks accepted in Tehran Stock Exchange during 2012- 2017, and the statistical sample consists of the banks having all of the following features:

- Their securities have been accepted before 2012, activated until the end of 2017, and does not have any losses.
- Their financial information is attainable.
- Its financial year does not change in the analyzed period.

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Based on the mentioned conditions, 20 banks were chosen as the research sample.

4.2 The Model

The first step in testing the research hypotheses is to present an accurate and suitable definition of the variables that provide the possibility of measuring the considered features of the research. The variables based on the roles they have in the study consist of the independent variables, the function or dependent variables, and the mediator or intermediate and control variables (Azar and Momeni, 2008).

The research variables were measured, and hypothesis testing was done as follows:

$$CR_{it} = \beta_0 + \beta_1 CGI_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 CAR_{it} + \beta_5 GDP_{it} + \beta_6 INR_{it} + \epsilon_{it} \quad (1)$$

4.3 The Variables

Independent Variables, (Corporate Governance Index: CGI): To compile the CGI of the banks, several theoretical sources, research, national standards, and international standards related to corporate governance were first examined. Considering the abundance of dimensions and components used in previous studies and the combination of standards and international guidelines and considering the environmental conditions of Iran, a combination of meta-synthesis method was used to prepare the corporate governance index checklist. Then, to measure the CGI, the content analysis method with the index approach was used according to the following measure. The corporate governance index is equal to the total number of disclosed dimensions divided by the total number of disclosable dimensions. Based on this approach, after selecting the components (i.e., financial transparency and disclosure of information, the independence of the board of directors and the dichotomy of the CEO's duties) using the meta-synthesis method, if any of the components mentioned in the report of the board of directors is disclosed, it is given one and if it is not disclosed, that number is zero.

Dependent Variable (Credit Risk: CR): In this research, the CR is the ratio of the total receivables (i.e., overdue, deferred, and bad debt) of the bank to the total assets of the bank at the analyzed time interval.

Control Variables: Five control variables are as follows*:*

SIZE: The size of the bank, which is equal to the natural logarithm of the total assets of the balance sheet

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LEV: The financial leverage, which is equivalent to the total sum of liabilities to the total assets
CAR: The ratio of capital adequacy, which is resulted from dividing the base capital to the overall weighted assets to the risk coefficients in terms of percentage
GDP: Gross domestic product without considering the oil revenue on the base year of 2011
INR: The inflation rate, which is estimated and expressed by the central bank every year
ϵ_{it}: The remained error of the model for the year *t*

5 The Results

5.1 Descriptive Statistics

After collecting data used in the research, the descriptive statistics of each variable were calculated separately. Table 1 represents the descriptive statistics of the analyzed variables for 20 banks accepted in the Tehran Stock Exchange from 2012 to 2017.

Table 1
Descriptive statistics of model variables of research

Statistical quantity / Variable	Mean	Median	Maximum Data	Minimum Data	Standard Deviation	Skewness	Kurtosis
Credit risk (CR)	0.078	0.046	0.727	0.011	0.08	4.77	3.699
Corporate governance index (CGI)	0.44	0.42	0.85	0.00	0.25	-0.26	2.05
Bank size (SIZE)	8.29	8.32	9.34	6.74	0.55	-0.35	2.66
Financial leverage (LEV)	0.91	0.94	0.99	0.52	0.1	-2.78	10.74
Capital adequacy ratio (CAR)	9.44	8.25	20.96	2.13	5.11	0.799	2.95
Gross domestic product (GDP)	6.79	6.77	6.84	6.76	0.029	0.715	1.7
Inflation rate (INR)	18.55	13.75	34.70	9.00	10.27	0.62	1.6

Source: Research Findings.

Among the significant measures, the average is a suitable measure to represent the centrality. The measures of dispersion are mostly the criteria to determine the amount of data dispersion from each other or the amount of their

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dispersion relative to the average. Standard deviation is one of the most significant measures of dispersion, which is the desirable condition for entering the variable into the regression model.

5.2 Unit Root Test Results

Prior to research modeling, to prevent from pseudo regression in research, at first, the stationarity of variables was investigated. To this purpose, Levin, Lin, and Chu's test (LLC) were used. Unit root test in Table 2 indicates that as the prob. value reported for all research variables is less than 0.05, which means that the null hypothesis (suggesting the existence of unit root) is rejected at 95% significant level. Consequently, all variables are at a stationary level and accumulated zero order.

Table 2
Unit Root Test Results of the research

Variables	Levin, Lin, and Chiu (LLC) test	
	Statistic	Prob.
Credit risk (CR)	14.056	0.0000
corporate governance index (CGI)	8.44	0.0000
Bank size (SIZE)	15.620	0.0000
Financial leverage (LEV)	13.081	0.0000
Capital adequacy ratio (CAR)	9.868	0.0000
Gross domestic product (GDP)	11.695	0.0000
Inflation rate	3.748	0.0001

Source: Research Findings.

5.3 Co-integration Test Results

Before estimating the model, the accuracy of the long-term relationship between the research variables was tested using the co-integration test.

Table 3
Panel co-integration test results

Kao Test	
Prob.	Statistic
0.0000	-6.14

Source: Research Findings.

According to the information of Table 3, the reported value for the level of error in the Kao statistic is less than 5%, suggesting that the null hypothesis of the test is rejected, and the linear combination of the examined variables has

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the co-integration. Therefore, being confident about the lack of false regression, the considered model can be estimated at the value levels.

5.4 F- Limer Test Results

First, it is required to provide the needed statistical tests to determine the data type. The Limer test results are represented in Table 4 for the research model. Moreover, for estimating the model, the panel or consolidated method is used for the data employment. The probability value of this test is more than 5% for the research model; thus, the null hypothesis is accepted.

Table 4
F-Limer Test Results

Test type	Test statistic	Prob.	Result	Confirmed method
F-Limer (chow)	0.9101	0.5720	Confirmation of H_0	consolidated

Source: Research Findings.

Table 5
Results of Estimating the Model

$CR_{it} = \beta_0 + \beta_1 CGI_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 CAR_{it} + \beta_5 GDP_{it} + \beta_6 INR_{it} + \epsilon_{it}$				
Variable name	Estimated coefficient	Standard error	t-statistic	Significance level
y-intercept	11.681	4.1499	2.858	0.0043
corporate governance index	- 0.533	0.0708	-7.539	0.0000
Bank size	0.772	0.0363	21.271	0.0000
Financial leverage	- 0.577	0.0915	-6.309	0.0000
Capital adequacy ratio	- 0.012	0.0029	-4.2216	0.0000
Gross domestic product	-1.5750	0.6160	-2.5567	0.0107
Inflation rate	- 0.0063	0.0019	-3.3564	0.0008
Coefficient of determination	0.6857			
The adjusted coefficient of determination	0.6828			
Durbin Watson statistic	1.9324			
Value of F statistic	24.0375			
Significance of the total model	0.0000			

Source: Research Findings.

5.3 Results of Estimating Model

As Table 5 demonstrates, the significance of the total regression model is confirmed considering the statistic F at the confidence level of 95%. Also, the value of the adjusted coefficient of determination shows that 68% of the changes in the credit risk of the banks is explained by the independent and control variable of the model. Besides, the value of the Durbin Watson statistic

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was 1.93, which represents a lack of an autocorrelated disturbance between the components.

6 Conclusions

The main aim of this research is to investigate the effect of corporate governance indicators on credit risk in the Iranian banking industry. Using different indicators of corporate governance, such as financial transparency and disclosure of information, independence of the board of directors, and the duality of chief executive officer's tasks, some of the main points about the effect of corporate governance on the credit risk of banks have been determined:

- Corporate governance has a significant inverse effect on credit risk.
- The existence of effective and robust corporate governance causes a reduction in information asymmetry, higher transparency, and leads to gaining stakeholders' trust, and consequently, a reduction in the banks' credit risk.
- Considering the effect of corporate governance on the credit risk, it is required that the Central Bank of the Islamic Republic of Iran pay more attention to indicators and corporate governance mechanisms to reduce the banks' credit risk.

The results are in line with the findings of a study by Ali et al. (2018), who investigated whether the quality of corporate governance affects the risk of default with an emphasis on the role of stock growth opportunities and liquidity. In another study, Switzer et al. (2017) examined the relationship between default risk and corporate governance in financial companies for 28 countries outside North America during the crisis and after the financial crisis. Elsewhere, Rose (2016) examined whether the existence of weak corporate governance features leads to greater credit risk acceptance. Mehrabanpour and Miri Chimeh (2017) studied the impact of corporate governance index on the cost of capital and company risk. Taheri (2014) investigated the relationship between corporate governance mechanisms and systematic risk and revealed their conformity and consistency.

According to the findings of the research, the following suggestions are made.

- Due to finding a negative and significant relationship between the corporate governance indexes and the credit risk as a risk measurement criterion, banks’ managers can pay more attention to the improvement of corporate governance mechanisms.

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- Given the impact of inflation and GDP on credit risk, banks should always observe macroeconomic variables and consider policies that are appropriate to economic conditions.
- The stock organization, formulation committee, accounting, and auditing standards, and audit organizations should pay more attention to formulating regulations and establishing rules and legal grounds to encourage banks toward the social responsibility mechanisms and establish legal requirements for presenting social responsibility reports.
- Given the fact that the data of this research include 20 banks, this research can be done on a larger number of stock companies.
- The impact of other corporate governance mechanisms such as management ownership, the board size, and the presence of the audit committee on credit risk can be investigated.
- Finding more areas for social responsibility and more precise tools to measure the risk of banks in these areas, eliminating the standard features between the areas of disclosure, corporate governance, and social responsibility are recommended for increasing the accuracy and certainty in interpreting the findings of the research.

7 The Limitations

Two limitations of this research are the limitation of time scope and that the results of the study are specific to the bank.

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