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Research Paper

Effect of Corporate Governance on Banking Failure

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ABSTRACT

We analyse the roles of bank Directors' Effectiveness, Transparency and the Disclosure, Responsibility and total corporate governance indicator in bank failures during 2006-2019, using Logistic model and Kaplan-Meier method. This study completes other studies to make composite banking failure indicator. Good corporate governance indicator was made. That it is one if corporate governance indicators for each bank are more than mean of sample and otherwise, it is zero. Forth we estimate the survival model according corporate governance indicators. Our results suggest that failures are strongly influenced by Corporate governance indicators. High Directors' Effectiveness, Responsibility and total corporate governance indicator decrease failure risk significantly. In contrast Transparency and the Disclosure increase failure risk. These findings suggest that banks with more transparency are less survival than others. In contrast Responsibility has most effect on survival banks. There are positive relationship between bank size, inflation and banking failure and negative relationship between economic growth and banking failure indicator.

1 Introduction

The study of bank failure is important for two reasons. First, an understanding of the factors related to a bank's failure enable regulatory authorities to manage and supervise banks more efficiently. Second, the ability to differentiate between sound banks and troubled ones will reduce the expected cost of bank failure. In other words, if examiners can detect problems early enough, regulatory actions can be taken either to prevent a bank from failing [47]. After the 2007 financial crisis, it became increasingly important to examine the impact of corporate governance on bank failures. So the question was whether the failure of corporate governance could lead to the bankruptcy of banks? Most studies of bank failure have focused on the influence of accounting variables, such as capital ratios, non-performing loan (NPL) ratios, and earnings [35, 40,33,14, 8,9,10, 22, 47]. However, one hand, almost no research to date has empirically made composite indicator to be able to examine the failure of banks from different dimensions. In this article, this gap is filled in the literature by designing a combination of variables explaining the failure of banks based on past literature. Other hand, almost few researches to date have empirically analysed the influence of corporate governance characteristics, on bank's probability of failure. The goal of this paper is to fill this gap in the literature. The study contributes to the dedicated

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literature in several ways. Firstly, the cumulative influence of internal governance framework on banking failure is analysed, including an internal corporate governance index (ICGI) in this regard. Secondly, the study completes other studies to make composite banking failure indicator. Third we make good corporate governance indicator that it is one if corporate governance indicators for each bank are more than mean of sample and otherwise, it is zero. Forth we estimate the survival model according corporate governance indicators.

The paper is organized as follows: session 2 and 3 presents the theoretical and literature review which includes the specific characteristics of corporate governance in banks, and the theoretical and empirical evidences related to the relationships between the corporate governance and banks failure in general, in session 4 we describe our sample, variables and in session 5 we describe the model used to test the impact of corporate governance on Iranian banks failure. In session 6 and 7, we present the empirical results and conclusions.

2 Corporate Governance and Banks Failure

It is generally believed that corporate governance improves firms' financial performance [4, 44]. Poor corporate governance is stated to be one of the main causes of financial crises [24]. Weak implementation of corporate governance leads to firms' poor financial performance which ultimately leads to corporate failure [39]. Sound corporate governance policies are important to the creation of shareholder's value and maintaining the confidence of customers and investors alike [46]. Corporate governance stipulates parameters of accountability, control and reporting functions of the board of directors of the corporations. Corporate governance provides the structure through which the objectives of the company are set, and the means of attaining those objectives and monitoring performance are determined. Corporate governance has emerged as an important tool to curb banking fraud, and there is need to evaluate the level of enforcement of corporate governance practices [49]. Poor corporate governance of the banks can drive the market to lose confidence in the ability of a bank to properly manage its assets and liabilities [24]. The objective of corporate governance is to ensure managers act in the best interests of shareholders [37, 51]. The agency theory perspective is the most popular [23]. It has provided the basis for governance standards, codes, and principles developed by many institutions. [17] Contend that a combination of theories better explains corporate governance. The applicability of the theories of corporate governance varies between the developed and developing world [21]. In the developing world where the regulatory framework is weak, the agency theory may be more appropriate [1]. Governance may differ from country to country due to differences in cultural values, political and social and historical circumstances [17]. The present corporate governance theories cannot fully explain the intricacy and heterogeneity of corporate business [17]. Effective corporate governance cannot be illustrated by one theory rather it needs a combination of more than one [1]. A mixture of various theories is best to describe an effective and efficient, good governance practice rather than hypothesizing corporate governance based on a sole theory [52]. Different theories of corporate governance affect the selection and composition of the board, and ultimately this affects the board's capacity to propel the firm to success and avoid collapse.

Proponents of corporate governance advocate for separation of control and ownership in corporations [41]. The concept of corporate governance emerged in reaction to corporate failures and widespread unethical business practices [35]. The overall effect of corporate governance should be the strengthening of investors' confidence in the economy [40]. Thus, the findings of this qualitative case study may improve the profitability of banks and prevent future bank failures. Agency theory, steward-

ship and resource dependence theories assist in understanding the role of the board of directors in contributing to the performance of the organizations they govern [38]. Agency theorists are concerned with aligning the interests of owners and managers [26,15]. Agency theorists, concentrate on the relationship between board leadership structure and firm performance [26, 15]. Agency theorists focus on the conflicting interests between the principals and agents while stakeholder theorists explore the dilemma regarding the interests of different groups of stakeholders [17]. Conversely, stewardship theorists focus on the proportion of executive directors on the board [13, 12]. Both agency theorists and stewardship theorists focus on the relationship between principals and agents but start from different assumptions [48]. [48] contend that stewardship theory is not a separate theory but a complement to the agency theory. Stakeholders are any individual or group who are affected or can affect the achievement of the firm objectives [1]. Stakeholder theorists challenge the assumption that corporate governance aligns between shareholders, of being residual risk-takers [36]. The proponents of stakeholder theory extend the responsibility of the management toward corporate social responsibility, profit maximization, and business morality [24].

3 Literature Review

Ashraf et al.[3] investigate the role that ownership structure and diversification of income plays in the financial stability of banks from the GCC region. They find evidence that suggests that higher concentration of ownership in any type of shareholding is associated with higher insolvency risk. However, this higher insolvency risk is not associated with any specific type of shareholders. Higher financial fragility is also associated with the size and whether the bank is an Islamic bank. Berger et al.[5], analyze the roles of bank ownership, management, and compensation structures in bank failures during the recent financial crisis. Their results suggest that failures are strongly influenced by ownership structure: high shareholdings of lower-level management and non-CEO higher-level management increase failure risk significantly. In contrast, shareholdings of banks' CEOs do not have a direct impact on bank failure. These findings suggest that high stakes in the bank induce non-CEO managers to take high risks due to moral hazard incentives, which may result in bank failure. They identify tail risk in non-interest income as a primary risk-taking channel of lower-level managers.

Chidziva [7], was grounded in the concept of corporate governance using the agency theory. The central research question explored strategies bank managers can employ to improve their understanding of the role of corporate governance in preventing bank failures in Zimbabwe. The transcribed interviews were coded to generate themes and validated through member checking. Four themes emerged from the research: the need for improvement on compliance to corporate governance policies and regulations, recruitment of qualified and competent directors who should be independent non-executive in majority, risk management and internal control, and training, education, and awareness of best practices. Farag and Mallin [16], investigate the influence of board diversity on financial fragility and performance of European banks. Corporate governance codes in Europe recommend unitary and dual-board systems; therefore, they believe that the influence of board diversity may vary across governance mechanisms and that no other studies have addressed these variations and their influence on financial fragility across European countries. The results show that a critical mass of female representation on both the supervisory board and the board of directors may reduce banks' vulnerability to financial crisis. However, interestingly, they find evidence that female directors on the management board are not risk averse. They argue that the degree of risk taking for female directors may vary based on their roles (non-executive or executive) and that female and male executive directors may have the same risk taking behavior. Their empirical results provide guidelines to the regulators in Europe with respect to the recently

approved proposal by the European Parliament on female representation.

Francis [19], explores the role of governance mechanisms as a means of reducing financial fragility. First, he develops a simple theoretical general-equilibrium model in which instability arises due to an agency problem resulting from a conflict of interest between the borrower and lender. In particular, when governance is weak and transaction costs are high, the share of capital assets that creditors can claim as collateral is highly sensitive to shocks. As a result, there is financial fragility, in that the willingness of agents to finance productive investments is sensitive to shocks. Second, using a data set that contains over 90 industrialized and developing economies, the author tests the hypothesis that governance is important in explaining financial fragility (measured as the likelihood of a banking crisis and investment volatility). His results show that institutions, rules, and laws that govern the financial environment are of first-order importance for the stability of financial systems. The author finds that, while better legal systems are particularly important, so are democratic institutions that limit the power of the executive. Karami et al. [29], indicate that there is a significant inverse relation-ship between the tax gap and future earnings changes. It can be argued that increasing the difference between earnings accounting earnings can be associated with decreasing interest in the next year and less stability. On the other hand, significant positive relation between corporate governance is efficient and strong with future earnings changes. because corporate governance will ultimately lead to more sustainable future gains due to the decline of discretionary accruals in discretionary accruals. It is also reinforced by the effect of the tax gap on future earnings changes in firms that have efficient corporate governance, and this effect is only seen for a year later. And is not effective for the second and third years.

Kargarpour [30] investigate the impact of corporate social responsibility (CSR) disclosure on idiosyncratic risk concerning three stakeholder theory, information asymmetry, and risk management. It also goes further and explores the impact of some corporate governance mechanisms such as ownership structure, board characteristics, and incentive contracts on this relationship. To achieve the research objectives, the results show that CSR disclosure; by increasing transparency, reducing uncertainty, stakeholder satisfaction, and positive market signaling; reduces idiosyncratic risk. It was also found that the ownership concentration and managers' remuneration by reducing CSR reporting lead to increased idiosyncratic risk, but government ownership, the duality of the CEO's duties, the board independence and the managers' equity decrease the corporate idiosyncratic risk by increasing CSR reporting. However, the effect of managers' remunerations and state ownership on the relationship between CSR reporting and corporate idiosyncratic risk was not confirmed at the 95% confidence level. Overall, from a theoretical viewpoint, a good corporate governance system can improve the quality of CSR, thereby improving corporate social reputation and reducing corporate idiosyncratic risk. Khorshidvand and Sarlak [31] investigate the relationship between corporate governance characteristics and valuation of the firm's performance in Iran. They found a significant and negative relation between firm size and financial leverage with the company's performance. The other results showed no significant and positive relationship between the number of board meetings and the firm's performance; the results in this study corresponded to the documentation mentioned in the theoretical framework and financial literature.

4 Sample and Variables

4.1 Sample

In this study we examine the impact of corporate governance (Directors' Effectiveness, Transparency and the Disclosure, Responsibility) on probability of Iranian bank failure. Limited number of studies have focused on effect of corporate governance on banking failure in developed countries [5, 16] and

in developing countries [3, 19]. But has not any study about Iran. For this reason, we decided to choose a sample of Iranian banks as developing country and examine effect of corporate governance on banking failure. The time period from 2006-2019 has been chosen by the idea to investigate the impact of corporate governance on banks failure during period of 13 years. In our research we use a secondary data for corporate governance indicators and financial statement for other indicators. Our sample are focused to 16 private owned banks. Because the existing regulations in Iranian banking system are related to the observance of the principles of corporate governance in non-state owned banks and credit institutions, and there is silence about state-owned banks. Therefore, the principles of corporate governance do not apply in state-owned banks. In addition, to measure banking failure indicator, we use three important indicators: Capital Adequacy, Non-performing loan and Z-score. Then we combine the three criteria and derive a new banking failure indicator.

4.2 Variables

4.2.1 Dependent Variable

One of the most obvious indicators of bank failure is non-compliance with capital adequacy regulations. One of the constant concerns of monetary institutions is that banks have sufficient capital to deal with economic fluctuations and use it to solve their professional problems. This concern is necessary not only to support depositors but also to maintain the health of the economic system. The bank's capital adequacy is very important to cover the potential losses arising from the payment of facilities and liabilities related to activities below the balance sheet of banks. Therefore, in this study, based on the principles of the Ball Committee that non-compliance with capital adequacy regulations exposes banks to bankruptcy and also based on empirical studies such as [2] capital adequacy index as banks failure, so that if the capital adequacy ratio in the Iranian's banks is less than 5%, the bank is bankrupt and otherwise healthy. The 5% criterion has been selected according to the structure of the Iranian's banking network. In order to be the average of the NPL ratio at banking Iranian network in the periods 2006-2019 to be used as the threshold. Threshold is 5% and if NPL ratio in a bank is more than 5%, then bank is considered insolvent or at risk, otherwise it is assumed healthy bank. The 5% criterion has been selected according to the structure of the Iranian's banking network [45]. [31, 25] used the Z_ Score to predict bank failure.

Z score is:

$$\text{Zscore}_{ti} = \frac{\text{capital adequacy}_{\text{ti}} + \mu_{\text{roati}}}{\sigma_{\text{roai}}} \quad \text{(1s}$$

Which $zscor$ is banking stability, μ_{roa} is mean of ROA, σ_{roa} and is Standard deviation of ROA.

To make new banking failure indicator (NBFI), we design following steps:

1. We make capital adequacy, Non –performing loan and Z-score.
2. We normalized capital adequacy, Non –performing loan and Z-score.:

$$I_{ti} = \frac{X_i - \min(X_i)}{\max(X_i) - \min(X_i)} \quad (2)$$

I_{ti} is Normalized indicators, X_i is every Banking failure indicators, $\min(X_i)$ is Min every indicators, $\max(X_i)$ is Max every indicators.

3. We make new banking failure indicators:

$$NBFI = \frac{\sum_{t=0}^{t=t} I_{ti}}{n} \quad (3)$$

NBFI is new banking failure indicator, n is number of indicators in every category. NBFI is between 0 and1. The closer NBFI to one, Banks are failure.

4.2.2 Explanatory Variables

The explanatory variables in this study are related to Directors' Effectiveness, Transparency and the Disclosure, Responsibility and total corporate governance indicator. Based on Ghasemi Aliabadi et al [20], the following stages have been passed for these indicators:

1. Study theoretical basis of corporate governance with regard to library research, with the aim of achieving common principles that can be used to evaluate and compare different banks. At this stage, all related literature including books, internal and external articles, databases, international journals (ex. OECD topics), Basel articles, sustainability committee, corporate social responsibility, etc. have been studied.
2. Study all existing documents relating to or containing regulations, standards or obligations of corporate governance principles in banking system. Some of these documents are commonly used articles for private banks, Basel texts on the implementation of corporate governance, corporate governance guidelines for Islamic financial services, the directive of the Stock Exchange for corporate leadership, the method of obligations for nongovernmental credit institutions, the method for professional qualification of managers in financial institutions, etc.
3. Find a benchmark as well as elements to evaluate the level of corporate governance observance and create a model for it.
4. Introduce specific indicators whose value can be used to calculate the Banks's corporate governance index.

4.2.3 Control Variables

Besides these two types of measures (dependent and independent variables), we following literature introduce a set of control variables in Table 1.

Table 1: Definition of The Variables

Variables	Indicators	Definition
Asset combination	Liquid asset to total asset Due from Central bank to total asset Due from other banks to total asset Investments to total asset Fixed assets to total asset	
Liability Combination	Due to Central bank to total liability Due to other banks to total liability Deposit Escape to total liability Investment Total deposit to total liability Capital to total liability	
Combination of Income	Interest income to total income Non-Interest income to total income	
Combination of Expense	Interest expenditure to total expense Non Interest expenditure to total expense	
Banking Industry	Bank size Cost to Income Interest Margin Loan to deposit Equity to loan Return on asset Return on equity	Bank size is logarithm of asset. Interest margin is Loan interest rate – deposit interest rate.
Macro economics	Inflation GDP Growth Deposit interest	

5 Model Specifications

Logistic regression is used to predict a categorical (usually dichotomous) variable from a set of predictor variables. With a categorical dependent variable, discriminant function analysis is usually employed if all of the predictors are continuous and nicely distributed; logit analysis is usually employed if all of the predictors are categorical; and logistic regression is often chosen if the predictor variables are a mix of continuous and categorical variables and/or if they are not nicely distributed (logistic regression makes no assumptions about the distributions of the predictor variables). Logistic regression has been especially popular with medical research in which the dependent variable is whether or not a patient has a disease. For a logistic regression, the predicted dependent variable is a function of the probability that a particular subject will be in one of the categories. Our regression model will be predicting the logit, that is, the natural log of the odds of having made one or the other decision. That is,

$$\ln(odds) = \ln\left(\frac{\hat{Y}}{1-\hat{Y}}\right) = \sum_{i=0}^{n} \beta_i X_i \tag{4}$$

Where $\widehat{Y}$ is the predicted probability of the event which is coded with 1 rather than with 0 , $1 - \widehat{Y}$ is the predicted probability of the other decision, and X is our predictor variable.
Our model will be constructed by a Binary Logistic regression. We estimate four models.

$$NBFI = c_1 \text{Directors' Effectiveness} + \sum_{i=0}^{n} \beta_i Control\ variables \quad \text{Model (1)} \tag{5}$$

$$NBFI = c_1 \text{Transparency and the Disclosure} + \sum_{i=0}^{n} \beta_i\ Control\ variables \quad \text{Model (2)} \tag{6}$$

$$NBFI = c_1 \text{Responsibility} + \sum_{i=0}^{n} \beta_i\ \text{Control variables} \quad \text{Model (3)} \tag{7}$$

$$NBFI = c_1\ \text{total corporate governance} + \sum_{i=0}^{n} \beta_i Control\ variables \quad \text{Model (4)} \tag{8}$$

Then using Kaplan Meier model, we estimate effect of corporate governance indicators on time of banking failure.

6 Empirical Results

6.1 Unit Root Test and Co-Integration Test

To check the stationary of our data we use two types of Panel Unit Root tests: Common unit root test and Individual unit root test. As common unit root process we use Levin , Lin and Chu Panel Unit root test and for individual unit root process we use three type of Panel unit root tests, first one is Lm, Pesaran and Shin Panel unit root test, second is Fisher type test, the ADF-Fisher Chi-square test and last one is also a Fisher type test, the PP-Fisher Chi square Panel unit root test. At 5%, all of Variables except, Bank size, Loan to deposit, Inflation, GDP growth, Deposit interest are stationary in Level and Individual Intercept. These variables are stationary after 1st difference and Individual Intercept. Deposit interest is stationary after 2st difference and Individual Intercept. Because of non-stationary variables, we use three types of Panel Cointegration tests. One type of tests was introduced by [42] and a second type was introduced by [28]. Thirth is [27, 18] Panel Cointegration. At 5% level of significance, the Pedroni residual co-integration test, Johnsen Fisher and Kao residual co-integration test reject null hypothesis which means variables have long run relationship. Details results are given in Table 3, Table 4 and Table 5. From TableS 3-5 in every case of opportunity cost except in Panel V-Statistics long term and difference between long term and short term at 5% level of significance, accept the null hypothesis otherwise in all case at 5% level of significance we reject the null hypothesis of no co-integration. This means the Variables (dependence and independence) have long run relationship.

Table 2: Unit Rate Test

Variables	Levin, Lin, Chu	Im, Pesaran, Shin	Fisher-PP	Fisher- ADF
Liquid asset to total asset	-6.13594 (0.0000)	-5.76034 (0.0000)	77.3015 (0.0000)	82.3974 (0.0000)
Due from Central bank to total asset	-7.35595 (0.0000)	-6.56044 (0.0000)	92.3719 (0.0000)	90.8991 (0.0000)
Due from other banks to total asset	-6.98582 (0.0000)	-7.54524 (0.0000)	93.5028 (0.0000)	112.646 (0.0000)
Investments to total asset	-1.10546 (0.1345)	-2.08532 (0.0185)	33.2865 (0.0068)	32.3076 (0.0091)
Fixed assets to total asset	-4.14452 (0.0000)	-5.32695 (0.0000)	66.0312 (0.0000)	62.4045 (0.0000)
Due to Central bank to total liability	-5.37401 (0.0000)	-4.56023 (0.0000)	57.8228 (0.0000)	70.0473 (0.0000)
Due to other banks to total liability	-3.27299 (0.0005)	-3.07240 (0.0011)	44.2792 (0.0002)	117.320 (0.0000)
Deposit Escape to total liability	-4.24031 (0.0000)	-4.80910 (0.0000)	85.0539 (0.0000)	71.8863 (0.0000)
Investment	-1.60866 (0.0538)	-1.70473 (0.0441)	30.7143 (0.0146)	52.9941 (0.0000)
Total deposit to total liability	-2.44477 (0.0072)	-2.74525 (0.0030)	37.6582 (0.0017)	47.0493 (0.0001)
Capital to total liability	-10.8601 (0.0000)	-14.5049 (0.0000)	334.276 (0.0000)	389.372 (0.0000)
Interest income to total income	-3.92546 (0.0000)	-4.55403 (0.0000)	56.9446 (0.0000)	47.0546 (0.0001)
Non-Interest income to total income	-3.92546 (0.0000)	-4.55403 (0.0000)	56.9446 (0.0000)	47.0546 (0.0001)
Interest expenditure to total expense	-5.63048 (0.0000)	-5.17233 (0.0000)	73.4513 (0.0000)	74.7833 (0.0000)
Non Interest expenditure to total expense	-14.2134 (0.0000)	-13.2977 (0.0000)	167.702 (0.0000)	204.170 (0.0000)
Bank size	-7.11570 (0.0000)	-6.81424 (0.0000)	98.0571 (0.0000)	162.201 (0.0000)
Cost to Income	-3.17095 (0.0008)	-3.98745 (0.0000)	61.7401 (0.0000)	62.6079 (0.0000)
Interest Margin	-4.46632 (0.0000)	-4.15966 (0.0000)	55.6154 (0.0000)	54.6344 (0.0000)
Loan to deposit	-2.71980 (0.0033)	.....	252.549 (0.0000)	385.083 (0.0000)
Inflation	-2.16420 (0.0152)	.....	5.22871 (0.0732)	5.22871 (0.0732)
GDP growth	-2.97424 (0.0015)	.....	6.90373 (0.0317)	6.90373 (0.0317)
Deposit interest	-0.76864 (0.0000)	.....	6.66812 (0.0356)	7.11977 (0.0284)
Equity to loan	-34.6141 (0.0000)	-29.8938 (0.0000)	369.984 (0.0000)	612.548 (0.0000)

Note:
Null: Unit root
Levin, Lin & Chu Test: Assumes Common Unit root Process
Im, Pesran and Shin: Assumes individual unit root process
ADF-Fisher chi-square: Assumes individual unit root process
PP- Fisher Chi-square: Assumes individual unit root process
Probbilities fo Fisher tests are computed using and asymptotic chi- Square distribution. Automatic Lag Length selection based on SIC

In Table 4 we use Kao test. Kao residual co-integration test also shows us for every case of opportunity cost at 5% level of significance we reject null hypothesis of no co-integration and every case P-Value 0.0000 which is highly significance its gives a strong evidence that the variables has long run

relationship. Number in Table 4 is T-Statistic and number in () is Prob.

Table 3: Pedroni Residual Co-Integration Test

Variables	**Within-Dimension**			
Dependent Variable	**NBFI**			
	V-Statistic	Rho-Statistic	PP-Statistic	ADF-Statistic
Bank size	2.106575 (0.0240)	-6.768465 (0.0000)	-5.696521 (0.0000)	-2.910342 (0.0001)
Loan to deposit	0.429911 (0.0201)	-6.860132 (0.0000)	-5.724329 (0.0000)	-5.381888 (0.0005)
Inflation	2.179240 (0.0068)	-9.076919 (0.0000)	-7.354223 (0.0000)	-6.160465 (0.0000)
GDP Growth	0.830723 (0.0069)	-38.540386 (0.0000)	-8.178112 (0.0000)	-7.130447 (0.0000)
Deposit interest	1.864673 (0.0328)	-10.01930 (0.0000)	-9.266575 (0.0000)	-6.298228 (0.0000)
Note: Null Hypothesis: No co-integration Trend Assumption: No deterministic intercept or trend Automatic lag Length selection based on SIC				
	Between Dimension			
Bank size		-4.719963 (0.0000)	-5.919117 (0.0000)	-5.091585 (0.0002)
Loan to deposit		-4.270318 (0.0000)	-13.15749 (0.0000)	-5.334858 (0.0000)
Inflation		-5.536389 (0.0000)	-7.751453 (0.0000)	-4.908227 (0.0000)
GDP Growth		-5.585236 (0.0000)	-6.886169 (0.0000)	-5.968450 (0.0000)
Deposit interest		-6.290374 (0.0000)	-6.944470 (0.0000)	-5.888057 (0.0000)
Note: Null Hypothesis: No co-integration Trend Assumption: No deterministic intercept or trend Automatic lag Length selection based on SIC				

Table 4: Kao Co-Integration test

Dependent variable:NBFI	**T-Statistic**	**Prob.**
Bank size	2.203096	0.0125
Loan to deposit	2.752098	0.0022
Inflation	3.078157	0.0000
GDP growth	4.336436	0.0005
Deposit interest	-3.760743	0.0000

In Table 5 we see for different opportunity cost in both case of Fisher trace test and fisher Max-Eigen test at most 1 variable has long run relationship.

6.2 Empirical Results

In this section, the four models introduced in the fifth section of this article are estimated by the Llogistic binary method. First, the models are estimated only the intercept and the necessary tests are performed at this stage, and then the other variables are entered into the models and re-estimated. Then the necessary tests have been performed to select the appropriate models. Finally, using the Kaplan-Meier model, the survival time of banks is calculated. The Block 0 output is for a model that includes only the intercept (which SPSS calls the constant). Given the base rates of the two decision options (175/300 = 58.3% decided to stop the research, 41.7% decided to allow it to continue), and no other information, the best strategy is to predict, for every case, that the subject will decide to stop. Using that strategy, you would be correct 58.3% of the time. This result is the same in all models (Table 6).

Table 5: Johansen Fisher Panel Co-Integration Test

Dependent variable	Hypothesized No. of CE(s)	Fisher Stat* (from trace test)	Fisher Stat* (from max-eigen test)
Bank size	None	63.87 (0.0000)	48.26 (0.0000)
	At Most 1	43.05 (0.0000)	43.05 (0.0000)
Loan to deposit	None	77.93 (0.0000)	50.57 (0.0000)
	At Most 1	62.55 (0.0000)	62.55 (0.0000)
Inflation	None	212.43 (0.0000)	179.86 (0.0000)
	At Most 1	99.74 (0.0000)	99.74 (0.0000)
GDP growth	None	197.56 (0.0000)	154.1 (0.0000)
	At Most 1	107.33 (0.0000)	107.33 (0.0000)
Deposit interest	None	122.76 (0.0000)	67.28 (0.0000)
	At Most 1	102.8 (0.0000)	102.8 (0.0000)

*Probabilities are computed using asymptotic Chi-square distribution.

Table 6: Classification Table[a,b](Step(0))

Models	Observed		Predicted NBFI 0	Predicted NBFI 1	Percentage Correct
Model(1)	NBFI	0	175	0	100
		1	125	0	0
	Overall Percentage				58.3
Model(2)		0	175	0	100.0
	NBFI	1	125	0	.0
	Overall Percentage				58.3
Model(3)		0	175	0	100.0
	NBFI	1	125	0	.0
	Overall Percentage				58.3
Model(4)		0	175	0	100.0
	NBFI	1	125	0	.0
	Overall Percentage				58.3

a. Constant is included in the model.
b. The cut value is 0.5

Under Variables in the Equation you see that the intercept-only model is ln(odds) = -0.336. If we exponentiation both sides of this expression, we find that our predicted odds [Exp(B)] = 0.714. That is, the predicted odds of deciding to continue the research 0.714 (Table 7).

Table 7: Variables in the Equation (step (0))

Models			B	S.E.	Wald	df	Sig.	Exp(B)
Model(1)	Step 0	Constant	-.336	.117	8.255	1	.004	.714
Model(2)	Step 0	Constant	-.336	.117	8.255	1	.004	.714
Model(3)	Step 0	Constant	-.336	.117	8.255	1	.004	.714
Model(4)	Step 0	Constant	-.336	.117	8.255	1	.004	.714

Now look at the Block 1 output. Here SPSS has added the explanatory and control variable as predictor. Omnibus Tests of Model Coefficients gives us Chi-Square in 4 models (16.55,14.25, 13.25, 12.78) on

1 df, significant beyond (0.000,0.019, 0.007, 0.037). This is a test of the null hypothesis that adding variables to the model has not significantly increased our ability to predict the decisions made by our subjects. Results indicate the null hypothesis is rejected (Table 8).

Table 8: Omnibus Tests of Model Coefficients

Models			**Chi-square**	**df**	**Sig.**
Model (1)	Step 1	Step	16.553	11	0.000
		Block	16.553	11	0.000
		Model	16.553	11	0.000
Model(2)	Step 1	Step	14.252	11	0.019
		Block	14.252	11	0.019
		Model	14.252	11	0.019
Model(3)	Step 1	Step	13.251	11	0.007
		Block	13.251	11	0.007
		Model	13.251	11	0.007
Model(4)	Step 1	Step	12.788	11	0.037
		Block	12.788	11	0.037
		Model	12.788	11	0.037

The -2*log likelihood (390.963, 393.264, 394.265, 394.428) in the table 9 can be used in comparisons of nested model. This table also gives two measures of pseudo R-square. We see that Nagelkerke's R^2 are (0.472, 0.602, 0.528, 0.586) which indicates that the model is good. Cox & Snell's R^2 is the nth root. Thus we can interpret theses as (54%, 46%, 43%, 42%) probability of the event passing the exam is explained by the logistic model.

Table 9: Models Summery

Step(1)	**-2 Log likelihood**	**Cox & Snell R Square**	**Nagelkerke R Square**
Model(1)	390.963[a]	0.54	0.472
Model(2)	393.264[a]	0.46	0.602
Model(3)	394.265[a]	0.43	0.528
Model(4)	394.728[a]	0.42	0.586
a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.			

We use Hosmer and Lemeshow Test for examination of goodness of fit of logistic model. Table 10, presents the calculated Goodness-of-Fit test statistics. The significant level is small (<5%) for all of models. This table gives the overall test for the model that includes the predictors. The chi-square value of (8.611, 4.211, 5.741, 5.471) with a p-value of less than 0. 05 tells us that our model as a whole fits significantly.The Classification Table (table 11) shows us that this rule allows us to correctly classify(35.2%, 32.8%, 32.3%, 32.8%) of the subjects where the predicted event (deciding to continue the research) was observed.

Table 10: Hosmer and Lemeshow Test

Models	**Chi-square**	**df**	**Sig.**
Model(1)	8.611	8	0.006
Model(2)	4.211	8	0.008
Model(3)	5.741	8	0.006
Model(4)	5.471	8	0.007

This is known as the sensitivity of prediction, the P (correct | event did occur), that is, the percentage of occurrences correctly predicted. We also see that this rule allows us to correctly classify (83.4%,83.4%, 85.1%, 84.6%) of the subjects where the predicted event was not observed. This is known as the specificity of prediction, the P(correct | event did not occur), that is, the percentage of non-occurrences correctly predicted. Overall our predictions were correct 208 out of 315 times, for an overall success rate of (63.3%, 62.3%, 63.3%, 63%). Recall that it was only 58.3% for the model with

intercept only.

Table 11: Classification Table[a](Step (1))

Models	**Observed**		**Predicted**		
			NBFI		
			0	1	**Percentage Correct**
Model(1)	NBFI	0	146	29	83.4
		1	81	44	35.2
	Overall Percentage				63.3
Model(2)		0	146	29	83.4
	NBFI	1	84	41	32.8
	Overall Percentage				62.3
Model(3)		0	149	26	85.1
	NBFI	1	84	41	32.3
	Overall Percentage				63.3
Model(4)		0	148	27	84.6
	NBFI	1	84	41	32.8
	Overall Percentage				63
a. The cut value is 0.5					

Table 12 indicates effect of corporate governance on Iranian banking failure. The number in () is sig. The paper of [20] was used to design the criteria of corporate governance and for selecting other criteria, the significance and sign of coefficients based on theory was used as a criterion. Therefore, other significant criteria for bankruptcy have been considered and criteria that have been rejected at the 5% level have not been included in the model. Survey of corporate governance indicators on NBFI indicates, Total corporate governance, board's structure effectiveness and responsibility have positive effect. But transparency and disclosure have negative effect. According to representation theory, the ability of the board of directors is an effective regulatory mechanism that depends on board's independency from chief management, the number of its members, and the relationship between the roles of chief of the board and chief executive manager. From that viewpoint it is argued that the larger boards are probably more alert and sensitive to the representation problems because the number of persons doing managerial roles in large boards is more than smaller boards [11]. Otherwise the existence of independent and nonexecutive members in the board of directors' helps to control the risks and through better information disclosure decreases the informational asymmetry between the management and shareholders. This feature has a negative effect on banks failure.

Banks should disclose the main points about the resources in danger, and their risk management strategies – without disclosure of confidential information. When a bank involves in complex or ambiguous activities, it is required to disclose enough information about the goal, the strategy, the structure and risk controls relates to those activities. Transparency and disclosure in corporate governance is related to disclosure of financial statements' information, disclosure of risk management' information, disclosure of corporate governance and internal control information and disclosure of important events' information [20]. Due to the problems faced by the Iranian banking network, such as lack of resources, lack of capital, non-performing loan, transparency and disclosure, can lead to a bank run and banks failure. For this reason, as shown in Table 12, the relationship between transparency and banks failure is positive. [6] introduced the fourfold principle with the title of "responsibility pyramid of corporates". We such as [20] have used those principles as the base for determining responsibility measures in corporate governance framework. Responsibility is one of the characteristics that has a negative effect on the banks failure. Because the observance of this principle causes the board of directors to refrain from making decisions that lead to fail of banks. As can be seen in Table 12, there is a negative relationship between banks' economic value added, return on assets, return on capital and banking failure. Since

these three indicator indicate the bank's ability to continue operating, improving them can reduce the likelihood of the banking failure.

Table 12: Results- Effect of Corporate Governance on New Banking Failure Indicator

	Model(1)		Model(2)		Model(3)		Model(4)	
Independent variables	**B**	**Exp(B)**	**B**	**Exp(B)**	**B**	**Exp(B)**	**B**	**Exp(B)**
Banking economic value added	-0.001 (0.012)	.999	-0.006 (0.011)	0.994	-0.004 (0.011)	0.996	-0.004 (0.011)	0.996
Return on asset	-0.024 (0.015)	.976	-0.21 (0.014)	0.979	-0.21 (0.014)	0.979	-0.022 (0.014)	0.978
Stock market capitalization (Percent of GDP)	0.135 (0.001)	1.145	0.164 (0.016)	1.178	0.223 (0.008)	1.250	0.193 (0.039)	1.212
Due to central bank to total liability	0.159 (0.005)	1.173	0.151 (0.007)	1.163	0.150 (0.007)	1.162	0.152 (0.007)	1.164
Return to capital	-0.005 (0.010)	.995	-0.001 (0.010)	0.999	-0.003 (0.010)	0.997	-0.003 (0.010)	0.997
Bank size	0.330 (0.031)	1.391	0.262 (0.001)	1.287	0.206 (0.001)	1.229	0.218 (0.030)	1.243
loan loss reserve on total non- performing loan	0.312 (0.029)	1.366	0.260 (0.021)	1.297	0.304 (0.028)	1.355	0.316 (0.028)	1.372
inflation	0.038 (0.041)	1.039	0.018 (0.037)	1.018	0.017 (0.036)	1.017	0.012 (0.037)	1.012
GDP growth	-.111 (0.083)	0.895	-0.017 (0.049)	0.998	-0.16 (0.049)	0.985	-0.018 (0.049)	0.982
Total corporate governance	-0.078 (0.005)	0.925	….	….	….	….	….	….
Board's structure effectiveness	….	….	-0.209 (0.015)	0.812	….	….	….	….
Transparency and disclosure	….	….	….	….	0.182 (0.004)	1.199	….	….
Responsibility	….	….	….	….	….	….	-1.23 (0.021)	0.885
Constant	0.843 (0.04)	2.324	-0.817 (0.010)	0.442	-1.570 (0.031)	0.208	-1.084 (0.039)	0.338

What is important in this article is the answer to the question of whether the existence of a good measure of corporate governance can increase the bank's survival. The Kaplan Mir method has been used to answer this question. The general structure of the Kaplan Mir model is Eq.9.

$$time\ variable = status\ variable + \sum_{i=1}^{n} Factor\ variables \tag{9}$$

Time variable is a continuous variable that indicates, the bank has improved its ranking after several periods. The status variable defined as a dummy variable, and if the economy is booming, it adopts a numerical value of one; Factor Variable indicates good overall corporate governance, good board effectiveness, good transparency and disclosure, and good responsibility. Since the sample of this article is private banks, the Stratification variable, is not defined in this article.

Table 13 show that if a bank meets all the criteria of corporate governance and faces the good of the total corporate governance, it will more survival than the other. Comparing the results of good criteria of board effectiveness, transparency and disclosure and responsibility shows the importance of a good measure of responsibility compared to other cases. Because by establishing this criterion, the bank will more survival than otherwise. On the other hand, good transparency and disclosure have the least survival in banks, and this result is consistent with the results of Table 12.

Table 13: Means for Survival Time

		Estimate	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Board's structure effectiveness	0	3.551	0.260	3.658	4.677
	1	4.168	0.458	2.654	4.449
	Overall	4.016	0.228	3.569	4.462
Transparency and disclosure	0	4.443	0.275	3.903	4.982
	1	2.705	0.254	2.208	3.202
	Overall	4.016	0.228	3.569	4.462
Responsibility	0	3.610	0.369	2.887	4.332
	1	4.215	0.287	3.653	4.778
	Overall	4.016	0.228	3.569	4.462
Total corporate governance	0	3.796	0.320	3.168	4.424
	1	4.200	0.321	3.572	4.829
	Overall	4.016	0.228	3.569	4.462

After estimating the model by Kaplan-Meier method, standard statistical tests (Log rank, Breslow test, Tarone-Ware tests) are performed to compare the differences between models. The Log rank is a test of equality of the survival function with the same weighting for all periods. The Breslow test of equality is a survival function by weighing all times taking into account the number of observations at risk at any given time. Tarone-Ware test is the equality test weighted survival function using the square root of the number of observations at risk at any point in time. The results are shown in Table 14. The three tests performed at the 5% level are significant and indicate a significant difference in the status of good corporate governance compared to the situation of lack of good corporate governance. Statistics show the distribution of chi-square. The numbers in parentheses indicate significance.

Table 14: Overall Comparisons

Models	Log Rank (Mantel-Cox)	Breslow (Generalized Wilcoxon)	Tarone-Ware
Board's structure effectiveness	1.361 (0.043)	3.214 (0.073)	2.545 (0.011)
Transparency and disclosure	14.682 (0.000)	9.652 (0.002)	11.955 (0.001)
Responsibility	1.810 (0.079)	1.309 (0.052)	1.562 (0.011)
Total corporate governance	.672 (0.013)	.525 (0.069)	.697 (0.004)

5 Conclusion

Good corporate governance plays an important role in preventing banking failure. So that the weak structures of the bank's management can not only waste the rights of stakeholders, but also extend the bank's risks to the whole economy. In the meantime, the realization of the principles of good corporate governance in the bank can prevent the spread of internal problems of the bank to the banking network

and the whole economy and solve the problems of the bank's progress well. In this article ،considering the importance of banks' influence on the principles of corporate governance ،the effect of corporate governance on banking failure has been investigated using the Binary Logestic model. [20]study have been used to design the corporate governance indicators. A new banking failure indicator (NBFI) has been developed to measure bank failures. NBFI components include capital adequacy, the non-performing loan to total loan, and the Z-Score. The study contributes to the dedicated literature in several ways. Firstly, the cumulative influence of internal governance framework on bank performance is analysed, including an internal corporate governance index (ICGI) in this regard. Secondly, the study completes other studies to make composite banking failure indicator. Third we make good corporate governance indicator that it is one if corporate governance indicators for each bank are more than mean of sample and otherwise, it is zero. Forth we estimate the survival model according corporate governance indicators.

The results of the article show the negative effect of total corporate governance, Board's structure effectiveness, Responsibility on banking failure and the positive effect of Transparency and disclosure on banking failure. The equality test of the good criteria of corporate governance shows the more importance of responsibility compared to others. Also, the more a bank adheres to the principles of corporate governance, the better the corporate governance standard and the most survival. Transparency and disclosure have the least effect on the survival of banks. The small effect of transparency on the survival of banks is due to the lack of transparency in the Iranian's banking network. Despite the requirements of transparency based on the principles of Basell, transparency in the Iranian banking network is still far from international standards. For this reason, its effect on bank survival is small.

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