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Investigation corporate governance characteristics on risk taking: A case study of private banks listed in Tehran Stock Exchange

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A B S T R A C T

During the past few years, there have been tremendous works on detecting the relationship between banks performance and the number of seats on board of directors. Board of directors of banks is responsible for shareholders ownership's interest. In this study, governance and ownership characteristics affecting risk appetite on some private banks listed in Tehran Stock Exchange is studied. The study investigates 12 private banks for a period 2005-2011 based on the implementation of some regression analysis using panel data. The results indicate that the effect of five major shareholders on risk-taking is positive and significant. The effect of institutional ownership on risk-taking is negative and significant. Effects of other variables, including the percentage of ownership concentration, return on assets and the logarithm of cash from operations (CFO) on risk-taking of the private banks are not significant. The effects of board size, reliance on debt and log of assets on risk-taking are significantly negative among private banks in Iran. These results indicate that shareholders that are institutional investors play a key role in monitoring managers.

1. Introduction

One of the key successes on performance measurement of any business activities is to have strong people in the board of directors. The outlook of any firms depends on decisions made by board of directors. However, there is one important question on whether the size of board of directors could possibly impact performance of business units specially in banking sector or not. There are many studies devoted on performance of business units specially the ones listed on stock exchanges where financial statements must be publically disclosed for public investors. Sohrabi Araghi and Attari (2013) compared the impact of accruals and operating cash flows on users' decisions on financial statements in a case study of firms listed in Tehran Stock Exchange. They surveyed the impact of

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accruals and operating cash flows in decisions of financial statement users for selected firms from Tehran stock exchange. They analyzed information content of operating cash flows and accruals in the connection with decision-making criteria implemented by various groups. They reported that there was a significant different between accruals and operating cash flows data content in association with different decision-making criteria.

Panahian et al. (2008) studied the relationship between discretionary accruals quality as well as innate accruals quality and portion of non-executive board of directors, concentration of ownership ratio and board size in Tehran Stock Exchange. They implemented two linear regression techniques to estimate the first part of the necessary data and then using structural equation modeling studied six hypotheses. They concluded that an increase on non-executive members positively could influence on discretionary accruals quality and negatively impacted innate accruals quality. They also reported that concentration of ownership ratio positively influenced on discretionary accruals quality and negatively affected on innate accruals quality. According to their survey, size of board of directors negatively influenced discretionary accruals quality and positively affected on innate accruals quality.

VakilAlroaia et al. (2012) studied the relationship between forward-backward factors on stock return, which depends on Price-Earnings ratio (P/E) and stock fluctuation in stock exchange using monthly time series pattern of Tehran stock exchange over the period 2006-2010. They explained that the independent variables had meaningful impacted on the research's dependent variable, which means that the influence of company's systematic risk and markets risk on companies' stock return were positive. Khodaei Valahzaghard and Salehi (2012) studied the impact of the corporate governance characteristics and ownership on earnings quality of the Islamic private banks in Iran.

Ştefănescu (2011) studied the level of disclosure ensured by corporate governance codes in force in European Union member states and stated that common law regime would be able to ensure the biggest level of transparency through corporate governance requirements. They also asserted that the compliance of corporate governance codes with OECD principles. Nelson (2005) investigated corporate governance practices, CEO characteristics and firm performance. Kent et al. (2010) studied innate and discretionary accruals quality and corporate governance.

In this paper, we present an empirical study to measure the impact of ownership and board of directors on performance of banking industry is selected private banks whose stock shares are traded in Tehran Stock Exchange. The organization of this paper, first, present details of the proposed model and hypotheses in section 2 and the results are explained next.

2. The proposed model

In this section, we present details of the proposed hypotheses.

2.1. Hypotheses

First hypothesis: There is a significant relationship between ownership concentration and banks' risk taking.

Second hypothesis: There is a significant relationship between 5 big owners and banks' risk taking.

Third hypothesis: There is a significant relationship between ownership concentration and banks risk taking.

The fourth hypothesis: there is a significant relationship between board of directors' size and the banks risk taking.

The fifth hypothesis: There is a significant relationship between reliance on banks' liabilities and earnings quality.

The seventh hypothesis: There is a significant relationship between assets return and banks' risk taking.

The eights hypothesis: There is a significant relationship between banks' cash from operations and risk taking.

Statistical data are associated with the research hypotheses using organizational documents of the bank's financial statements listed in Tehran Stock Exchange. The study uses the data generated by a domestic software package named TADBIRPARDAZ and RAHAVARD E NOVIN for a period 2005-2011. The study uses the following regression analysis to test the hypotheses of the survey,

$$\begin{aligned} Z-Score \;=\; & \beta 0 \;+\; \beta 1 CFO\,i,t \;+\; \beta 2 Sizei,t \;+\; \beta 3 DEBTRLi,t \;+\; \beta 4 ROAi,t \;+\; \beta 5 BSIZEi,t \\ & +\; \beta 6 EODi,t + \;\beta 7 RGit \;+\; \beta 8 OWNCONi,t + \;\beta 9 INSOWNi,t \;+\; \varepsilon i, \end{aligned} \tag{1}$$

where

$Z-Score \;=\;$ Return on Assets plus the Capital Asset Ratio divided by the Standard Deviation of Asset Returns (Roy, 1952)

$\text{Ownership Concentration} \;=\; OWNCONi,t$

$\text{Institutional Ownership} \;=\; INSOWNi,t$

$\text{Managing Penetration} \;=\; EODi,t$

$\text{Board Size} \;=\; BSIZEi,t$

$\text{Reliance on Debt} \;=\; DEBTRLi,t$

$\text{Cash flow from Operations} \;=\; CFOi,t$

$\text{Return on Assets} \;=\; ROAi,t$

$\text{Revenue Grouth} \;=\; RGit$

$\text{Natural Logarithm of total Asset} \;=\; SizeI,t$

For statistical analysis software, SPSS and Eviews will be used. We begin by examining the relationship between risk taking by banks and their ownership structures. The primary measure of ownership structure is the CF rights of the largest owner, where CF right is equal to zero when the bank is widely held. We examine whether greater CF rights by the largest owner is associated with greater risk. We collect new data on each bank's board structure and managerial ownership. First, we set the dummy variable large owner on management board equal to one if the large shareholder has a seat on the management board and zero, otherwise. Next, to assess theories about managerial shareholding and risk, we compute the CF rights of executive managers and directors and refer to this variable as management ownership. The following terms are defined and implemented for the proposed study of this paper.

Bank risk management: A continuous and organized process to the entire database for the identification, assessment, control and decision making in response to and reporting on opportunities and risks definitions that affect the achievement of objectives.

Z-Score: This is the risk tolerance criteria. Z-Score represents the company's bankruptcy. This number is higher than that of a company's financial stability.

Corporate Governance: According to Organization for Economic Cooperation and Development (OECD, 2004), Corporate Governance is defined as **"**Corporate Governance structure, responsibilities, and relationships among the major groups of shareholders, board members and the CEO to promote better competitive performance necessary to achieve goals attend to the interests of different stakeholders and to ensure the effective and efficient use of resources is encouraged to participate**".**

Level of institutional ownership (INSOWN): According to Rubin (2005) and Quito (2009), to calculate the total amount of institutional ownership of shares in Bank and Insurance we need to consider different items including pension funds, investment companies of funding and investment fund, organized and governmental agencies and private companies of all issued shares of the company or division and percentage of institutional ownership.

Percentage of institutional ownership concentration (OWNCON): To calculate the concentration of institutional ownership Herfindal-Hirschman index has been used. Herfindal-Hirschman Index economic indicator is applied to measure the degree of monopoly in the market. The shares of each of the institutional owners are powered by 2 level and then be summarized:

OWNCON = Σ (Percentage of ownership for each entity) ^2

The five largest shareholders (SH5): comparison of five major shareholders is obtained by *Herfindal index:*

SH5 = (percent five major shareholder -100) / percent five major shareholder

Board size (BSIZE): The size of the board members.

Reliance on debt (DEBTRL): This variable can be achieved by ratio of total debt to total assets

Cash from operations (CFO): net cash from bandings operation is obtained.

Return on assets (ROA): return on assets, the ratio of earnings to assets.

The size of the banks (Lnsize): the natural logarithm of the total assets of the bank.

Banking crisis: This refers to a situation where a large number of banks in one country may not be able to repay their debts and liabilities. Banking Professional substance due to its specific characteristics and risks are always likely to get the higher degree of uncertainty is critical.

3. Results

3.1. Description of Variables

Describe and analyze statistical information and data scientific research is part of the process. Scientific research and peer review in order to conclude about the population parameters, the statistical characteristics of the sample is used to estimate the parameters of inferential statistics in order to achieve results. Subject descriptive statistics and a complete and accurate experimental data and results of objective research and subject inferential statistics, descriptive results explain, interpret and evaluate their importance and validity. Interpretation of the results of objective and scientific research is likely to be true, it is necessary that the probable result of the interpretation of sample data can be generalized to the population.

No variable in this study consisted of a dependent variable and eight independent variables were studied in the information and data from twelve private banks in the country is collected during seven years. The scope of the information collected during the years 2005 to 2011 is formed. Table 1 shows

the names of the banks and years of the study. Distributed parameters described in Table 2. Central tendency and dispersion to describe the characteristics of these variables is discussed.

Table 1
Bank name and year of sampling for the study of factors affecting earnings quality

	Year							
Bank	2005	2006	2007	2008	2009	2010	2011	Total
Saderat	1	1	1	1	1	1	1	7
Tejarat	1	1	1	1	1	1	1	7
Melat	1	1	1	1	1	1	1	7
Post Bank	1	1	1	1	1	1	1	7
Kaar Afarin	1	1	1	1	1	1	1	7
Saman	1	1	1	1	1	1	1	7
Parsian	1	1	1	1	1	1	1	7
Pasargas	1	1	1	1	1	1	1	7
Eghtesad Novin	1	1	1	1	1	1	1	7
Sarmaye	1	1	1	1	1	1	1	7
Sina	1	1	1	1	1	1	1	7
Etebari Toseie	1	1	1	1	1	1	1	7
Total	12	12	12	12	12	12	12	84

There are 84 observations associated with dependent variable with a mean of 9.93342 and variance of 98.673 and it maintains positive skewness and kurtosis. Skewness with a value of 1.023 and it has a larger coefficient of absolute deviation of 1.96, which indicates a strong deviation of the distribution and normal curve distribution.. These indices indicate that the distribution curve was long and a remote observation of the central distribution is located in the right range. Central tendency and dispersion of the results of variable Risk Taking indicators are shown in Table 2.

Table 2
Major indexes distributed dependent variable, Risk Taking

Kurtosis			Skewness			Variance	Std. Dev	Mean	N	Variable
coefficie	Std. Error	Statistic	coefficient	Std. Error	Statistic					
1.54615	.520	.804	3.88973	.263	1.023	98.673	9.93342	14.6009	84	RT

In this survey, we use Kolmogorov- Smirnov and Jarque-Bera to verify whether the data are normally distributed and significant level is considered to be five percent and based on the results we could confirm the normality of the results.

Table 3
Distribution of test results of the study variables using three tests

Research variables	Total	Kolmogorov – Smirnov		Jarque – bera	
		Statistics	Error level	Statistics	Error level
Risk Taking	84	1.196	.114	15.79221	0.000372
Percentage of institutional ownership	84	1.793	.003	1.836140	0.399289
Big shareholders	84	3.024	.000	212.5239	0.000000
Percentage of ownership concentration	84	1.532	.018	1.286439	0.525597
Board size	84	2.326	.000	7.118864	0.028455
Debt reliance	84	2.879	.000	586.9832	0.000000
Assets logarithm	84	.839	.483	4.337962	0.114294
Assets return	84	1.286	.073	39.44154	0.000000
Operation cash logarithm	84	2.708	.000	43.06571	0.000000

The other issue in any regression analysis is to find out whether there is any linear relationship among independent variables and to make sure there is no autocorrelation between residuals in our survey. We have used F-statistic to verify linearity and Durbin-Watson test as well as J_B-stat to versify there is no auto correlation among residuals. Table 4 demonstrates the results of our survey.

Table 4
Results of linear regression test, the residual distribution and statistics Durbin - Watson models

Models	Linear relation teat		Durbin-Watson test		Residual distribution test	
	F-stat	error	D.W	D.W*	J_B-stat	error
Model 1	21.46	0.000	2.5-1.5	1.69	8.950	0.010000
Model 2	22.27	0.000	2.5-1.5	1.77	6.570	0.0370000
Model 3	4.70	0.000	2.5-1.5	1.55	21.71443	0.000019
Model 4	3.12	0.005	2.5-1.5	1.53	57.07312	0.000000
Model 5	7.46	0.000	2.5-1.5	1.67	38.88551	0.000000
Model 6	21.5	0.000	2.5-1.5	1.64	22.41433	0.000000
Model 7	19.18	0.000	2.5-1.5	1.68	35.04564	0.000000
Model 8	26.21	0.000	2.5-1.5	1.99	28.97852	0.000001
Model 9	3.10	0.006	2.5-1.5	1.82	83.03802	0.000000
Model 10	19.12	0.000	2.5-1.5	1.74	38.64864	0.000000

As we can observe from the results of Table 4, all Durbin-Watson values are within acceptable limits and all F-statistic values are significant. Therefore, we can conclude that there is a linear relationship between independent variables and there is no auto correlation between residuals. We also have to make sure there is no correlation among independent variables. In fact, when there are strong relationship between independent variables, we will get misleading results using regression analysis. Table 5 shows details of correlation among independent variables.

Table 5
Results of correlation test between the explanatory variables in the research study

Variable	INSOWN	SH5	OWNCON	BSIZE	DEBTRL	LnAssets	ROA	LnCFO
INSOWN	1	0.63	0.52	-0.49	0.19	0.36	-0.16	0.08
SH5	0.63	1	0.54	-0.30	0.16	-0.07	0.15	-0.030
OWNCON	0.52	0.54	1	-0.50	-0.006	-0.12	-0.002	-0.22
BSIZE	-0.49	-0.30	-0.50	1	-0.07	0.05	0.42	0.16
DEBTRL	0.19	0.16	-0.006	-0.07	1	0.44	-0.29	0.097
LnAssets	0.36	-0.072	-0.12	0.05	0.44	1	-0.38	0.30
ROA	-0.16	0.15	-0.002	0.42	-0.29	-0.38	1	0.10
LnCFO	0.08	-0.03	-0.22	0.16	0.09	0.30	0.10	1

In order to test different hypotheses of this paper we use various regression functions. The results of the first regression model is as follows,

$$Y = 39.57044 - 0.045380INSOWN + 1.090399SH5 - 4.726471OWNCON - 2.1475BSIZE$$

Std. Dev.	27.86947	0.106839	0.326957	6.574087	4.527933	$R^2 = 0.825,$
t-stat.	1.419849	-0.424757	3.334992	-0.718955	-474278	$\bar{R}^2 = 0.787,$
Sig.	0.1602	0.6724	0.0014	0.4746	0.6368	$F = 21.46,\ D.W = 1.69$

(1)

As we can observe from Eq. (1), F-value is within acceptable value, which indicates the linear relationship between independent and dependent variables and Durbin-Watson indicates there is no auto correlation among independent variables. However, the only meaningful t-student is associated with big five shareholders (SH5). In other words, there is no meaningful relationship between institutional ownership, ownership concentration and board size as independent variables with risk taking as dependent variable. The adjusted R-Square is calculated as 79%, which means the independent variable can describe 79% of the changes in risk taking.

The other hypotheses of this survey investigate the effect of four independent variables and control variables on earnings quality. Table 6 summarizes the results of regression function.

Table 6
Results of regression analysis testing the effect of four independent variables and control variables on earnings quality

Parameter	Variable	coefficient	Standard error	t-stat	Sig.
β_0	C	81.24247	25.96888	3.128455	0.0026
β_1	INSOWN	-0.045279	0.097440	-0.464686	0.6437
β_2	SH5	1.021017	0.296631	3.442042	0.0010
β_3	OWNCON	-4.169719	5.927120	-0.703498	0.4843
β_4	BSIZE	-1.823122	4.086333	-0.446151	0.6570
β_5	DEBTRL	-2.592663	3.105874	-0.834761	0.4070
β_6	Lsize	-8.781180	1.795152	-4.891607	0.0000
β_7	ROA	-20.16578	56.62944	-0.356101	0.7229
β_8	CFO	0.011190	0.257901	0.043388	0.9655

As we can observe from the results of Table 6, only two t-student values associated with big five shareholders (SH5) and the size of the banks (Lnsize), which is the natural logarithm of the total assets of the bank are statistically significant. Adjusted R-Square is equal to 0.829 and Durbin-Watson value is equal to 1.77, which is within acceptable limit. In addition, F-value is calculated as 22.27, which confirms the linear relationships between independent variables and dependent variable. According to the results of the regression model, it can be claimed that there are no impacts from institutional ownership, percentage ownership concentration, board size, reliance on debt, the logarithm of assets, return on assets and the logarithm of cash from operations towards risk taking in private banks.

The third to tenth models: The effect of independent variables and control each separately: The eight models combined with regression analysis are to evaluate and test. The results of this model are shown in Table 7.

Table 7
Results of regression analysis to test the effect of each independent and control variables on earnings quality

Models	C	slop	variable	Coefficient	Standard error	t-test	sig
3	pooled	panel	C	2.670842	3.418453	0.781301	0.4371
			INSOWN	0.184508	0.052275	3.529536	0.0007
4	pooled	panel	C	12.12281	0.666232	18.19608	0.0000
			SH5	0.951613	0.181576	5.240850	0.0000
5	pooled	panel	C	-3.862093	9.674773	-0.399192	0.6909
			OWNCON	6.615406	3.461040	1.911393	0.0597
6	pooled	panel	C	69.73997	23.03536	3.027518	0.0034
			BSIZE	-10.13492	4.232930	-2.394304	0.0193
7	pooled	panel	C	23.21798	2.906380	7.988625	0.0000
			DEBTRL	-9.565350	3.167820	-3.019537	0.0035
8	Panel	pooled	C	57.89703	7.859966	7.366066	0.0000
			LSIZE	-9.023323	1.634708	-5.519838	0.0000
9	pooled	panel	C	12.19547	1.399413	8.714704	0.0000
			ROA	118.1757	63.28596	1.867329	0.0657
10	pooled	panel	C	14.52596	1.937614	7.496829	0.0000
			CFO	0.013247	0.326682	0.040552	0.9678

Chaw and Hausman test for model selection of the appropriate model have been used and proper model has been selected and fitted. Among the fitted equations for the eight explanatory variables, the statistical test results of two models for the null hypothesis have been rejected. According to the results of the third model, the calculated *t* statistic for a variable percentage of institutional ownership has been greater than the absolute critical value 1.96 and its expression level was significantly smaller than the 0.05, which shows the effect of institutional ownership changes has direct and significant benefit on quality. Coefficient of variation of this model shows that about 30% of risk taking is explained by the variable percentage of institutional ownership. Durbin Watson statistic model is

equal to 1.55, indicating a mild serial auto correlation between residuals. Fisher statistic was larger than the critical value and its calculated level has been significantly smaller than 0.05, indicating that there was a linear relationship between the explanatory variables and the dependent variable. Coefficient of variation of this model shows that about 40% of risk taking is explained by the variables of the five largest shareholders.

The summary of testing hypotheses

First hypothesis: there is a significant relationship between ownership concentration and banks' risk taking.

To answer this hypothesis, three equations have been fitted with a combination of regression analysis. The first equation is based on four independent variables, which influence the quality of earning and statistic calculated for the variable concentration of ownership of the power rejects the null hypothesis suggesting no effect of ownership concentration on risk taking in private banks of Iran. In addition, based on other independent variables and control variables we cannot reject the null hypothesis. The effect of these variables on the quality of the evidence in favor of a separate equation for the null hypothesis is rejected. The evidence gathered and citing probabilities cannot be accepted that the concentration of ownership in private banks, leading to significant changes in risk taking so, the research hypothesis is accepted.

Second hypothesis: there is a significant relationship between five big owners and banks' risk taking.

To answer this hypothesis, three equations have been fitted with a combination of regression analysis. The first equation is based on four independent variables, which influence the quality of the test and its statistic calculated for the index variable for 5 owners cannot reject the null hypothesis and there is no evidence that the effect of institutional ownership on risk taking in private banks in Iran. Thus, regardless of other factors affecting the of banks' risk taking or assuming that other conditions are remained constant, institutional ownership on risk taking has a significant influence or control with respect to other factors and their effect on risk taking varies, significantly. Citing evidence gathered and to be accepted possibilities that concentration of ownership in private banks, leading to changes in risk taking is remarkable, and this hypothesis is confirmed by this research.

Third hypothesis: there is a significant relationship between ownership concentration and banks risk taking.

To answer this hypothesis, three equations have been fitted with a combination of regression analysis. Based on the evidence we gathered from different regression analysis we do not have enough evidence to believe that board size in the private banks will lead to significant changes in risk taking and, therefore, the research hypothesis is rejected.

The fourth hypothesis: There is a significant relationship between board of directors' size and the banks risk taking.

To answer this hypothesis, three equations have been fitted with a combination of regression analysis. The effect of these variables on the quality of evidence implies that we should reject the null hypothesis and conclude that there is a direct and significant impact between these two items.

The fifth hypothesis: there is a significant relationship between reliance on banks' liabilities and earnings quality.

To answer this hypothesis, the equation has been fitted with a combination of regression analysis. The second equation in which the effect of these variables, along with three other control variables and

four independent variables on the quality of the test is an indicator statistic calculated for the control variable reliance on debt can reject the null hypothesis for the lack of evidence the reliance on debt is not high. The effect of these variables on the quality of evidence during a separate equation for the null hypothesis is accepted.

The seventh hypothesis: there is a significant relationship between assets return and banks' risk taking.

To answer this hypothesis, the equation has been fitted with a combination of regression analysis. The effect of these variables on the quality of evidence during a separate equation for the null hypothesis is rejected.

The eights hypothesis: there is a significant relationship between banks' cash from operations and risk taking.

To answer this hypothesis, the equation has been fitted with a combination of regression analysis. The effect of these variables on the quality of evidence during a separate equation for the null hypothesis is rejected.

4. Summary results of hypotheses test

In this study, eight hypotheses are proposed and investigated. Research hypotheses using regression analysis and the test compound have been investigated. The results confirm the hypothesis in two cases and seven cases have been rejected. The hypotheses, variables, and model results are mentioned in Table 8.

Table 8
The summary of testing different hypotheses

Hyp.	Dependent variable	Independent variable	Model with independent variable	Model with both independent and controlling variables	One-variable model	result
1	Percentage of institutional ownership	Risk tasking	✕	✕	✓	Hypothesis is accepted in two things and rejected in one thing
2	Big shareholders	Risk tasking	✓	✓	✓	accepted
3	Percentage of ownership concentration	Risk tasking	✕	✕	✕	rejected
4	Board size	Risk tasking	✕	✕	✓	Hypothesis is rejected in two things and accepted in one thing
5	Debt reliance	Risk tasking		✕	✓	Hypothesis is accepted in one thing and rejected in one thing
6	Assets logarithm	Risk tasking		✓	✓	accepted
7	Assets return	Risk tasking		✕	✕	rejected
8	Operation cash logarithm	Risk tasking			✕	rejected

5. Conclusion

In this paper, we have investigated the effect of the impact of corporate governance characteristics on risk taking of private banks listed in Tehran Stock Exchange. The study has used different regression analysis to test various hypotheses. Based on the results of our survey, we did not find any evidence

on the impact of percentage of ownership concentration, board size, reliance on debt, the logarithm of assets, return on assets and cash flow from operations, banks' risk taking in financial performance private banks listed in Tehran Stock Exchange. However, the result of our survey has concluded that the five largest shareholders could influence financial performance, significantly. These results indicated that institutional shareholders with sufficient capital play an important role in monitoring managers.

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