RESEARCH ARTICLE -ENGINEERNG TECHNOLOGY

Capital structure and bank financial performance: the moderating roles of corporate governance, financial constraints, size and capital intensity

Esmaeil Balouei[1], Ali Asghar Anvary Rostamy[*2], Seyyed Jalal Sadeghi Sharif [3]and Ali Saeedi[4]

[1] PhD Candidate in Financial Management, Islamic Azad University, UEA Branch. Departmen of Financial Management, Faculty of Management, Islamic Azad University UAE Branch. Address: Block 4, Dubai Knowledge Park, postal code 502321, Dubai, UAE, esmaeilbalooei@yahoo.com
[2] Professor of Finance, Tarbiat Modares University, Tehran, Department of Management, Faculty of Management & Economics, Tarbiat Modares University, Address: Jalal Ale-Ahmad, postal code 14115-111, Tehran, Iran., anvary@modares.ac.ir
[3]Assistant Professor, Shahid Beheshti University, Tehran, Iran. Department of Finance, Faculty of Management, Shahid Beheshti University, Address: Evin, Tehran, postal code 198369411, Tehran, Iran, j_sadeghisharif@sbu.ac.ir
[4] Associate Professor, Islamic Azad University, North Tehran Branch, Tehran, Iran. Department of Accounting, Faculty of Management, Islamic Azad University Tehran North Branch, Address: Babei High way, Hakimiyeh, Vafaei, Bulvard, postal code 1651153311, Tehran, Iran. ali_saeedi@yahoo.com

Abstract: Capital structure is a combination of the liabilities and equity and making decisions regarding capital structure is a critical financial decision. This study investigates the moderating roles of corporate governance, financial constraints, and capital intensity on the relationship between capital structure and the financial performance. This research is an applied descriptive correlational research. To test the hypotheses, unbalanced panel data is used. The statistical population includes all banks listed on Tehran Stock Exchange during the years 2009 to 2015. The result indicates a positive significant relation between capital structure and the banks' financial performance. Moreover, the results show that capital intensity and the size positively moderate the relation between capital structure and bank financial performance.

Keywords: Capital structure, financial performance, corporate governance, financial Constraints, Capital intensity.

1- Introduction

Due to the crisis of bank failures in the 1990s, financial structure and capital ratio of banks have become important topics in banking industry. In order to prevent repetition of such incidents and maintain the health of domestic and international financial and monetary systems in the future, the (Basel committee stated that) bank capital should be at least 8% of the value of weighted risk assets. One of the reasons mentioned for increasing the bank's capital is enabling them to deal with credit risk as a buffer against bankruptcy.

Capital structure is a combination of debt and equity. Financial managers are very interested to optimize financial structure by considering financing restrictions. To optimize capital structure, one should have sufficient knowledge of different sources of financing, their risks and costs, and Weighted Average Cost of Capital (WACC). Calculating the effective cost for each financing resources and WACC helps financial managers to make decisions that maximize the value of a firm.

RESEARCH ARTICLE -ENGINEERNG TECHNOLOGY

Accordingly, we would expecting a relationship between the capital structure with some variables such as financial risk, cost of capital, WACC, profitability and the value of banks.

Optimal implementation of corporate governance in banking system increases bank efficiency, reduces financial risk, and enhances its stability. If desired implementation of corporate governance is secured, provision of internal and external resources will be facilitated for banks so that lenders and investors' appetite and desire to finance banks grows. It also reduces the cost of capital rate for banks through risk reduction related to shareholders and depositors, and improves their operational performance.

On the other hand, financial constraints play an important role in determining the financial structure and financing of firms in a way that their financing is impacted by financial constraints. Financial constraints may destroy the efficient allocation of investment and reduce the value of the company. Firms with financial constraints are highly dependent on internal funds, which show that it affects investment decisions.

All organizations and firms, including banks, attempt to achieve profit while ensuring their own survival. Accordingly, increasing bank profits is possible by reducing its costs. In order to increase bank profitability, financing sources should be inexpensive. Thus, financing mix or financial structure affects the cost of financing, financial risk, and profitability. Therefore, in this regard we can expect that the features of corporate governance, financial constraints, and banks' capital intensity influence banks' profitability and that this impact varies with banks' sizes.

This research will help decision-making on financial structure and deal with explaining the roles of corporate governance, financial constraints, size and capital intensity on the relationship between capital structure with financial performance of banks listed in the Tehran Stock Exchange (TSE). To achieve this goal, the next part of this article outlines theoretical foundations and research history. In the third section the conceptual models, research hypotheses and variables are presented. The fourth section is dedicated to providing the results. In the final section, the findings and conclusions are presented.

2- LITERATURE REVIEW

2-1 Capital structure

Capital structure issue was first discussed by Modigliani and Miller (MM) in the 1960s. They stated the theory of capital structure being irrelevant to the company value and firmly believed that the recognition and valuation of companies based on assets and how to finance them are not dependent on recognition of capital structure. Based on MM model and by the assumption of not having bankruptcy costs, firms must use up to one hundred percent of the debt in order to maximize their value, because using more debt due to providing tax shield, despite resulting in an increase in the cost of equity, reduces the cost of capital (Modigliani and Miller, 1963).

Based on the static balance theory, the optimal ratio of a company's debt is determined based on parallelism of interest and borrowing costs, or in other words, based on striking a balance between tax savings of interest and different bankruptcy costs (Myers, 1984).

Budgeting and financing decisions, which are of the most important areas of financial management decisions, must be taken in order to maximize corporate value and what plays a major role in capital budgeting decisions is the firm's cost of capital. Since the cost of capital is used as the discount rate of cash flows resulted by investment projects, accepting or rejecting investment projects is a function of cost of capital and its WACC, and WACC in turn is a function of its capital structure. It is expected that change in the combination of financing sources affect cost of capital and consequently the firm value (Brealey et al, 2001).

In this research we explain two theories.

RESEARCH ARTICLE -ENGINEERNG TECHNOLOGY

2-1-1 Balance theory

Based on Balance theory, capital structure is estimated by the balance between benefits and costs of debt. The main discussion in this theory has grown following the Modigliani. & Miller theories. When the tax benefit was added to the unimportant capital structure, original model is led to considering tax benefits for debt.

2-1-2 Hierarchical theory

Myers (1984) argued that adverse selection implies that the sources of funding, retained earnings, and debt-equity debt are preferred. In other words, if a company prefers internal financing to external financing, and in external financing conditions prefers financing through capital debt on capital release, it is believed that the company uses hierarchical theory to determine the optimal capital structure. Optimal capital structure is the point at which the market value of the Bank for the amount of the debt ratio is maximized.

Bank financial resources are divided into two categories: debt and equity. The largest part of the bank's resources is the debt and it is funded through accepting deposits and borrowings. Another part is capital, which can be financed through both the issue of new shares and retained earnings. To determine the optimal financial structure of banks, it is essential to note the equation of the ratio of debt to market value of the bank. The optimal capital structure is the point at which the market value of the bank is at the peak because of that debt ratio. Bank value is as following:

The real value of bank: The current value of tax shield-the current value of costs of fund shortage

[Insert Figure 1 Here]

2-2 Corporate governance

Corporate governance is defined as a set of mechanisms designed to reduce the problem of representation between shareholders and managers by ownership and control) Armstrong and Weber, 2010). It covers a wide range of external mechanisms such as the role, structure, and motives of the board of directors, capital structure and external mechanisms (such as laws and regulations, capital markets, product markets, etc. (Gillan, 2006). Corporate governance, more than anything else, aims at the long-term viability of the firm and seeks to protect the interests of shareholders against the management of the organizations. The two corporate governance goals are to: 1- reduces enterprise risk by improving transparency and accountability, and 2- improve the long-term effectiveness of the organization by preventing the arbitrariness and lack of accountability of the executive management (Keasey and Thompson, 2005). The most important theory that emphasizes the establishment of corporate governance in the financial markets is the agency theory developed by Jensen and Mac Ling (1976). According to this theory, agency relationship is a contract between shareholders and management in a financial institution. Based on agency theory, the board ignores shareholders management in order to control the company management. Therefore, the board directly responds to adequate control of the company. So, because of the separation of ownership from management, the board may maximize their interests against the interests of shareholders. Accordingly, the application of appropriate corporate governance mechanisms can eliminate conflicts of interest. The purpose of applying corporate governance in banks is to increase security and financial stability and investors' protection. By aligning the interests of managers and shareholders, corporate governance helps to reduce agency problems in banks. In this study, we explain some of the variables related to corporate governance.

2-2-1 The percentage of non-executive directors

According to the agency theory the existence of non-executive directors and their supervisory tasks, as independent people, reduce the conflicts of interest between shareholders and managers of the company (Johnson and Mac Ling, 1976). Chau and Leung believe that a Board of Directors that most of its members are non-executive and independent can control opportunistic behaviors of the management.

2-2-2 Board size

RESEARCH ARTICLE -ENGINEERNG TECHNOLOGY

The size of the board as one of the board's functions includes the number of board members of the company. There are different opinions about the size of the board. Some believe in the effectiveness of the board of directors due to the extensive experience of members and the diverse expertise of the board of directors (Abdul Rahman and Ali, 2006). While, some believe in the effectiveness of the board of directors for the ease of cooperation, communication and decision making (Forbes and Milliken, 1999).

2-2-3 Duality of the responsibility of the Chief Executive Officer

The duality of the responsibility of the Chief Executive Officer occurs when the CEO of the company is simultaneously responsible for heading or being the vice for the board of directors. Huafang and Jiangsu (2007) showed that an individual, who is responsible for both of these duties, has less inclination to release satisfactory information for users.

2-2-4 Percentage of ownership of major shareholder

Kochhar and David (1996) believe that institutional investors with their monitoring participation have a key role in the disclosure of more information. Rouf (2011) believes that institutional investors have more incentives to monitor the disclosure practices of companies. Some experts argue that the major shareholders in the company streng then backgrounds and incentives to monitor the performance of managers and sometimes due to non-compliance of the interests and expectations of the major shareholders with the interests and goals of minor shareholders, control costs and also costs of aligning the interests of major shareholders with other shareholders major shareholders increase (Vang, 2006).

2-3 Financial constraints

How to make decisions in the face of financial constraints is one of the most fundamental questions in financial terms (Almeida and Campello, 2007). The reason for this is that financial constraints can undermine the optimal allocation of investment and reduce the value of the company (Agca and Mozumdar, 2008). Firms face financing constraints when they experience a gap between internal costs and external costs of allocated funds (Fazzari et al, 1988). According to the aim of this study, we consider two criteria related to financial constraints.

2-3-1 The size of company

The size of the company can have an influence on investment sensitivity of cash flows. Large companies face less trouble attracting investment. In big companies, creditors deal with less monitoring and agency cost. As a result, small companies compared to large companies have higher costs of external financing and more limited access to capital markets. To measure the natural logarithm we applied the book value of the company's total assets (George et al, 2008).

2-3-2 Dividend ratio

Companies that distribute dividends are less likely to be faced with financial constraints compared to companies which do not distribute dividends. The reason is that when their access to external financing reduces, they can stop paying dividends. To measure the dividend ratio, we applied the dividends paid over the fiscal year based on the book value of total assets at the beginning of the period (Arsalan et al, 2006).

2-4 Research history

Zeitun and Tian (2007) examined the relationship between capital structure and firm performance using data from 167 Jordanian companies during the years of 1989-2003. They found that there is a significant relationship between the ratio of short-term debt to total assets, the ratio of total debt to total assets, the ratio of long-term debt to total assets, and the ratio of total debt to total equity with the ROA ratio.

Areshad, Hassan and Butt, Safdar Ali (2009) conducted a study entitled the relationship between impact of ownership structure and corporate governance on capital structure of Pakistani listed companies on a sample of 58 non-financial companies over the period of 2002-2005. In this research, variable of ownership structure was considered with managerial ownership and institutional ownership while variable of corporate governance was considered with board size and composition of the board of directors. The results show that there is an important, significant and negative correlation

RESEARCH ARTICLE -ENGINEERNG TECHNOLOGY

between the size of both the board and management ownership and capital structure. Thus, the variables of corporate governance and ownership structure variables have an important impact on determining financial composition in companies.

Chang et al. (2014) conducted a study entitled "The relation between corporate governance and the variability of capital structure". The study simultaneously examined two effects of debts resulted by agency theory on the speed of adjustment of the capital structure to the optimal capital structure. The results indicated that both groups of companies with high financial leverage and low financial leverage with weak mechanisms of corporate governance move more slowly to the optimal capital structure compared to the companies with better corporate governance.

Andreou et al. (2014) studied corporate governance, financial management decisions and firm performance bringing evidence from the maritime industry. The results show that corporate governance mechanisms such as local ownership, board size, committee on corporate governance, board members active in the board of directors of other companies, and the duality of board members have relation to financial management decisions and performance of the company.

Liao et al. (2015) studied corporate governance and capital structure Dynamics: AN Emprical study. Consistent with theoretical predictions, we find that both a higher level of financial leverage and a faster speed of adjustment of leverage toward the shareholders' desired level are associated with better corporate governance quality as defined by a more independent board featuring CEO–chairman separation and greater presence of outside directors, coupled with larger institutional shareholding. In contrast, managerial incentive compensation on average discourages use of debt or adjustments toward the shareholders' desired level, consistent with its entrenchment effect. The effect of corporate governance on leverage adjustments is most pronounced when initial leverage is between the manager's desired level and the shareholders' desired level where the interests of managers and shareholders conflict.

Shaukat Malik et al. (2016) studied Does corporate governance begets firm performance in Fortune Global 500 companies? The study found a strong positive relationship between corporate governance and firm performance. Smaller board sizes are found to generate better firm performance in Fortune Global 500 Companies. Frequency of board meetings has also been found to have inverse relationship with firm performance. The study supports board independence to improve transparency in board decision-making process. CEO compensation has been found to have inverse relationship with firm performance. The robustness of our results has been measured with the usage of three dependent variables, and we have found same results with varying significance level.

Alam Siddik et al. (2017) Studied Impacts of Capital Structure on Performance of Banks in a Developing Economy: Evidence from Bangladesh. The results of the pooled ordinary least square analysis showed that capital structure inversely affects bank performance. The findings of this empirical study are of greater significance for the developing countries like Bangladesh because it calls for the concentration of the bank management and the policy makers to pursue the policies that reduce reliance on debt to achieve the optimal level of capital structure. The results of this study are also analysed in the light of earlier studies.

Kyriazopoulos. (2017) Studied Corporate governance and capital structure in the periods of financial distress. Evidence from Greece. The results from the panel regression analysis signify the role of corporate governance structures in determining the capital structure of the Greek listed firms. In particular, the empirical results reveal a negative impact of board size on debt levels, which is weakened during the debt crisis period. In contrast, the presence of outside directors provides the appropriate certification to use more debt. Finally, growth opportunities and profitability are the two firm-specific factors which effect was weakened during the financially-constraint period.

3- Materials and Methods

This research is a descriptive applied research. It is also a correlational study based on analysing the results obtained using the panel data. In order to gather the information, first research history and initial definitions are studied. In order to test the statistical hypotheses of the research, we used the

RESEARCH ARTICLE -ENGINEERNG TECHNOLOGY

financial data of "Rah Avarde Novin" software and the database of "Tadbir Pardaz" company. In addition, in some cases we also used www.rdis.com, the website belonging to an affiliated organization (the Canter for Research and Islamic Studies) of the Tehran Stock Exchange.

The statistical population consists of all banks listed in TSE during the period of 2009-2015. In order to analyze the data we used multivariate regression fixed effects estimators, random effects and Least. We applied E-views software to explain the roles of corporate governance, financial constraints, size and capital intensity on the relationship between capital structure with financial performance of banks listed on TSE.

THE PROPOSED MODELS, HYPOTHESES, AND VARIABLES

3-1 The conceptual model
The proposed conceptual model is as figure 2.

[Insert Figure 2 Here]

3-2 Research hypotheses
This study is based on the following research hypotheses:

Hypothesis 1: Corporate governance, financial constraints, firm size and capital intensity significantly moderate the relationship between capital structure and profitability (of banks listed on the TSE).

Hypothesis 2: Corporate governance, financial constraints, firm size and capital intensity significantly moderate the relationship between capital structure and profit to sales ratio (of banks listed on the TSE).

Hypothesis 3: Corporate governance, financial constraints, firm size and capital intensity significantly moderate the relationship between capital structure and return on assets (of banks listed on the TSE).

Hypothesis 4: Corporate governance, financial constraints, firm size and capital intensity significantly moderate the relationship between capital structure and return on equity (of banks listed on the TSE).

3-3 Research variables

In this study, the independent variable, dependent variables, and moderating variables are as follows:

3-3-1 Independent variable
Independent variable is the capital structure of the banks, which is the ratio of debt to equity.

3-3-2 Dependent variables
In this study, we used four dependent variables to express the bank's financial performance; 1) net profit of the period, 2) the ratio of profit to sales (profit margin) which is obtained by dividing the net profit to sales, 3) return of assets, and 4) return of equity.

3-3-3 Moderating variables
The moderating variables include:

- Seven variables indicating the features of corporate governance of banks (size of the board, size of major shareholders, the board's financial independence, financial expertise of the board, tenure of the board of directors, the duality of CEO and chairman duties, and the control and audit structure)
- Three variables which indicate financial constraints (dividend ratio, operating cash flow, and sales growth)
- Two variables indicating the size and the intensity of capital
    Variables indicating corporate governance features are:
- *Board size:* Measured by the natural logarithm of the number of board members.
- *Size of major shareholders*: Measured by the percentage of stock ownership by shareholders who hold more than 5% of the company's shares.
- *Independence of the board*: Measured by the proportion of non-executive members to the total number of board members.

RESEARCH ARTICLE -ENGINEERNG TECHNOLOGY

- *Financial expertise of the board*: Measured by the ratio of the number of board members with financial expertise to the total number of board members.
- *Board of directors tenure*: Measured by the natural logarithm of years members have been present at the board of directors.
- *Duality of CEO and chairman duties*: Measured by a binary dummy variable. It becomes one if the CEO is the chairman of the board of directors at the same time and takes zero otherwise.
- *Control and audit structure*: Measured by a binary dummy variable. It becomes one if there is an audit and a risk committee, and it becomes zero otherwise.
    Variables which indicate financial constraints:
- *Dividend ratio*: Measured by dividing the profit distributed to the total earnings in year *t*.
- *Operating cash flow*: Operating cash flow in year *t* divided to the value of assets at the beginning of the period.
- *Sales growth*: Measured by dividing sales value in year *t* to the value of assets at beginning of the period.
    Other variables:
- *Capital intensity*: Measured by dividing the value of fixed assets to the total assets.
- *Firm size*: Measured by the natural logarithm of the value of the total assets.
    The statistical models are:

$NP_{it} = \alpha_0 + \beta_1 Capital\ Structure_{it} + \beta_2 LogBSize_{it} + \beta_3 MSS_{it} + \beta_4 INDEP_{it} + \beta_5 SCIENCE\ it + \beta_6 Log\ AGE\ it + \beta_7 DUA\ it + \beta_8 CONT + \beta_9 DP + \beta_{10} CFO + \beta_{11} GS + \beta_{12} Log\ FSIZE + \beta_{13} CI + \varepsilon\ it$

$PTS_{it} = \alpha_0 + \beta_1 Capital\ Structure_{it} + \beta_2 LogBSize_{it} + \beta_3 MSS_{it} + \beta_4 INDEP_{it} + \beta_5 SCIENCE\ it + \beta_6 LogAGE\ it + \beta_7 DUA\ it + \beta_8 CONT + \beta_9 DP + \beta_{10} CFO + \beta_{11} GS + \beta_{12} Log\ FSIZE + \beta_{13} CI + \varepsilon\ it$

$ROA_{it} = \alpha_0 + \beta_1 Capital\ Structure_{it} + \beta_2 LogBSize_{it} + \beta_3 MSS_{it} + \beta_4 INDEP_{it} + \beta_5 SCIENCE\ it + \beta_6 Log\ AGE\ it + \beta_7 DUA\ it + \beta_8 CONT + \beta_9 DP + \beta_{10} CFO + \beta_{11} GS + \beta_{12} Log\ FSIZE + \beta_{13} CI + \varepsilon\ it$

$ROE_{it} = \alpha_0 + \beta_1 Capital\ Structure_{it} + \beta_2 LogBSize_{it} + \beta_3 MSS_{it} + \beta_4 INDEP_{it} + \beta_5 SCIENCE\ it + \beta_6 LogAGE\ it + \beta_7 DUA\ it + \beta_8 CONT + \beta_9 DP + \beta_{10} CFO + \beta_{11} GS + \beta_{12} Log\ FSIZE + \beta_{13} CI + \varepsilon\ it$

Where:
CS: Capital structure
NP: Net profit of the period
PTS: Profit to sale (profit margin)
BSIZE: Board size
LSS: Size of major shareholders
INDEP: Independence of Board of Directors
SCIN: Financial expertise of the Board of Directors
AGE: Board of Directors tenure
DUA: Duality of duties
CONT: Control and audit structure
DP: Dividend ratio
CFO: Operating cash flow
GS: Sales growth
CI: Capital intensity
FSIZE: Firm size
ROA: Return on assets
ROE: Return on equity

4- Results
Table 1 illustrates the mean, median, maximum, minimum, and standard deviation of variables.
4-1 Descriptive statistics of the variables

RESEARCH ARTICLE -ENGINEERNG TECHNOLOGY

Criteria	Average	Median	Maximum	Minimum	Deviation
NP	3.033.190	1.528.953	18.303.455	-1.292.582	3.853.991
PTS	0.225802	0.19	0.78	-0.51	0.205904
ROA	0.015544	0.01	0.08	-0.02	0.015489
ROE	0.154313	0.16	0.45	-0.6	0.130016
SCIN	0.53837	0.571429	1	0	0.207538
DP	0.011029	0.007	0.06	-0.003	0.012615
FSIZE	8.080200	8.117580	9.247677	6.534169	0.638233
GS	0.112159	0.07	0.69	-0.02	0.107461
INDEP	0.375737	0.4	0.8	0	0.267170
MSS	0.436855	0.40005	1	0	0.292126
DUA	0.934426	1	1	0	0.248556
AGE	1.842537	1.7918	2.6391	0	0.48332729
BSIZE	0.736636	0.698970	1	0.477121	0.09284704
CFO	0.052455	0.02	1.23	-0.94	0.198334
CI	0.114913	0.09	0.5	0.004	0.087787
CONT	0.852459	1	1	0	0.356107
CS	0.881667	0.93	0.98	0.2	0.137432

1:
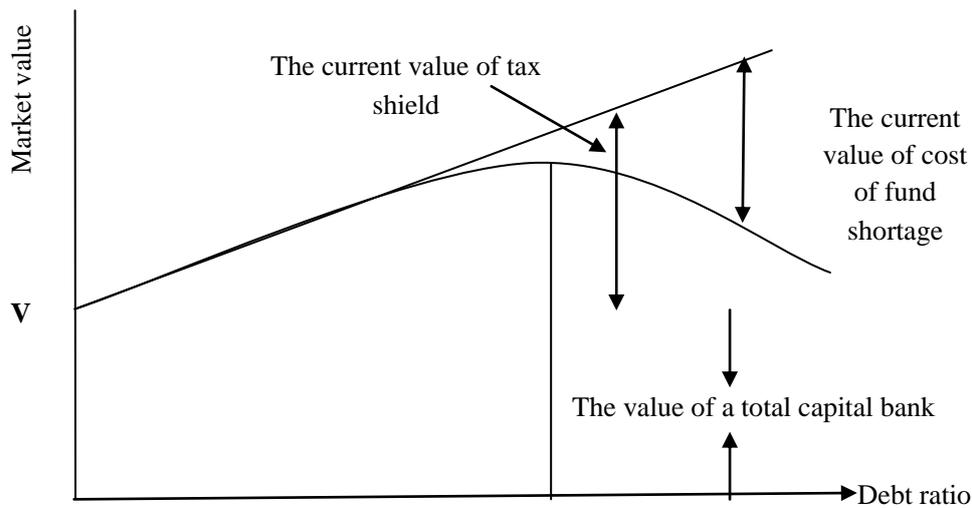
Figure 1-Optimal debt ratio (Sinki, 1989: 34)

RESEARCH ARTICLE -ENGINEERNG TECHNOLOGY
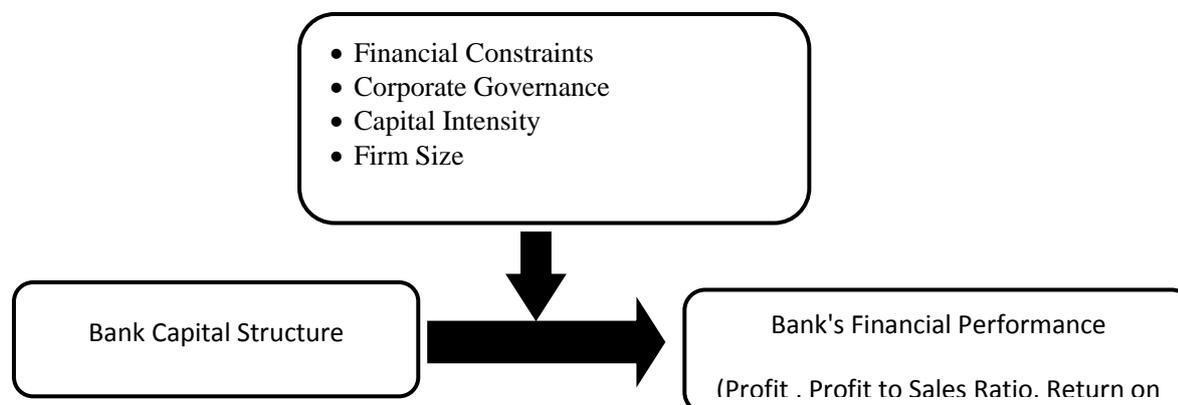

Figure 2: The proposed conceptual model

4-2 Validity and Reliability testing of data

Due to the fact that the data used in this research is secondary and quantitative data, collected from the sites linked to the Stock Exchange and prepared according to the standards of that organization, their validity is confirmed. The static data of the combination of root unit tests are used to measure the static.

H0= There is a unit root and the variable is unstationary.

H1= There is no unit root and the variable is stationary.

To reject the null hypothesis, the level of significance is less than 0.05. As seen in the table above, level of the significance in all cases is less than 0.05. Therefore, the stationary of all variables examined is confirmed.

Table2: unit root test results

variables	Test statistic Levin, Lin & Chu t*	Significance level
AGE	-2/97	0/001
BSIZE	-8/13	0/000
FSIZE	-7/61	0/000
INDEP	-8/82	0/000
MSS	-2/35	0/009
SCIEN	-10/05	0/000
CFO	-27/42	0/000
CI	-8/32	0/000
CS	-10/57	0/000
DP	-7/71	0/000
GS	-12/18	0/000
NP	-4/09	0/000
ROA	-17/47	0/000
ROE	-12/93	0/000
PTS	-10/13	0/000

4-3 Correlation test of research variables

If the research variables are of a proportional and continuous scale, Pearson correlation coefficient is used to examine the correlation between them. The zero assumption in the correlation

RESEARCH ARTICLE -ENGINEERNG TECHNOLOGY

test is based on the non-significant correlation between the variables under study and the hypotheses can be written as follows:

H0= There is no significant correlation between the variables studied.

H1= There is a significant correlation between the variables studied.

To reject the null hypothesis and confirm the significance of correlation, the significance level should be less than 0.05.

Table3: Correlation coefficient among research variables

In the table above, the correlation coefficient in the first line and the correlation significance are written in the second line. If the significance is less than 0.05, the correlation is statistically significant. As seen in some cases, the correlations between the independent variables are significant, but the intensity of the correlations is less than the probability of the existence of coherence in the model.

4-4 Pre-Estimate Tests

The chow test is used to determine whether the panel method is more efficient in estimating the model or the combined data method. The zero assumption in the Chow test (F lemmer) is based on the non-use of the data panel (i.e., the use of compilation data) and hypotheses can be written:

H0= It cannot use the data panel method to estimate (the compilation data method should be used)

H1= It can be used to estimate the data panel method.

Table4: Chow test results for regression models

Models	Significance level	Degrees of freedom	Test statistic
Model1	0.000	(17 and 91)	10/58
Model 2	0.000	(17 and 91)	3/41
Model 3	0.000	(17 and 91)	8/59
Model 4	0.000	(17 and 91)	5/46

As it is seen in the table, the significance level of the Chow test in all four of the studied equations is less than $\alpha = 0.05$. So with 95% confidence, the possibility of estimating models is confirmed using the panel method.

4-5 Fixed or random effects test

RESEARCH ARTICLE -ENGINEERNG TECHNOLOGY

Given that the zero assumption of the Chow test on the width equalization of the originals was rejected, the Hausman test is used to determine whether there are fixed effects or the presence of random effects.

The zero assumption in the Hausman test is based on the non-use of the fixed effects method (i.e., the use of the method of random effects), and the hypotheses can be written as follows:

H0= It cannot be used to estimate the static effects model in the data panel method (we must use the random effects model in the data panel method).

H1= It can be used to estimate the constant effects model in the data panel method.

Table 5: Hausman test results for regression models

Models	Significance level	Degrees of freedom	Test statistic
Model1	1/000	13	0.000
Model 2	1/000	13	0.000
Model 3	1/000	13	0.000
Model 4	1/000	13	0.000

As it is seen in the table, the significance level of the Hausman test is calculated for all four equations larger than 0.05, but this value is exactly zero, and the Hunsman test does not have the ability to distinguish between the use of constant and random effects. Therefore, Hausman's test in these four estimation equations gives rise to the use of static effects.

4-6- The first hypothesis test

The first hypothesis suggests that corporate governance, financial constraints, size and capital intensity significantly influence the relationship between capital structure and the profitability of banks listed on the TSE. The result of model estimation for the first hypothesis was tested using diagnostic tests. It showed that in terms of the number of significant items, coefficient of determination, normal distribution of residual components, heterogeneity of variance, correlation, Durbin - Watson and generally being significance the model is approved. Table 5 provides the results of model estimation.

Table 6: Results of model 1using fixed effects method

Variables	Coefficient	t- Statistic	Significance
AGE	-161046/4	-0/26	0/78
BSIZE	-155135/7	-1/48	0/14
CFO	-283539/5	-1/06	0/28
CI	-1019592	-0/88	0/37
CONT	539322/9	2/47	0/01
CS	-2319860	-2/96	0/003
DP	1576531	2/40	0/01
DUA	1072348	1/66	0/0995
FSIZE	847826/4	2/85	0/005
GS	2341009	2/65	0/009
INDEP	870839/4	-1/37	0/17
MSS	180474/5	0/27	0/78
SCIN	120616/4	0/39	0/69
C	-2502178	-0/95	0/34

According to the above table, the results show that due to the significant level of variables, the variables of capital structure, control structure and audit, dividend ratio, sales growth and firm size with more than 95% confidence have a significant effect on the net profit is the period. Other variables do not have a significant effect on the relationship between financing and profitability of banks and do not influence them.

RESEARCH ARTICLE -ENGINEERNG TECHNOLOGY

Goodness of fit test result: According to Table 6, coefficient of determinant of the model suggests that 85 percent of the changes in profitability are explained by variables inserted in the model. Moreover, Durbin- Watson statistic value is between 1.5 and 2.5 and it means the model does not have the problem of Autocorrelation.

Table 7: Goodness of model 1

17/90	F-statistic	0/85	R-squared
1/74	Durbin-Watson stat	0/80	Adjusted R-squared
		0/0000	Prob(F-statistic)

4-7 the second hypothesis test

The second research hypothesis suggests that corporate governance, financial constraints, size and capital intensity significantly influence the relationship between capital structure and profit to sales ratio of banks listed on the TSE. The result of model estimation for the second hypothesis was tested using diagnostic tests. It showed that in terms of the number of significant items, coefficient of determination, normal distribution of residual components, heterogeneity of variance, correlation, Durbin - Watson and generally being significance the model is approved. Table 7 provides the results of model estimation.

Table 8: Results of model 2 using fixed effects method

Variables	Coefficient	t- Statistic	Significance Level
SCIN	0/14	2/20	0/03
MSS	0/09	2/07	0/04
INDEP	-0/03	-0/51	0/60
GS	-0/60	-6/34	0/000
FSIZE	-0/23	-5/72	0/000
DUA	0/03	2/52	0/01
DP	3/31	7/80	0/000
CS	-0/08	-0/56	0/57
CONT	0/02	1/16	0/24
CI	-0/13	0/64	0/52
CFO	0/008	0/25	0/79
BSIZE	0/005	0/36	0/71
AGE	0/02	0/83	0/40
C	1/95	4/51	0/000

According to the above table, the results show that considering the significant level of variables, sales growth variables, size of company, size of major shareholders, financial knowledge of the board of directors, duality of the duties of the CEO and the chairman of the board and dividend profit ratio have a significant effect on The ratio of profits to sales. Other variables did not have a significant relationship with the relationship between financing and the ratio of profits to sales of banks and do not influence them.

Goodness of fit test result: According to Table 8, determining coefficient of the model suggests that 69 percent of the changes in Changes in profit to sales ratio are explained by variables inserted in the model. Moreover, Durbin- Watson statistic value is between 1.5 and 2.5 and the model does not have the problem of Autocorrelation.

Table 9: Goodnees of model 2

6/79	F-statistic	0/69	R-squared
2/38	Durbin-Watson	0/58	Adjusted R-squared
		0/00000	Prob(F-statistic)

RESEARCH ARTICLE -ENGINEERNG TECHNOLOGY

4-8 The third hypothesis test

The third research hypothesis suggests that corporate governance, financial constraints, size and capital intensity significantly influence the relationship between capital structure and return on assets of banks listed on the TSE. The result of model estimation for the third hypothesis was tested using diagnostic tests. It showed that in terms of the number of significant items, coefficient of determination, normal distribution of residual components, heterogeneity of variance, correlation, Durbin - Watson and generally being significance the model is approved. Table 9 provides the results of model estimation.

Table 10: Results of model 3 using fixed effects method

Variables	Coefficient	t- Statistic	Significance Level
SCIN	0/001	0/60	0/54
MSS	0/004	3/55	0/000
INDEP	-0/003	-0/91	0/36
GS	0/04	7/84	0/000
FSIZE	-0/01	-3/005	0/003
DUA	0/007	0/74	0/46
DP	0/09	3/42	0/000
CS	-0/03	-2/56	0/01
CONT	0/001	1/13	0/25
CI	0/002	0/20	0/83
CFO	-0/005	1/84	0/06
BSIZE	-0/001	-1/53	0/12
AGE	0/005	0/11	0/91
C	0/13	3/99	0/000

According to the above table, the results show that considering the significant level of variables, capital structure variables, major shareholder size, sales growth, dividend ratio, firm size have a significant effect with more than 95% confidence return on assets. Other variables do not have a significant relationship with the relationship between financing and return on assets of the banks and do not influence them.

Goodness of fit test result: According to Table 10, determining coefficient of the model suggests that 87 percent of the changes in Changes in return on assets are explained by variables inserted in the model. Moreover, Durbin- Watson statistic value is between 1.5 and 2.5 and the model does not have the problem of Autocorrelation.

Table 11: Goodnees of model 3

21/90	F-statistic	0/87	R-squared
2/06	Durbin-Watson stat	0/83	Adjusted R-squared
		0/0000	Prob(F-statistic)

4-9 The fourth hypothesis test

The fourth hypothesis suggests that corporate governance, financial constraints, size and capital intensity significantly influence the relationship between capital structure and return on equity of banks listed on the TSE. The result of model estimation for the fourth hypothesis was tested using diagnostic tests. It showed that in terms of the number of significant items, coefficient of determination, normal distribution of residual components, heterogeneity of variance, correlation, Durbin - Watson and generally being significance the model is approved. Table 11provides the results of model estimation.

Table 12: Results of model 4 using fixed effects method

Variables	Coefficient	t- Statistic	Significance

RESEARCH ARTICLE -ENGINEERNG TECHNOLOGY

SCIN	-0/03	-1/04	0/29
MSS	0/01	0/40	0/68
INDEP	-0/09	-2/18	0/03
GS	0/19	2/81	0/005
FSIZE	-0/17	-3/36	0/001
DUA	0/01	1/52	0/12
DP	1/16	3/03	0/003
CS	0/33	3/91	0/000
CONT	0/01	0/88	0/37
CI	-0/37	-2/31	0/02
CFO	-0/05	-2/90	0/004
BSIZE	-0/009	-1/05	0/29
AGE	-0/03	0/58	0/56
C	1/45	3/17	0/002

According to the above table, the results show that considering the significant level of variables, capital structure variables, board independence, dividend ratio, operating cash flow, sales growth, capital squeeze, size of company have a significant effect return on equity. Other variables do not have a significant relationship with the relationship between financing and Return on equity of the banks and do not influence them.

Goodness of fit test result: According to Table 12, determining coefficient of the model suggests that 73 percent of the changes in changes in return on equity are explained by variables inserted in the model. Moreover, Durbin- Watson statistic value is between 1.5 and 2.5 and the model does not have the problem of Autocorrelation.

Table 13: Goodnees of model 4

0/0000	Prob(F-statistic)	0/73	R-squared
2/47	Durbin-Watson stat	0/64	Adjusted R-squared
		8/38	F-statistic

Conclusions

The present study was designed to declare the roles of corporate governance, financial constraints, size and capital intensity on the relation between capital structure and the financial performance of banks admitted to the Tehran stock exchange. The results show that the larger the size of the banks, the higher the transparency information, the lower the financial constraints, the greater the opportunities for growth, the lower the probability of bankruptcy, and the greater the credibility of the capital market lenders and investors, as well as the sensitivity of investment to cash flows, so that larger banks face less investment attraction problems and ultimately increase their profitability and returns. Banks with dividend payments face less financial constraints, which will not reduce the value of the bank and their financial performance, but if banks cut dividends, this could negatively influence the stock market price and reduce their reputation. On the other hand, the increase in dividend yields reduced cash flow of banks and they are forced to go abroad and, as a result, reducing free cash flow will reduce the agency's problems. Accordingly, banks will divide net profit and returns in terms of their investment opportunities, their financing and the cost of capital belonging to it in such a way as to increase the value of the bank. It is better to have large and active banks in the international arena with a risk and auditing committee to provide information and advice on the current and future status of the bank's risk-taking strategy, which can improve net profit and returns of banks. Increasing the presence of independent non-executive directors in the board of directors helps to reduce the conflict of interests between shareholders and managers of the bank in board meetings. If members are not members of the board of directors, the board may exercise more effective oversight of the banks. The use of non-executive directors with financial knowledge can lead to desirable decision makers and,

RESEARCH ARTICLE -ENGINEERNG TECHNOLOGY

consequently, improve the financial performance of banks. Separation of the duties of the CEO and the chairman of the board of directors will further control and strengthen the bank's management system in such a way as to reduce costs, problem of representation and increase the net profit and returns of banks. It is better to use banks from the chairman of the board of directors and also to distinguish between the duties of the CEO and the chairman of the board of directors, which can improve the performance of banks in relation to banks under the influence of the CEO. By increasing the ratio of ownership of institutional investment, the quality of profit and returns of banks improves. The existence of institutional investors in the bank reduces the agent's costs by controlling the performance of the directors and also wants to provide accurate and timely information on the activities of the bank. The board of directors of banks should have financial knowledge and various skills, including banking and law, to supervise management and participate in decision making, which can lead to an increase in the value of the bank. When banks have poor financial performance, they will use financial knowledge managers to combine their board of directors. The more members of the board of directors gain financial and accounting knowledge in the banks, they can have more effective oversight of the management of the bank, which will increase the value of the bank.

According to the results, authors present the following suggestions for future studies to scholars and researchers:

- Analysis of the model in this research using other models, such as vector auto-regression, and auto-regression with distribution gaps
- Declaration of the role of corporate governance and financial constraints, Size and Capital intensity on the relation between capital structure and the financial performance of all companies admitted to the Tehran stock exchange, separated by industry
- Analysis of the roles of other variables that affect the relation between capital structure and the financial performance of companies and banks, such as keeping cash, growth opportunities, liquidity of assets and company shares for funding, the rate of income tax and companies' dividends
- Analysis of the relation between capital structure and the risk of companies and banks (on the undesirable risk indicator, such as threatened value)

References

[1]. Abdul Rahman, R. & Ali, F.H. (2006). Board, audit committee, culture and earnings management: Malaysian evidence. .*Managerial Auditing*, 21(7):783-804.

[2]. Agca, S. & Mozumdar, A. (2008). The impact of capital market imperfections on investment–cash flow sensitivity. *Journal of Banking and Finance*, 32(2): 207-216.

[3]. Almeida, H. & Campello, M. (2007). Financial constraints, asset tangibility, and corporate investment. *Review of Financial Studies*, 20(5): 1429–1460.

[4]. Andreou, P.C., Louca, C. & Panayides, P.M. (2014). Corporate governance, financial management decisions and firm performance: Evidence from the maritime industry. *Transportation Research Part E: Logistics and Transportation Review,* 63: 59 -78.

[5]. Armstrong, C.S. Guay, W.R., & Weber, J.P. (2010). The role of information and financial reporting in corporate governance and debt contracting. *Journal of Accounting and Economics,* 50(2-3): 179-234.

[6]. Arsalan, O. Florackis, C. & Ozkan, A. (2006). The role of cash holdings in reducing investment cash flow sensitivity: Evidence from a financial crisis period in an emerging market. *Emerging Markets Review,* 7(4): 320–338.

[7]. Arshad, H. & Butt, S .A. (2009). Impact of ownership structure and corporate governance on capital structure of Pakistani listed companies. *International Journal of Business and Management,* 4(2): 50-57.

[8]. Belkaui, A.R. (1999). *Capital Structure-determination, Evaluation and Accounting*, Westport, CT United States: Quorum books.

[9]. Brealey, R. Myers, S. & Marcus, A. (2001). *Fundamentals of Corporate Finance*, Third Edition, United States of America: McGraw- Hill Companies.

RESEARCH ARTICLE -ENGINEERNG TECHNOLOGY

[10]. Chang, Y.K., Chou, R.K. & Huang, T.H. (2014). Corporate governance and the dynamics of capital structure: New evidence. *Journal of Banking & Finance,* 48: 374- 385.

[11]. Fazzari, S.M., Hubbard, R.G. & Peterson, B.C. (1988). Financing constraints and corporate investment. *Brookings Papers on Economic Activity,* 1: 141-195.

[12]. Forbes, D.P., & Milliken, F.J. (1999). Cognition and Corporate governance: Understanding boards of directors as Strategic decision making groups. *Academy of Management Review*, 24(3): 489-505.

[13]. George, R. Kabir, R. & Qian, J. (2011). Investment cash flow sensitivity and financial constraints: New evidence from Indian business group firms. *Journal of Multinational Financial Management*, 21(2): 69-88.

[14]. Gillan, S. L. (2006). Recent developments in corporate governance: An overview. *Journal of Corporate Finance*, 12(3): 381-402.

[15]. Huafang, X. & Jianguo, Y. (2007). Ownership structure, board composition and corporate voluntary disclosure: Evidence from listed companies in China. *Managerial Auditing Journal*, 22(6): 604-619.

[16]. Keasey, K. Thompson, S. & Wright, M. (2005). Corporate governance: Accountability, Enterprise and International Comparisons. The University of California: John Wiley & Sons**.**

[17]. Kochhar, R. David, P. (1996). Institutional investors and firm innovation: A test of competing hypotheses. *Strategic Management Journal*, 17(1): 73-84.

[18]. Kyriazopoulos, George. (2017) Corporate governance and capital structure in the periods of financial distress: Evidence from Greece. Investment Management and Financial Innovations, 14(1-1):254-262.

[19]. Liao, Li-Kai, Mukherjee, Tarun, Wang, Wei. (2015) Corporate Governance and capital structure Dynamics: AN Emprical study .the journal of financial research, Vol.XXXVLLL (2):169-191.

[20]. Michael, C. Jensen, William. & Meckling, H. (1976). Theory of the firm: managerial behavior, agency costs and ownership structure. Journal of Financial Economics, 3(4): 305–360.

[21]. Modigliani, F. Miller, M. (1963). Corporate income taxes and the cost of capital: A correction. The *American Economic Review,* 53(3): 433-443.

[22]. Myers, S. C. (1984). The capital structure puzzle. *Journal of Finance*, 39(3): 575-592.

[23]. Nur Alam Siddik, MD, Kabiraj, Sajal, Joghee, Shanmugan. (2017) Impacts of Capital Structure on Performance of Banks in a Developing Economy: Evidence from Bangladesh. international journal of financial studies, 5(13), doi: 10.3390.

[24]. Rouf, A. (2011). Corporate characteristics, governance attributes and the extent of voluntary disclosure in Bangladesh. *African Journal of Business Management*, 5(19): 7836-7845.

[25]. Shaukat Malik, Muhammad, Makhdoom, Durayya Debaj.(2016) Does corporate governance beget firm performance in Fortune Global 500 companies?, Corporate Governance: the international journal of business in Society, 16(4):747-764.

[26]. Sinkey, J.F. (1989). *Commercial Bank Financial Management in Financial Service Industry*, New York: Macmillan.

[27]. Wang, Z. J., Deng, X.L. (2006). Corporate governance and financial distress: Evidence from Chinese listed companies. *The Chinese Economy*, 39(5): 5-27.

[28]. Zeitun, R. Tian, G.G. (2007). Capital structure and corporate performance: evidence from Jordan. *Australasian Accounting, Business and Finance Journal,* 1(4): 40-61.

m", in Proc. Fifth European Conf. Software Maintenance and Reengineering, 2001.