

The Effect of Competition on the Stability of the Banks Listed in Tehran Stock Exchange

Maryam Khalili Araghi and Mohammad Reza Soleymani
Tehran Science and Research Branch, Islamic Azad University, Tehran, Iran

Abstract: The aim of this study was to investigate the effect of bank competition on stability of the banks listed in Stock Exchange Market. Sample of 10 banks listed on the stock market were selected during the years 2007-2012 to test the hypothesis. The multivariate regression model based on combined data is used to analyze the data and testing of hypothesis. In this research, the effect of three measures of banking soundness, market pricing power and market pricing power due to banking soundness are investigated as indicators of competitiveness, on the systematic risk as an indicator of the bank stability. The results indicate that there is significant and direct relationship between the bank soundness and systematic risk and there is significant and inverse relationship between market pricing power and the systematic risk and finally between markets pricing power due to the bank soundness on systemic risk, too.

Key words: Banking competition, systematic risk, bank stability, pricing, power, data

INTRODUCTION

Activities and organizational processes of banks that associated with the bank's profitability have very important effects. Institutional framework of activities and organizational processes of the banks is same the banks' competitiveness that has directly and sometimes indirectly associated with the profitability activities of banks.

Since, the customer in the service delivery process is considered part of the provided service, there have to adopted solutions to the personalization of the services to each customer and the client make sure that the organization is profitable.

Banks need capital for growth and development. Funding side of the bank is a part of capitals that are available through retained earnings that are created as a result of profit activities of bank and are not divided between shareholders and the rest will be created through capital markets or borrowing and receive interest-free loan by people and other depositors. It should be note that the financing through the second method will be associated with increased risk and competition. The bank which have any debt, its capital structure is constitutes by the equity so there is no such thing in practice. The investment bankers are believed that the fluctuations in earnings are considered as an important measure of risk for bank investors and the banks with fixed income have always less risk and competitive. So, the banks which have higher profit margins have higher competitiveness and more

interested to investor and it is a more appropriate location for investment. Bank managers as representatives of the shareholders and people should constantly trying to adjust the bank's capital structure so that the cost of capital of banks being to minimized and therefore the value and profitability of banks being to maximized and the bank's risk should be minimized and finally will be caused to the competitiveness of banks (Beck *et al.*, 2010a). The aim of this study is the evaluation the effect of banking competition on the stability of banks in the financial and credit activities of banks. Banking competition is predicated on the progress of a bank compared to similar banks in the area of the investment and providing of banking services (Demircuc-Kunt and Huizinga, 2010).

The banking stability to creating the interoperability and stability of monetary and fiscal policy during a specified time period is called banking stability (Beck *et al.*, 2010b). To calculation of bank competition we using two indicators of market pricing power and soundness of activities (Demircuc-Kunt and Huizinga, 2010; Houston *et al.*, 2010) and the contrast between the market pricing power and soundness of activities (Beck *et al.*, 2010b) as independent variables and to calculate the bank stability we used of systemic risk measur as the dependent variable. Also we used some control variables such as funding (Berger *et al.*, 2009), the ratio of debt (Schaeck and Cihak, 2010), the ratio of non-interest income (credit) (Boyd *et al.*, 2006), annual growth rate and the component of activity, for operating

the competition indicator and how to calculate the correct systematic impact on stability of the bank activity. Therefore, the main question raised in this research is that how much the bank competition can be impact on the bank stability variable.

LITERATURE REVIEW

Ariss (2010) examine the “quality of accruals, risk information and competitiveness” and showed that there is no evidence based on that “the firm with lower accruals quality has been higher cost of capital”. Their results showed that the inherent partial impact of accruals on cost of capital is more than one of its optional component.

Turpin and Shalvand (1995) study the effects of asymmetry of information between managers and shareholders in relation to profitability and competitiveness in aspect of time and amount. According to the results of mentioned research, the increase in the level of institutional ownership in Japanese companies, the less asymmetry of information between executives of company and other related parties on the market. Therefore, in the company that the corporative ownership is higher, the stock market prices involves the information related to the company’s future profitability faster than companies with lower corporative ownership.

Filosa (2007) study the relationship of the stability of profit in the banking industry and concluded that, contrary to previous studies, there is no systematic relationship between capital and bank profitability. The operating costs have a positive impact on the profitability of banks which may be a result of the high cost of high-quality management that it will lead to increased profits. The relationship between profitability and operational risk and profit and the consumer price indicator is negative and the relationship is positive in aspect of the degree of concentration and GDP growth.

Domestic research: Vakili (2006) conduct a research on co-evaluation for efficiency and risk of stability of investment alternative opportunities in Iran. Finally, they found that during the period under studied for stock index returns were more than other investment opportunities. Although, its risk compared to other opportunities was higher. However, it was found that the risk and relative return of the investment opportunities were higher in compared to other opportunity.

Jahankhani and Parsaiian (2007) in his research, “Investigate the relationship between capital structure and stability of earnings” showed that there is a positive relationship between capital structure and corporate profitability but this relationship is statistically little; the relationship between capital structure and profitability

also depends on the industry and capital optimal structure can be set in various industries. Also, the relationship between capital structure and profitability in the industry is dependent on profitability.

Jahankhani and Yazdani (1994) have studied the impact of capital structure on stability of earnings and found that there is significant and positive relationship between the capital structure and return on equity ratio, this relationship is statistically little.

Namazi and Shirzadi in a study titled “The Relationship Between the Capital Structure with Profitability and Competitiveness of the Companies Listed in Tehran Stock Exchange (With an Emphasis on Type of Industry) were analyzed” the effect of capital structure on profitability of listed companies in Tehran Stock Exchange during the years 1375- 1379. This study showed that there is a positive relationship between capital structure and corporate profitability but this relationship is statistically little; the relationship between capital structure and profitability depends on the industry and the capital optimal structure can be set in various industries. The results of this study suggest that there is not a strong relationship between capital structure and profitability.

Tehrani (2008) in a research have studied “the effects of growth opportunities on the relationship between capital structure, stability of dividend and competitive standards” that the main aim of this study was to evaluate the effect of growth opportunities on the relationship between capital structure, dividend and ownership structure with corporate value in the companies listed in Tehran Stock Exchange in the period 1383-1387. The results showed that there is a significant relationship between the capital structure and dividend with the corporate value and in the case of growth opportunities, the relationship is negative and significant, but without opportunities for growth, it will be a significant and positive. Also, the results showed a significant nonlinear relationship between ownership structure and corporate value and the growth opportunities have a significant effect on the relationship.

Research hypotheses: After the preliminary research and studies on possible solutions, to answer the questions raised in the problem statement, the following hypotheses were formulated:

- There is a significant relationship between bank soundness and systemic risk
- There is a significant relationship between market pricing power and the systemic risk
- There is a significant relationship between market pricing power due to bank soundness and the systemic risk

Research population: The study population consisted of all banks listed on the Tehran Stock Exchange. According to the official website of the Tehran Stock Exchange, All banks listed at the end of 1391, includes 10 banks were in 2 groups of public and private institutional shareholders. Therefore, in this study, all banks listed on Tehran Stock Exchange during a period of 6 years, from 1386-1391 were the research population.

MATERIALS AND METHODS

The study is descriptive and correlational research that in term of classification is based on objective research is considered applied research. In the research for the study of literature and literature review, the method of library utilizing the books and technical papers and Persian and Latin theses were used. Since, the information and data about the variables were include many accounting items contained in the audited financial statements of banks and required data from the financial statements included in the research management, development and Islamic studies related to the stock and securities organization at www.rdis.ir, Kodal network, comprehensive information systems for publishers at www.codal.ir, financial data processing center Iran www.fipiran.com and CDs of the Securities and Exchange extracted manually which seems have reliability higher than other available sources. Also other required information related to the financial statements of banks has been collected from database of Stock Exchange and from Novin Rahavard software with Pdf and Excel files. This information includes profit and loss, balance sheet, profit forecasts, etc.

Variables of research

Systemic risk (Risk_{i,t}): Capital Asset Pricing Model (CAPM) states that the expected return rate of bank equal to non-risk return rate of bank plus a risk premium that will be shown as follows:

$$ER_i = R_f + [E(R_m) - R_f] \times \beta_i \\ \Rightarrow R_{it} = R_{ft} + (R_{mt} - R_{ft}) \beta_i + e_{it}$$

Where:

R_{it} = Rate of return of firm i in period t

β_i = The beta for stock market (systematic risk) of i bank

R_{mt} = Rate of return on market portfolio in period t and

e_{it} = Annoying factors

It should be noted that for the measurement of systemic risk, the information related to securities return rate and available market portfolio in the stock market

have been used. The stock exchange organization is used to the following equation to measure the actual performance of securities:

$$R_{i,t} = \frac{(p_t - p_{t-1}) + DPS_t + SO_t + SR_t}{P_{t-1}}$$

Where:

$R_{i,t}$ = Efficiency of bank i at time t

p_t = The price per share at the end of the period t

p_{t-1} = The price per share at the end of period t-1

DPS_t = Dividend per share in the period t

SO_t = Value the granted share option certificates for purchase within the time period t

SR_t = Value of the granted stock option priority to purchase within the time period t and accounting beta (systematic risk) is calculated with given equation:

$$\beta_i = \frac{COV(R_{i,t}, R_{mt})}{VAR(R_{mt})}$$

Where:

$R_{i,t}$ = Efficiency of bank i at time t

R_{mt} = Returns rate of the market portfolio in time t

Accounting beta is obtained by dividing the covariance on variance that the covariance examines and compare the changes of two variances and the variance examines the dispersion which are calculated as follows:

$$COV(R_{i,t}, R_{mt}) = \frac{\sum (R_i - \bar{R}_i)(R_m - \bar{R}_m)}{n} \\ = E(R_i - \bar{R}_i)(R_m - \bar{R}_m)$$

Bank soundness: The bank soundness measure according to the research (Demirguc-Kunt and Huizinga, 2010) is calculated as follow:

$$Z_{i,t} = (ROA_{i,t} + E/A_{i,t}) / s ROA$$

where according to Barth, the calculation of return of assets is as follow:

$$ROA_{i,t} = \frac{\text{Operating net interest}}{\text{Book value of total assets}}$$

And the ratio of retained earnings to the book value of fixed assets will be calculated by the equation:

$$E/A_{i,t} = \frac{\text{Retained earnings}}{\text{The book value of fixed assets}}$$

Market pricing power indicator (Competition_{i,t}):

According to Gan, the market pricing power indicator is calculated as follow:

$$\text{Competition}_{i,t} = (P_{i,t} + MC_{i,t})/P_{i,t}$$

Where:

MC_{i,t} = The average of return of share for firm during 3 years past

P_{i,t} = The price of stock in current year

Market pricing power due to bank soundness (Z_{i,t} × Competition): According to Beck *et al.* (2006), the variable of market pricing power due to bank soundness is obtained through contrast of two variable of bank soundness (Z_{i,t}) and market pricing power (Competition_{i,t}) indicators.

Control variables

Funding (SWF_{i,t}): According to Ariss (2010), the funding is calculated as follow:

$$\text{SWF}_{i,t} = \frac{\text{Total cash resource at banks}}{\text{Book value of total assets}}$$

Debt ratio (Lo/Ass_{i,t}): The calculation of debt ratio according to Martinez-Miera and Repullo (2010) is stated as follow:

$$\text{Lo/Ass}_{i,t} = \frac{\text{Total loans recieved by banks}}{\text{Book value of total assets}}$$

Non-interest income ratio of the bank (NIRS_{i,t}):

According to the research studied by Martinez-Miera and Repullo (2010), the non-interest income ratio of the bank calculated as follow:

$$\text{NIRS}_{i,t} = \frac{\text{Total debit and credit - The market value of equity}}{\text{Book value of total assets}}$$

Bank annual growth rate (AnGro_{i,t}): In this study, the annual growth rate of the bank according to Carletti (2008) will be calculated by multiplying of stock price growth rate and growth rate of bank interest:

$$\text{AnGro}_{i,t} = \text{GP} \times \text{GIN}$$

$$\text{GP}_{i,t} = \frac{P_{i,t} - P_{i,t-1}}{P_{i,t-1}}$$

Where:

GP_{i,t} = The growth rate of stock prices of bank i in year t

P_{i,t} = The stock price of the bank i in year t

P_{i,t-1} = Stock prices of bank i in year t-1

$$\text{GIN}_{i,t} = \frac{\text{IN}_{i,t} - \text{IN}_{i,t-1}}{\text{IN}_{i,t-1}}$$

Where:

GIN_{i,t} = The growth rate of interest of bank i in year t

IN_{i,t} = The interest of bank i in year t

IN_{i,t-1} = The interest of bank i in year t-1

Component of bank activity (ComB_{i,t}): According to Beck *et al.* (2008), it is dummy variable that if the studied bank in related to domestic investment and related rates to it follows of central bank regulatory; it is equal to 1 and if not it is zero. ε_{it} is randomized error of firm i in the end of year t.

Research models: The models from 1-3 will be used to test the hypothesis of first to third, respectively as follows. In this model, if β₁ coefficient (coefficients of independent variables) is significant at 95% confidence level the three research hypotheses will be confirmed, respectively.

Model 1:

$$\text{Risk}_{i,t} = \alpha_0 + \beta_1 Z_{i,t} + \beta_2 \text{SWF}_{i,t} + \beta_3 \text{Lo/Ass}_{i,t} + \beta_4 \text{NIRS}_{i,t} + \beta_5 \text{AnGro}_{i,t} + \beta_6 \text{ComB}_{i,t} + \epsilon_{i,t}$$

Model 2:

$$\text{Risk}_{i,t} = \alpha_0 + \beta_1 \text{Competition}_{i,t} + \beta_2 \text{SWF}_{i,t} + \beta_3 \text{Lo/Ass}_{i,t} + \beta_4 \text{NIRS}_{i,t} + \beta_5 \text{AnGro}_{i,t} + \beta_6 \text{ComB}_{i,t} + \epsilon_{i,t}$$

Model 3:

$$\text{Risk}_{i,t} = \alpha_0 + \beta_1 (Z_{i,t} \times \text{Competition}_{i,t}) + \beta_2 \text{SWF}_{i,t} + \beta_3 \text{Lo/Ass}_{i,t} + \beta_4 \text{NIRS}_{i,t} + \beta_5 \text{AnGro}_{i,t} + \beta_6 \text{ComB}_{i,t} + \epsilon_{i,t}$$

In these models, i indicates the bank (cross-section units) and t is the year and ε_{it} andomized error of firm i at the year t.

RESULTS AND DISCUSSION

In the following Table 1, the amounts of dispersion and central indicators have been calculated for research variables.

First hypothesis:

- H_0 : there is not a significant relationship between bank soundness and systemic risk
- H_1 : there is a significant relationship between bank soundness and systemic risk

$$H_0: \beta_1 = 0$$

$$H_1: \beta_1 \neq 0$$

Since, the possibility of t-statistic for variable coefficient of bank soundness measure is smaller than 0.05 (0.0179), therefore, the significant relationship between bank soundness and systemic risk at 95% confidence is confirmed. Thus, the first hypothesis was accepted and one can say with 95% confidence that there is a significant relationship between bank soundness and systematic risk of firms. A negative coefficient for this variable (-0.0008) showed an inverse relationship between bank soundness and systemic risk of the firms (Table 2).

Second hypothesis:

- H_0 : there is not a significant relationship between market pricing power and systemic risk
- H_1 : there is a significant relationship between market pricing power and systemic risk

$$H_0: \beta_1 = 0$$

$$H_1: \beta_1 \neq 0$$

Since, the possibility of t-statistic for variable coefficient of market pricing power is smaller than 0.05 (0.0002), therefore, the significant relationship between market pricing power and systemic risk at 95% confidence is confirmed. Thus, the second hypothesis was accepted and one can say with 95% confidence that there is a significant relationship between market pricing power and systematic risk. A positive coefficient for this variable (0.2025) showed a direct relationship between market pricing power and systemic risk. Given to confirmation of second hypothesis results that there is a significant and directly relationship between market pricing power and systematic risk (Table 3).

Third hypothesis:

- H_0 : there is not a significant relationship between market pricing power due to bank soundness and systemic risk
- H_1 : there is a significant relationship between market pricing power due to bank soundness and systemic risk

$$H_0: \beta_1 = 0$$

$$H_1: \beta_1 \neq 0$$

Since, the possibility of t-statistic for variable coefficient of market pricing power due to bank soundness is smaller than 0.05 (0.0001), therefore, the significant relationship between market pricing power due

Table 1: Descriptive statistics for research variable

Variables	No. of observation	Mean	SD	Minimum	Maximum	Skewness	Stretch
Systematic risk	60	0.5138	0.3306	0.0045	2.0449	1.098	2.781
Bank soundness	60	1.6717	0.4911	0.3948	3.4518	1.398	2.843
Market pricing power	60	0.5189	0.4179	0.0108	2.3425	1.646	3.477
Market pricing power due to bank soundness	60	0.8672	0.7314	0.0146	3.4246	1.404	1.664
Funding	60	0.6582	0.1796	0.1231	0.9296	-0.555	-0.063
Debt ratio	60	0.5636	0.1843	0.1061	0.8915	-0.442	-0.285
Non-interest income ratio	60	0.0577	0.2582	0.0003	2.9155	11.017	122.847
Annual growth rate	60	0.1617	0.3135	0.0002	2.1161	4.046	18.592
Component of activity	60	0.5079	0.5019	0.0000	1.0000	-0.032	-2.031

Table 2: The results of first hypothesis of the research

Dependent variable: systematic risk; No. of observations: 60 years bank

Variables	Coefficient	t-statistical	p-values	Relationship
Fixed component	0.5697	3.2911	0.0014	Positive
Bank soundness	-0.0008	-1.0151	0.0179	Negative
Funding	-0.1226	-0.6206	0.5362	Non-significant
Debt ratio	0.0952	0.6325	0.5285	Non-significant
Non-interest income ratio	-0.1247	-0.8066	0.4218	Non-significant
Annual growth rate	-0.0267	-0.6103	0.5430	Non-significant
Component of activity	-0.3150	-0.8536	0.3954	Non-significant

Determinant coefficient for model = 0.4721; Statistics = 3.4055; p-value = 0.0000

Table 3: The results of second hypothesis of the research

Dependent variable: systematic risk; No. of observations: 60 years bank

Variables	Coefficient	t-statistical	p-values	Relationship
Fixed component	0.7210	5.2802	0.0000	Positive
Market pricing power	-0.3458	-1.6741	0.0973	Non-significant
Funding	-0.3458	-1.6741	0.0973	Non-significant
Debt ratio	-0.1250	-0.8142	0.5285	Non-significant
Non-interest income ratio	-0.0650	-0.5238	0.6016	Non-significant
Annual growth rate	-0.0227	-0.4061	0.6855	Non-significant
Component of activity	-0.0278	-0.7090	0.4800	Non-significant

Determinant coefficient for model = 0.5137; Statistics = 4.0231; p-value = 0.0000

to bank soundness and systemic risk at 95% confidence is confirmed. Thus, the third hypothesis was accepted and one can say with 95% confidence that there is a significant relationship between market pricing power due to bank soundness and systematic risk. A negative coefficient for this variable (-0.1283) showed an inverse relationship between market pricing power due to bank soundness and systemic risk. Given to performed analysis for third hypothesis it can be results that there is a significant and inverse relationship between market pricing power due to bank soundness and systematic risk.

CONCLUSION

According to the results of the first hypothesis that found a significant and an inverse relationship between bank soundness and systemic risk it is recommended that investors capture comprehensive information on the standard deviation of return on assets of banks while investment making.

Given to the direct relationship between the market pricing power and systemic risk it is suggested to investors that do ranked the on the basis of this proxy.

Given to the inverse relationship between the variables in the third hypothesis, it is recommended to the risk-averse investors to invest in banks which have a higher market pricing power due to bank soundness.

REFERENCES

- Ariss, R.T., 2010. On the implications of market power in banking: Evidence from developing countries. *J. Banking Finance*, 34: 765-775.
- Beck, T., 2008. Bank competition and financial stability: Friends or foes? Policy Research Working Paper 4656, The World Bank, Washington, DC., USA., June 2008.
- Beck, T., A. Demircuc-Kunt and R. Levine, 2006. Bank concentration, competition and crises: First results. *J. Banking Finance*, 30: 1581-1603.
- Beck, T., A. Demircuc-Kunt and R. Levine, 2010a. Financial institutions and markets across countries and over time: The updated financial development and structure database. *World Bank Econ. Rev.*, 24: 77-92.
- Beck, T., R. Levine and A. Levkov, 2010b. Big bad banks? The winners and losers from bank deregulation in the United States. *J. Finance*, 65: 1637-1667.
- Berger, A.N., L.F. Klapper and R. Turk-Ariss, 2009. Bank competition and financial stability. *J. Financial Serv. Res.*, 35: 99-118.
- Boyd, J.H., G. De Nicolo and A.M. Jalal, 2006. Bank risk-taking and competition revisited: New theory and new evidence. IMF Working Paper No. 06/297, International Monetary Fund, Washington, DC., USA., December 2006.
- Carletti, E., 2008. Competition and Regulation in Banking. In: *Handbook of Financial Intermediation and Banking*, Thakor, A.V. and A.W.A. Boot (Eds.). Chapter 14, Elsevier, San Diego, CA., USA., ISBN-13: 9780080559926, pp: 449-482.
- Demircuc-Kunt, A. and H. Huizinga, 2010. Bank activity and funding strategies: The impact on risk and returns. *J. Financial Econ.*, 98: 626-650.
- Filosa, R., 2007. Stress testing of the stability of the Italian banking system: A VAR approach. *Heterogeneity and Monetary Policy*, No. 0703, March 2007, pp: 1-46.
- Houston, J.F., C. Lin, P. Lin and Y. Ma, 2010. Creditor rights, information sharing and bank risk taking. *J. Financial Econ.*, 96: 485-512.
- Jahankhani, A. and A. Parsaiian, 2007. *Financial Management*. Vol. 1, SAMT Publication, Tehran, Iran, Pages: 39.
- Jahankhani, A. and N. Yazdani, 1994. The effect of industry type, size, business risk and operational leverage on the use of financial leverage in the companies listed in Tehran stock exchange. *J. Manage. Stud.*, 17: 186-169.
- Martinez-Miera, D. and R. Repullo, 2010. Does competition reduce the risk of bank failure? *Rev. Financial Stud.*, 23: 3638-3664.

- Schaeck, K. and M. Cihak, 2010. Competition, efficiency and soundness in banking: An industrial organization perspective. European Banking Center Discussion Paper No. 2010-20S, July 2010.
- Tehrani, R., 2008. Financial Management. 4th Edn., Negahe Danesh Publication, Tehran, Iran, pp: 452-456.
- Turpin, D. and A.A. Shlvand, 1995. Seven golden orders for customer satisfaction. Monthly Tadbir Magazine, Issue 58, Tehran, Iran.
- Vakili, D., 2006. Evaluation of the performance of commercial banks. Master Thesis, Banking Faculty, Tehran, Iran.