The development of capital market and bank risk: The Case of Iran

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ABSTRACT

This paper is an attempt to investigate about relationship between the development of capital market and bank risk in Tehran Stock Exchange. Three hypotheses were presented in this research. This is a descriptive- correlative research. Multi-variable regression was used in this research. According to results of this research, there is a significant relationship between the development of capital market and bank risk. Additionally, there is significant relationship between Beta, income variety, and market value and capital market development. Also, due to effective role of bank in Iran economy bridge market, it is possible to point out its effective role in capital market. Results of this research confirm this claim. It is suggested to stakeholders and users of banking information and capital market to pay attention to bank risks regard their decision-making.

KEY WORDS: *Development Of Capital Markets, Risk, Beta, Income Diversification, Market Value*

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INTRODUCTION

With the development of financial markets, different investment facilities and grounds are formed and the private sector is able to select different solutions tailored to their needs for savings in less risky situations. Moreover, through the mobilization of resources from savers and direct them to profitable economic activities with high added value, can increase economic growth (Akbariyan and Heydari Poor, 2009). Financial markets are considered significantly due to their main role in collecting resources by large and small savings in national economy, optimizing the flow of financial resources and lead them to spending and investment needs in the productive economic sectors.

The positive effects of stock exchange on the economic development including incentives increase to investment by reducing the risk, pricing risk and liquidity risk facilitate, and the mobilization of deposits is very high and sensitive, as Some economists believe that the difference between developed and underdeveloped economies is not in developed technology but is in integrated active and wide financial markets(Elahi et al, 2015).

Those markets non-developed countries do not have them. According to these studies, the level of development of financial markets, especially the stock market and their effect on finance of companies and selecting finance method of companies, finally impacts significantly on economic growth. Developed financial markets such as financial markets of the developed countries control significant volume of financial capital of the economy. These markets are responsible for saving and changing it to investment with aim of forming capital. Hence, they have main role in accelerating economic growth (Khatayi et al, 2008).

Many people believe that traditional method of banking is not flexible. They believe that main role of banks includes collecting funds and borrowing it to other people. But revenue in banks is changing. So that the share of revenue is considered from the provision of services such as letters of credit, foreign exchange services, warranty banking, e-banking services including issuing cards, bills, transfer funds. The mechanism of banks income can be classified into two general categories:

1. *The joint revenues*

2. *Non-shared revenues(Khan & Bradbury, 2014).*

Nature of the business and Scope of work of financial institutions has changed risk acceptance as a main part in these institutions. In other words, risk-taking is an integral part of any business and achieve better economic performance always means more uncertainty and will have to take more risks (Khan, Boradbury, 2014).

The specific conditions governing the banking industry and banking activities in various areas such as lending, investments, issuance of guarantees, bonds, certificates of deposit and opening of letters of credit have led to the concept of risk in banks and institutions financial and credit is of particular importance (Dchvv, 2012). Here, specific conditions governed on bank industry and banks activity type in different fields resulted in high importance of risk in banks(Decho, 2012).

In addition, according to high amount of assets of banks, provided mostly by deposits of customers, they communicate with high range of economic institutions and various sectors of society. On the other hand, they have to work in fierce competition with other banks and financial institutions in order to maintain their profit margins in addition to meet customer satisfaction of the managers and owners of capital properly (Mohammad et.al, 2011).

In financial market, role of bank is two-way, because main role of bank represents in money market. On the other hand, with the participation of the bank in the capital market and buy and sell stocks in the market can also see its role in the capital market (Vithessonthi, 2014).

So with the development of financial markets, role of bank is essential. Studying different aspects of bank including income, shares value, and risk of bank are very important. Main aim of this research is to find answer of this question: is there relationship between development of financial market and bank risk?

LITERATURE REVIEW

Maekel, Shokov (2015) studied risks of bank in Russia. According to results of their results, Russia's banking system shows resistance in the face of global volatility. also, Neckol risk in this system has high rank than other risks.

Vithessonthi (2014) investigated on financial market development and bank risk in Thailand. According to results of his investigation, there is relationship between development of financial market and income variables, investment, and bank risks.

Khan, Bradbury (2014) investigated on the volatility and risk of total revenue. Research results indicate that total revenue is more volatility than net income. Additionally, total income is correlated with market risk. The total income volatility is not associated with market risk.

Vaordmen (2013) investigated systematic and non-systematic risk in bank system of western bank . According to results of his research, non-systematic risk is low in developed countries, but non-systematic risk is changing. But in non- developed countries, systematic risk is dominant on non-systematic risk.

Hilli et al. (2010), investigated on income of companies and risk. According to results of their research, there is significant relationship between operational risk and income of companies. There was no relationship between income and other risks.

Chaiporn, Jittima(2015) investigated on development of financial markets, business cycles and bank risk in South America. In this paper, the effect of banking crises or business cycles of development of financial markets at risk of banks in a sample of 37 commercial public banks in seven countries in South America over a period of 22 years between 1991 and 2012 studied.

Chaiporn (2014) presented a paper as development of financial markets and bank risk , an experience of Thailand during 1990-2012. Relationship between development of financial markets and bank risk in Thailand during 1990-2012 was investigated. According to results of their investigation, macro-level variables and in firm-level, positive shares market development correlates with banks capital ratio and is related to its beta with negative mark.

Hsueh (2013) presented an article as economic growth and financial development in Asian countries. Financial development of countries is defined based on how to use effective surplus capital or deposits for policy-making aims, considering selecting variables of financial development including size of financial markets, diversity of financial tools, complete rules , performance of financial markets.

Vithessonthi, Chaiporn (2015) presented an article as impact of development of financial markets on bank risk with some witnesses of Southeast Asian countries during 23 years in 1990-2012. According to theoretical results, development of financial markets is associated with capital level of weak bank, and correlates positively to diversity and divers of income of bank.

Hypotheses of research

According to Vithessonthi, Chaiporn (2015) , bank risk of capital risk includes three types as beta, income diversity, and market value. Hence, hypotheses of research are as follows:

Hypothesis 1 : there is significant relationship between capital market development and beta of banks as member of Tehran Stock Exchange .

Hypothesis 2: there is significant relationship between capital market development and income diversity in banks member of Tehran Stock Exchange.

Hypothesis 3: there is significant relationship between capital market development and market value in banks member of Tehran Stock Exchange.

Model of Research

$CMD = \beta_0 + \beta_1 \text{Beta} + \beta_2 \text{ID} + \beta_3 \text{MV} + \beta_4 \text{Size} + \beta_5 \text{Age} + \beta_6 \text{Lev} + \varepsilon$

Development variable: CMD : Financial market development

Independent variable: Beta= Risk, ID = income diversity, MV= bank investment

Control variable: Size = company size, Age = company age,

Lev = Company Leverage

Defined variables

Development of capital market: Theoretical Definition: Represents the amount of investment in the capital market.

- Operational definition: the market value of investments (total market value of companies in Tehran Stock Exchange IRR) divided by GDP (Vithessonthi, 2014).

Risk: Theoretical definition: the probability of occurrence of the non-expected event.

Operational definition: it is calculated by Beta equal to Co-Variance of market returns and returns of companyh divided by the variance of the market (Vithessonthi, 2014).

Diversification of income: - Theoretical definition: ration of non-shared revenue to shared earnings of bank. Non-shared revenue is achieved by services fees and providing financial advice and investment consulting. shared revenue is achieved by cooperation between bank and people.

Operational definition: non-shared income divided by shared income of company (Vithessonthi, 2014).

Market value

- Theoretical definition: the amount of investment of persons in the bank . In other words, it is known as bank market value.

- Operational definition: The number of shares multiplied by the stock market value(Vithessonthi, 2014).

Operational definition: the number of shares multiplied by the market value of the shares (Vithessonthi, 2014).

Company size: the log of assets.

Age: year t minus the year of entry into stock.

Company Leverage: total debt divided by total assets

METHODOLOGY

This is a correlative research. Data was extracted of the financial statements of companies listed in Tehran Stock Exchange devoted to analyzing the relationship. The research was conducted within the framework of deductive- inductive in terms of descriptive-analytic research purpose is considered as applied research. Population of this research include all banks accepted in Tehran Stock Exchange since 2009 20 2014.

data was collected by using library studies, literature of Persian and Latin books and professional journals and Web sites available (such as www.codal.ir, www.seo.ir, www.tse.ir,

etc.) also referring to the Tehran stock exchange and the data from the financial statements and the notes to the weekly reports, monthly stock exchange as well as the Rah Avaran Novin software. Notably, Excel and EViews were used to calculate variables of research.

Results-In this research, results are presented in two sections as descriptive and inferential statistics as follows:

- Descriptive statistics
- Descriptive statistics of the variables are provided in the table (1) . The results presented in table 1 provide an overview of the state of research.

Table 1: Descriptive statistics research

Variables	Mean	Average	Max	Min	SD	Skewness	Elongation
CMD	0/00098	0/0008	0/00102	0/007	0/0001	2.68	11.62
Beta	0.385	0.33	2.93	0	0.313	1.84	10.34
ID	0.128	0.13	1.63	0	0.111	4.39	55.41
MV	272635	265460	789857	26561	86555	-0.742	3.04
Size	13.29	13.16	18.19	9.82	1.36	0.625	4.22
Age	1.097	1.02	3.52	0.05	0.532	1.01	4.56
Lev	0.738	0.52	6.24	0.02	0.728	2.85	14.66

In general, according to above table, it is concluded there is average dispersion in all variables. This can be inferred from the standard deviation. In addition, according to mean and median distance, symmetry of variable is concluded.

Reliability of variables of research

According to definition, a time series is reliable when its mean, Variance, Covariance is fixed always, and time of calculating these indexes is not important (Nofarsti, 2009). Unit root tests are the most common tests that are used to determine the reliability of a time series process. Some of the most common unit root tests are as follows:

Dickey–Fuller test, generalized Dickey–Fuller test, Phillips and Person test. Generalized Dickey–Fuller test is used in this paper.

Table 2: Generalized Dickey-Fuller unit root test results for all variables

Variable	—	p-value	—	Error level	—	Reliability level	—
CMD		450.5	—	0.00	—	I(0)	—
Beta		701.27	—	0.014	—	I(0)	—
ID		440.5	—	0.00		I(0)	—
MV		329.48	—	0.00		I(0)	—
Size		536.57	—	0.00		I(0)	—
Age		489.99	—	0.00		I(0)	—
Lev		801.49	—	0.00		I(0)	—

As can be seen in the table above, augmented Dickey-Fuller unit root test results show that all the variables are reliable.

Correlation test

In order to investigate on existence and direction of a linear relationship between independent variables , Pearson correlation coefficient was done. Its results are in table 3 as follows:

Table 3: Pearson correlation coefficient

Variables	Beta	ID	MV	Size	Age	Lev
Beta	1					
ID	0.124	1				
MV	0.056	0.065	1			
Size	0.007	0.006	0.053	1		
Age	0.039	0.009	0.219	0.066	1	
Lev	0.021	0.086	0.012	0.252	0.102	1

According to table 3, the correlation between independent variables of research in patterns represents lack of high dependency among them.

Test of hypotheses of research

The present study follows the model that will be examined below:

$$CMD = \beta_0 + \beta_1 \, Beta + \beta_2 \, ID + \beta_3 \, MV + \beta_4 \, Size + \beta_5 \, Age + \beta_6 \, Lev + \varepsilon$$

Diagnostic tests

Before estimating the models, method of estimation should be clear. This is done by diagnostic tests. Their results are presented as follows:

Hypotheses of F Limer test (Chow) is as follows:

H0 = Traditional composite data

H1= Panel data

The results of this test is displayed in table 4.

Table 4: F-Limmer Test

F	Probability level	Accepted method
19.49	0.00	Panel data

According to table 4, results indicate rejecting H0 . hence, Panel data method is accepted . Hausman test should be done. Hypotheses of his test are as follows:

H0= panel data with random effects

H1= panel data with fixed effects

Results are shown in table 5 as follows:

Table 5:Hausman test

F	Probability level	Accepted method
18.25	0.019	Fixed effects

According to results of Hausman test and rejecting H0, panel data method with fixed effects is used for estimating models. Results of estimating these models is presented by panel data with fix effects.

Table 6: Results of estimating model

Variable	Factor	t test	Sig
Intercept	0.589	26.04	0.000
Beta	0.033	3.26	0.001
ID	0.0007	0.382	0.000
MV	0.246	12.87	0.000
Size	-0.008	-0.127	0.000
Age	-0.005	-0.553	0.58
Lev	0.003	1.87	0.000
F Fisher statistic (significant)	(0.000) 623.82		
The coefficient of determination	0.899		
Durbin-Watson statistic	1.73		

ANALYSIS OF RESULTS

Correlation

To investigate this hypothesis, the Durbin-Watson statistic is used, if this statistic is between 1.5 to 2.5, the correlation between the remaining sentences is rejected. According to the results of this research, P-value is 1.63. Hence, there is not autocorrelation regression in remaining sentences of this model.

F-fisher test

An *F*-test is any statistical test in which the test statistic has an *F*-distribution under the null hypothesis. It is most often used when comparing statistical models that have been fitted to a data set, in order to identify the model that best fits the population from which the data were sampled. Exact "*F*-tests" mainly arise when the models have been fitted to the data using least squares. H0 of this test represents lack of linear relation between independent variables and dependent variables. Results of table with sig =0 represents rejecting H0 with 95% confidence. In other words, there is significant relationship between independent and dependent variables . also, this model has enough validity for analysis of results.

Determination factor

The determining factor represents the percentage of dependent variable explained by the independent variables. In this model, the coefficient of determination is equal to 0.899 i.e. independent variables explain 90% of changes of dependent variable.

Analysis of result of hypothesis one

Aim of this hypothesis is to examine whether there is significant relationship between capital market development and beta of banks member of Tehran Stock Exchange. According to estimating the model, coefficient and error level of Beta is 0.033 and 0.001 represents significant relationship of this variable with market development variable. Hence, there is no evidence to reject this hypothesis. So, this hypothesis is accepted.

Analysis of result of hypothesis two

Aim of this hypothesis is to examine whether there is significant relationship between capital market development and income diversity of banks member of Tehran Stock Exchange. According to estimating the model, coefficient and error level of Beta is 0.033 and 0.001 represents significant relationship of this variable with market development variable. Hence, there is no evidence to reject this hypothesis. So, this hypothesis is accepted.

Analysis of result of hypothesis three

Aim of this hypothesis is to examine whether there is significant relationship between capital market development and market value of banks member of Tehran Stock Exchange. According to estimating the model, coefficient and error level of Beta is 0.246 and 0.001 represents significant relationship of this variable with market development variable. Hence, there is no evidence to reject this hypothesis. So, this hypothesis is accepted.

CONCLUSION

According to results of this research, there is significant relationship between risk and capital market development. Hence, when growth happens in capital market, it is one of main and basis factors related with risk. On the other hand, by increasing banks risk, capital market is changed too. Also, due to effective role of bank in economics market of Iran, its effective role in capital market is obvious. Results of this research confirm this claim. Hence, it is suggested to uses of bank information and capital market to pay attention to bank risks in their decision-making process.

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