



## Credit Risk, Liquidity Risk and Stock Return, (Evidence from Pakistan Stock Exchange)

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### ABSTRACT

This research's work done to examine the financial risks (Credit Risk, Liquidity Risk) effects on companies' stock returns listed from Pakistan stock Exchange. There are narrow number of research studies passed out in the field of financial risks. The purpose of this study is to spread the work of Mehri Akhavi Babi (2015) and Mehri Akhavi Babi including the latest data, appropriate models, including panel data. There are two independent variables (Credit Risk and Liquidity Risk) and one dependent variable (Stock Returns) and one control variable (Company Size). This paper includes 50 non-financial companies listed in PSX-100 index for the period of 2010 to 2015. This study demonstrates the relationship among credit risk, liquidity risk, size and stock returns of the company. The results show that that Credit risk has significant but negative relationship with stock return of company, Liquidity risk has significant positive relationship with stock return of company and Size has positive and significant relationship with stock return of company.

**KEY WORD:** Credit Risk, Liquidity Risk, Size, Stock Returns

### INTRODUCTION

For the profit and wealth maximization, the investment decision-making is almost certainly the utmost vital part of the investment, which required to investors. Consequently, for the decision-making process, the collection of information is a necessary and important feature. This information's are collected from many sources such as security market, company's annual reports and news etc. The utmost significant information source is the financial reporting, which deliver information for assisting decision-making process. Information is moreover measured as a planned tool in decision-making, and the superiority of decisions depend on the precision and suitability of the information accessible throughout decision-making process. (Mirnejad, Valipour& Alame-Haeri, 2013).

Raei and Saeidi, (2010) investigate to study the financial risk management, financial engineering. They study the concept of risk and returns that risk has vast importance in finance. All the investors wish to get greater return on their investment. The two-foremost principle of the investment-decision is risk& returnand the greater return, as per the lowest risk is a significant condition. Therefore, risk is a concept which claims that finance contributors ask about risk level of securities which they face in the market. Risk is a crucial condition for investment. Lastly, a certain share should be purchased after general analysis of the circumstances. The financial risks have straight effect on the earnings of businesses and could be prime of their disappointment.

Harry Markowitz,(1958) bring a solution, was CAPM. They investigate the stock returns and risks relationship. Black (1972), Sharp and Linter (1964) used a model to calculate risk-free rate and risk premium. They scale the stocks sensitivity by Beta factor, when financial crises cover all over the world in 1980's and 1990's. The new risk management techniques arose to control all type of risks and logically one risk manage another one. The risk is very appropriate for financial and non-financial organization are; (market, interest rate, liquidity, credit, foreign exchange and solvency risks). Risk recognition is an action of risk management which evaluate the risk and explanation of risk. In this research report, they examine on three types of risk that mostly faced such as credit risk, liquidity risk and solvency risk.

The rationality of the relationship between earnings and returns was first presented by Ball and Brown in 1968 in an article titled as "An empirical evaluation of accounting income numbers" and their null hypothesis stated that

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accounting income numbers were not beneficial for stock exchange investors. Therefore, their research hypothesis appealed that these numbers were suitable for investors. The findings of their study resulted in the rejection of the null hypothesis and it showed that a general review of the stock prices, after the distribution of income reports verified that the information contained in the annual income number, was beneficial and the direction of changes in reported accounting income, had positive correlation with the changes in stock prices in comparison to the previous year. They also concluded that the information presented in capital market was beneficial on condition that it suggested investors' reactions to bring up changes in stock prices or in the volume of stock exchanges (Ball & Brown, 1968).

Shabahang, (2003) believes that the main pattern of earnings and returns is a hypothesis based on which the capital market achieves efficiency in comparison to the related information which is available to the public. He also claims that the hypothesis of efficient market refers to the reaction rate of the securities of capital market compared to the distribution of new information. Therefore, the definition of the efficiency of market consists of the fact that the capital market reflects the available information thoroughly and the market prices show immediate reaction to the new information; that is, the new information has immediate effect on the securities price.

There are basic principles in investment which stated that the capital loses through risk and pursued toward earning and returns. The result shows that the investors who take risk and impede the investment in business, that is risky and unsafe their return. Every investment is involving in risk.

Teimouri and Abzari, Samadi, (2008) claimed that risk and fear of loss in all business. But high and low level of risk depend on investment. Thus, investor imagine enough earnings based on invested capital.

Raei and Saeidi, (2010) reported that the earnings directly affected by financial-risk of the companies and what they are lending from the financial institution. Therefore, seeing that vital role of risks in investment, and this study was an attempt to inspect that two types of risks, liquidity and credit risks can affect the relationship of return and earning.

Unsystematic-risk factors (credit risk and liquidity risk) are the most vital component from past several years. The earlier researches exhibit that, its effect companies' stock return. The problem of this study was that the work done on unsystematic-risk factors were too much low in the context of Pakistan and there were no but little work has been done to identify the accurate effect of unsystematic-risk factors on companies' stock return. Different researchers worked on effect of financial-risk factors (systematic risk, unsystematic risks) on stock return but they used most of systematic-risk factors or both systematic and unsystematic risk factors mixed in researches. So, this study used only one side of financial-risk factors, was unsystematic risks: including credit risk and liquidity risk. This research main objectives, to determine the effect of financial risks such as Liquidity and credit risks on stock returns. To investigate the Credit risk and Liquidity risk effect on stock returns.

## LITERATURE REVIEW

Hyoung Goo Kang and ChoongOh Kang, (2009) investigated the Credit risk's effect on stock return. They collected the data from Korea Composite Stock Price Index (KOSPI) covering period from 1995 to 2007. Crossing the Asian Financial Crisis in 1997-1999, Dot-com Bust in 2002 and Credit Card Crisis in 2002-2003 in Korea. They concepted a systematic risk factors in relation to credit risk by means of the credit blowouts of individual firms resulted from the Merton (1974) model. The credit factor captures a systematic risk from Korean SM.

Empirical tests and the Korean stock market show the credit risk factor exhibits meaningfully positive premiums even after controlling by Fama and French three factor.

Nasrin Moradi and Mohammad Mohebbi, (2015) researched on the relationship between the liquidity risk and stock return. Sample size, 6 oil companies were taken. That were active in 2011 to 2013 in Tehran stock exchange. Fama and French model was used to investigate the relationship among dependent and independent variable. Statistical analyses were done based on multi-choice regression and data was monthly and panel. The results show that the size of company doesn't significant effect on oil companies stock return, as result from investor point of view but book value to market value, market risk premium and liquidity risk has significant effect on stock return of oil companies, Tehran stock exchange that represents the importance of these variables in studied companies stock return.

Sadia Iqbal, (2015) investigated in her study that ROE and CCR have a significant& negative affect while the ROA and Current Ratio have positive& significant result on liquidity.

ROA and Current Ratio have positive affect on liquidity to the upward but ROE and CAR have negative affect on liquidity to the downward.

If the ROE and CAR Rises the risk of liquidity will decrease. If the ROA & Current Ratio increases the risk of Liquidity will increase.

Nasir Akram, (2014) they put Ask-bid-spread for variable proxies to investigate the risk of liquidity. Information has been gathered from ten companies registered on KSE Pakistan from 2005-2012.

For the information investigation, what they collect use two phase regressions. And among the liquidity and returns the results show a negative implication.

Mehri Akhavi Babi, (2015) they investigated the financial risk, earnings per share and stock returns (TSE Iran). 65 companies were selected, 2008 to 2013. The linear and multiple regressions were used to test the hypotheses. The consequences show that the EPS has a positive effect & significant effect on return. Furthermore, the consequences show that the solvency & credit risks were inverse & significant effect on EPS & stock returns. But the liquidity relation was insignificant.

Florian Steiger, (2010) They examined the prospect of applying derivative risk payments to describe return. There are several kinds of risk appear in the market because of fast developing derivatives market by trading, such as interest rate, credit and many more.

Trilochan Tripathy and Eshan Ahluwalia, (2015) Explained that the uncertainty and expectation are very interesting things in the market event to build it. They Examine the relationship among liquidity and equity return in financial system and day long effect of liquidity & Equity Return in the Day During Government budget notice. They used the OLS & ARDL Models. They revealed the route and magnitude of relationship among varies liquidity proxies & daily stock return in Indian stock market. The study shows that the returns have significant active relation with liquidity scales. More that the effect of liquidity on return is relative prominent in the date of budget speech than the date of post budget notice. The study reveals that the absolute spread test as a liquidity test, plays a vital role in ruling a day long equilibrium motion of daily stock returns in Indian market.

Sirine Chekilil and Nadia Abaoub, (2013) This study published to show the presence of the liquidity premium paid. Data has been collected from Tunisian stock Exchange and Twenty listed securities has been taken as sample size. The period of the sample size is twenty-four mounts from January 2003 to December 2004. The Martinez Nieto, Rubio and Tapia 2005 model has been used to examine the relationship among liquidity premium and stock returns. we decided that the Bid-ask spread is a scale of liquidity in the Tunisian market but the rotating ratio is a scale of liquidity. The recent scale of Amihud (2002), is a worthless tool to scale the Tunisian market and liquidity premium isn't distribute the month of January.

Cheng Fan Fah and Annuar Nasir, (2011) This study find the effect of financial, market and price risks on the ERC (Earning Response Coefficients) for Commercial Banks in china. They use the collective abnormal returns (dependent) and the unexpected earning (independent) variables. It shows that: i) Have a solid relation of Returns-to-Earnings with banks; ii) The liquidity risk has information content in the Returns-to-Earnings relation.

Isaac Mwaurah, Willy Muturi and Anthony Waititu, (2017) This study investigates the inspiration of financial risk on stock returns. Annual data of 9 banks listed from 2006 to 2015 has been used. Stock returns (dependent) and credit, market, liquidity plus capital risks (independent) and bank size (control and moderator) variables were taken. They assumed a multivariate least square regression modeling and absorbed two-dimension regression. i) Individual impact of financial risk on Stock Returns. ii) collective multivariate impact of financial Risk on Stock Returns. Individual regression of credit, market, liquidity plus capital risks show a statistical significant positive relationship with Stock Returns. Collective multiple (GLS) regression of financial risk with a control variable specified financial risk is negatively - significant on Stock Returns and bank size had a positive significant effect on stock returns. Moderating effect of bank size on the influence of financial risk on stock returns was found positively significant.

Shaun A. Bond and Qingqing Chang, (2013) they find the effect of innovations in liquidity on stock-return. Study find a positive low liquidity shock for business which have positive cash flow and expected-return news. The correlation among liquidity proxies and stock returns, rise from the association of liquidity proxies with the 3 stock return components. Regression of returns on liquidity proxies may minimize or maximize the importance of liquidity with stock-return variance. At the end, liquidity proxies tend to explain stock returns better in negative market liquidity shocks.

Mahdi Salehi, Ghodrattallah Talebnia and Behzad Ghorbani, (2011) Current study investigate the relationship between stock returns and liquidity ability in companies, listed in Tehran Stock Exchange. Monthly data for the years 2002 - 2009 has been used. The study results indicate that there is a negative correlation between stock returns and liquidity. The outcomes of current study support negative relationship presumption between stock returns and its liquidity ability.

Waqas Bin Khidmat and Mobeen Ur Rehman (2014) Ten listed chemical companies of Pakistan has been selected and 9 years data of these companies from (2001-2009) has been used. Solvency ratio has negative and significant impact on the (ROA) and (ROE). Its show that the (DTE) ratio goes up then firm performance goes down. It is also concluded that the liquidity has high positive effect over Return on Assets of sector. Stakeholders also interested in solvency ratios of companies. Suppliers check the solvency position of the companies before delivering the goods.

The investors are interested in solvency position to know how much the company is risky. Liquidity, solvency and profitability are closely related because, if one of them increases the other one decreases.

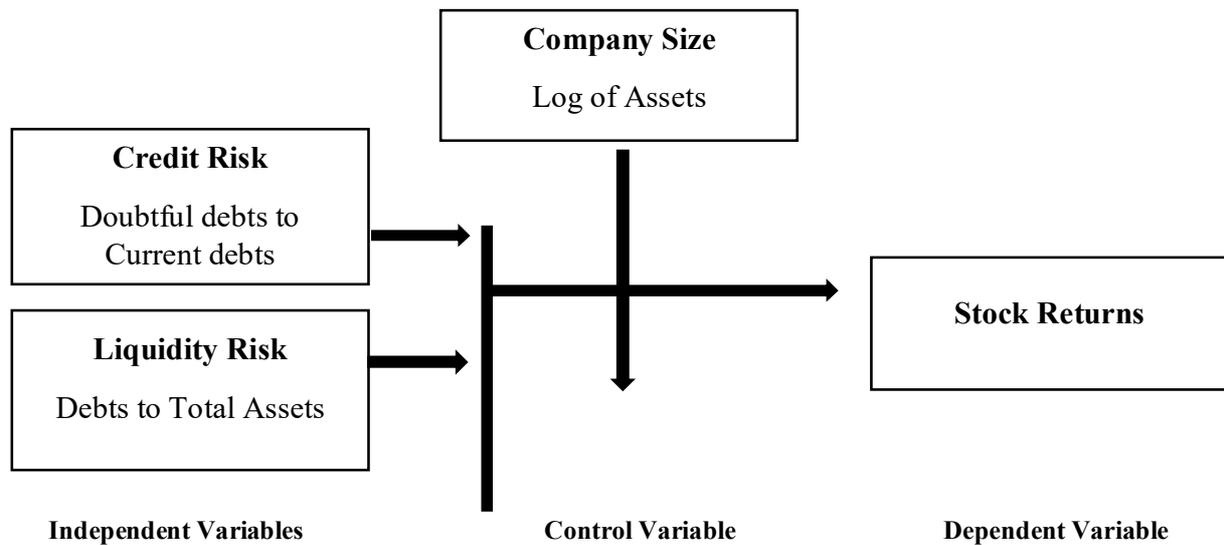
**Research Hypotheses**

The current research based on the following hypotheses:

- H<sub>1</sub>: There is a significant effect of credit risk on stock returns.
- H<sub>1</sub>: There is a significant effect of liquidity risk on stock returns.

**Conceptual Framework**

A conceptual framework busy in the study discusses the basis that influence of financial risk on stock returns. The dependent variable in the study includes company’s stock returns while independent variables credit risk and liquidity risk. The study involved a control/moderator variable of company “size”.



**Credit Risk**

In this study credit risk was measured using the ratio of Doubtful Debts to Current Debts. This measure conforms to following empirical study of (Mehri Akhavi Babi, 2015).

**Liquidity Risk**

Saleh (2014) defined liquidity risk as the inadequacy of the liability side of the company that restrains demand deposit and possibly triggers system fragility and company runs. It is the uncertainty that arise when a security cannot be liquidated in a market to avert a financial loss. This study adopted funding liquidity risk as a measure by the ratio of Debts to Total assets (Mehri Akhavi Babi, 2015).

**Company Size**

Berger and Brouwman (2011) determined that company size can be used as a control variable measured as a log of asset base. They described that company size is positively related to probability of survival. This explains that the effect of risk and returns in company is determined by the state of the economy. This observation was supported by Shariat and Khosvari (2008) who observed that firm size is negatively related to stock returns during periods of financial difficulties.

**Stock return**

Stock return is the change in capital or wealth due to an investment. The changes could occur due to cash flows such as earnings, dividends or interest or due to negative or positive changes in prices (Mehri, 2015). To determine stock returns the study employed formula applied by Purnamasari et al. (2012) and Predescu and Stancu (2011) in calculating the stock returns:

## DATA COLLECTION RESEARCH METHODOLOGY

### Introduction

This portion of the research includes the type of research, the sample used in this research and also the different sources from which the data is collected. The research methodology also discussed in this portion. This chapter also includes variables of the research.

### Type of research

The study being based on secondary data therefore this study is quantitative in nature and as we are testing a hypothesis therefore a deductive approach being used. As according to Wilson (2010) "A deductive approach is concerned with developing a hypothesis (or hypotheses) based on existing theory, and then designing a research strategy to test the hypothesis.

### Population and Sample size

The population for the study comprises of all the non-financial companies listed at PSE. We selected about 50 non-financial companies randomly from the said population for the study. Moreover, we selected those non-financial firms whose data for the study period (2010 to 2015) were available.

### Sources of data collection

This study based on the secondary data for the included variables and data collected from the following websites:

1. Official website of the State Bank of Pakistan (Balance sheet analysis)
2. Open doors for all.com
3. Annual Reports of the selected non-financial firms

### Data

The data collected from companies' annual reports. The index price collected from the Pakistan stock exchange. The closing prices of the stock return's taken and calculated by log of today by previous returns. The log returns calculated by the formula.

$$RT = \ln (P1/Po)$$

RT = represents the return

P1 = represents the closing price on the given day

Po = represents the closing price on the day previous P1

## RESEARCH METHODOLOGY

To examine the credit and liquidity risks effect on stock returns. covering period of 6 years from 2010 to 2015. Panel data used. The stock return of the companies calculated as follows

$$RT = \ln (P1/Po)$$

For the annually returns the  $R_t$  signify the annual returns, P1 show the closing price on the given year and P0 showing the closing price on the previous year to P1.

Furthermore, this study analyzed to estimate the credit risk and liquidity risk. After these calculations, we regressed credit risk and liquidity risk with stock return of selected companies.

### Regression Model

$$RT = \alpha + \beta_1 (CR) + \beta_2 (LR) + \epsilon_t$$

There are three different test models of panel data.

Common, fixed and random effect models used.

To select among common and fixed effect model, "F value" test used. If its value is greater than two we will use fixed effect model otherwise common effect model will used.

### Variables

#### Independent Variables

##### Credit risk

This study assessed the ratios for credit risk by Doubtful Debts to Current Debts of the company. (Mehri Akhavi Babi, 2015).

##### Liquidity risk

This study, measured the ratios for liquidity risk by debt to total assets of the company.(Mehri Akhavi Babi, 2015).

#### Control Variable

##### Company Size

This study assessed the ratios for company size by log of total assets of the company. (Isaac Mwaurah, Willy Muturi and Anthony Waititu, 2017)

## Dependent Variable

### Stock Return

The stock return of the companies calculated as follows

$$RT = \ln(P1/P0)$$

## RESULT AND DISCUSSION

The panel data set used in this study which is a combination of time series and cross section data. Data set covers a time period of 2010-2015. We used multiple regression analysis. To use multiple regression first of all we used appropriate model among the common effect regression model and fixed effect regression model F statistic test has used to select the best model among the common effect regression model and fixed effect regression model. To select among fixed effect and random effect model, "Houseman" test will use. if its result comes significant random effect model will use otherwise fixed effect model will be used.

First to select model among common effect model and fixed effect model F-value calculated by the following formula.

$$F = \frac{(R^2_{FE} - R^2_{CE})/N-1}{(1-R^2_{FE})/NT-N-K}$$

Where,

$R^2_{FE}$  = fixed effect model  $R^2$

$R^2_{CE}$  = common effect model  $R^2$

N = Number of used cross sections

T = Number of used time period

K = Number of used independent variables

By calculating the F-value with the help of above formula, the value is 5.17, which is greater than 2. Thus, the null hypothesis rejected and alternative hypothesis accepted that is fixed effect model used. Now we used Housman test for using best model between fixed effect model and random effect model.

The result of Housman test, as given below.

### Housman Test Summary

Chi-Sq. Statistic	Chi-Sq. d.f	Prob.
8.979559	5	0.1099

Dependent Variable = Returns			
Independent Variables	Coefficients	t-value	p-value
Credit risk	-0.001542	-2.938608	0.0036
Liquidity risk	0.00000181	0.197803	0.0434
Size	0.000482	0.948745	0.0237
R Square		0.193144	
F-value		1.137050	
Prob (F-statistic)		0.258114	

From the above result it is clear that the P-value is 0.1099 which greater than 0.05 so the result is not significant and we used fixed effect model for the analysis. The results of the fixed effect model, as given below.

### Fixed effect model

The above table represents the explanatory power of model used which are, F-value 1.137050, P-value 0.258114 and R square 19.3144. The coefficient of Credit risk is negative and its value is -0.001542, t-value is -2.938608 and Probability value is 0.0036. This it shows that Credit risk has significant but negative relationship with stock return of company, it may also have interpreted as unit increase in credit risk brings -0.001542 units decrease in stock return of firm, remaining other things constant.

The Liquidity risk coefficient is positive and its value is 0.00000181, t-value is 0.197803 and Probability value is 0.0434. This result shows that Liquidity risk has significant positive relationship with stock return of company, it may also have interpreted as unit increase in size brings 0.00000181 units increase in stock return of firm, remaining other things constant.

If we look at the coefficient of Size which is 0.000482 which is positive and t-value is 0.948745 having probability value 0.0237, if we look at these values this shows that Size has positive and significant relationship with stock return of company, we can also interpret these results that one-unit increase in size will bring 0.00000633 units increase in stock return of firm keeping other things constant.

### **Conclusion**

This study conducted on financial risks (Credit risk, Liquidity risk) on stock return of non-financial firm listed in Pakistan stock exchange. In this paper, we used panel data analysis to measure the relationship between financial risks and stock returns, listed non-financial companies for six-year period. We used two independent variables (credit risk, Liquidity risk) to measure their effect on stock return. The results exhibit that credit risk negatively correlated with stock return of company; though, this relationship is significant. This result is consistent to Mehri akhavi Babi, (2015). Liquidity risk positively correlated with stock return of company but, the relationship is significant. This result is inconsistent to Mehri akhavi Babi, (2015). and Size positively correlated with stock return of company but, the relationship is significant.

### **Recommendation**

This study analyzed relationship between financial risks and stock return. its only two risks credit risk and Liquidity risk. However, the other major risk factors like market risk, capital risk and interest risk are factors of systematic risks and this research study conducted by only unsystematic risk factors.

### **Limitation**

However, the limitation of the study must be included in this this research. My analysis is based on some limitation. The limitations are given below.

The first we consider only two financial risks, credit risk and liquidity risk.

Second refer to the fact that the research is only based on Pakistan which is a developing country. In previous literatures some researchers study these relationships based on developed countries. So, their results were different from this study.

This study is conducted in a limited span of time and to check the relationship. After studying the previous researches on correlation of financial risks on stock return especially in my selected sample there was little work being available in which these risks were studied together. Therefore, it could be a new topic for furthermore research to analyze correlation in these kinds of risks.

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