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The Effects of Expected Stock Returns and Stock Prices Volatility on Corporate Operational Risk (Tehran Stock Exchange)

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Abstract - The investors tend to investing in companies which have low risk and high expected efficiency and upstream shares price turbulence and in this regard the operational risk is a factor which results in the decrease of above criteria and confronts the company with the risk of bankruptcy, hence the investors have less motive for investing and the company has no choice but to use the financial leverages optimally in order to provide financially and in this situation the company's shares price is without fluctuation and stays in the lowest price. In this study the researcher has used the correlation approach-post events in the range of 1392-1388- to investigate the effects of operational risk (bankruptcy risk) on the turbulence of shares price, the expected efficiency of the shares and since the operational risk variable is not normally distributed, the data attribute is changed from gradation to order and finally the Logistic Regression Test is used for testing the hypotheses of the research.

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Abstract- The investors tend to investing in companies which have low risk and high expected efficiency and upstream shares price turbulence and in this regard the operational risk is a factor which results in the decrease of above criteria and confronts the company with the risk of bankruptcy, hence the investors have less motive for investing and the company has no choice but to use the financial leverages optimally in order to provide financially and in this situation the company's shares price is without fluctuation and stays in the lowest price. In this study the researcher has used the correlation approach-post events in the range of 1392-1388- to investigate the effects of operational risk (bankruptcy risk) on the turbulence of shares price, the expected efficiency of the shares and since the operational risk variable is not normally distributed, the data attribute is changed from gradation to order and finally the Logistic Regression Test is used for testing the hypotheses of the research. The results of this study indicates the effects of operational risk on the expected efficiency of the shares and the turbulence of shares price so that with the increase of operational risk, the expected efficiency of shares has decreased and the turbulence of shares price has decreased.

I. INTRODUCTION

Investment plays a decisive role in economic growth. One of the main objectives of countries is to achieve economic growth and sustainable development. Investment in the economics literature is considered as a vessel of life for an economic system and establishing it as the most important determinant of economic growth and development has been emphasized.

Given the importance of the stock exchange in the financial market, its performance and analysis of key factors on investments in securities, theoretically and in practice can be a significant important issue for investors and capital market analysts. On the other hand, given that the most important determinant factors on investment include venture capital and investment returns and knowing the factors affecting them.

The introduction to the concepts of risk and return, and their relationship to each other, helps us to identify the most important sources of investment risk,

measures of risk and knowledge of pricing and pricing mechanisms (evaluation) of assets, which can have a significant impact on the consciousness of investors and analysts and capital market participants. In this regard, this article addressed this issue and provides a comprehensive analysis of the role of investment and the stock exchange and risk and return assets, to investigate the relationship between accounting data and financial ratios and risk and return (Tehrani and Chitsazan (2004) p.27-37).

II. STATEMENT OF PROBLEM

Due to the increasing development of our economy and economic growth, the need to invest more in different parts of the business has been increased and governments try to gain greater domestic and foreign investment in its economy. Therefore, one of the indicators of progress and development is the investment growth. Here, investing in the Stock Exchange has a special place for investors who are interested in investing in small and large scale are expected to improve efficiency (Izadi Nia et al., 2007, p. 2).

The role of accounting information in forecasting stock returns in financial management is accepted as a hypothesis and one of the purposes of accounting information is to help users to predict future cash flows input to business units and consequently the expected return on investment. Some of the variables affecting the efficiency of the Company's shares on the stock market are related financial information made through the calculation network. This information effect is very complex and to some extent unknown. Economic environment includes all the factors affecting accounting network usage and capital markets. In this environment all the components interact with each other in communication and interaction (Galileans, 2010, p. 2).

Managers, analysts, and investors turned their attention to the largest companies' reported earnings. Managers benefit from maintaining the growing trend of interest because their bonus depends on the amount of corporate profits. Financial analysts engaged in business of processing and interpretation of data and understanding the information content of earnings as an essential part of this process. Accounting is useful for

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investors to estimate the expected value and risk and return portfolio (Raei and Saeedi, 2004).

III. DEFINITION OF KEY TERMS

a) *Return on investment (ROI)*

It is the benefit and profit from an investment. Invest in real assets such as property following the allocation of resources and equipment and financial assets such as securities that the rate of return commensurate with the expected risk.

b) *Total efficiency*

Efficiency is the ratio of total income (losses) from investments in a given period to the total investment employed for the acquisition of the earnings in the same period. Investment income will be earned in two ways:

1. Change in value and the price of expended capital such as shares purchased.
2. Dividends accrued as a result of investment to the capital as stock dividends.

c) *Expected stock returns*

In this study, the Expected stock return is calculated by the formula:

Systematic method is based on the assumption that investors take measures to invest with analysis of economic conditions, industry conditions and the state investment company. (Website of management of investment culture development, Tehran Stock Exchange)

d) *Operational Risk*

In the diagram, the investment future is determined through the study of past behavior, and portfolio theory. First, efficient capital markets and market information are available to all people, and secondly, the return on investment with the same risk, are same.

IV. PAST RETURNS

a) *Future Returns*

Past performance is measured by the ratio of return on investment and the better use of the group's adjusted ROA. (ROA) This ratio is calculated as follows:

To test the relationship between operational risk and stock return rate, we are looking for works of intense risk use. We assess the severity of operational risk using the model same as the model of Chernoby which uses the Pucin model for assessing the severity of the predicted value of the company's financial operational risk events in a month. They discovered that the macro-economic variables are significant determinants of operational risk. However, with an emphasis on by examining operational risk for financial companies and non-financial companies we extend the existed literature.

V. THE STANDARD CAPITAL ASSET PRICING MODEL (CAPM)

The investments have risks primarily due to the volatility of the return on their investment. Financial economists presented different models to measure the risk. Capital market theory with the expansion of portfolio theory extracts a model for pricing risky assets.

The final output of portfolio theory is a model for pricing risky assets. The final output of this theory is called the capital asset pricing model and makes it possible to determine the rate of risky assets. The main factor leading to the development of capital market theory is the concept of a risk-free asset.

Such assets have zero correlation with other risky assets and its return ratio are risk-free (Brown and Bailey, 2000) and generally it can be said that pricing model of capital markets was developed based on the theory of capital asset.

In fact, general equilibrium theories as the capital market theory (CMT) with models of the capital market line (CML), securities output line (SML) and capital asset pricing model (CAPM) were used to assist us in understanding market behavior (Raie and Talangoru, 2004). Capital Asset Pricing Model (CAMP) and capital market theory (CMT) as equilibrium models have practical benefits in providing a measure of systemic risk and valuation of securities and are standard for performance measurement. (Farrell, 1997)

VI. RESEARCH METHOD

In this study, the relationship between operational risks with a variable yield, stock price volatility were explored and debated in the field of investment.

a) *Research Hypotheses*

1. There is no significant relationship between the stocks expected return and corporate operational risk.
2. There is no significant relationship between the stock price volatility and the operational risk of the companies.

b) *Results and Finding*

The descriptive data were analyzed by SPSS software. The statistical indicators were examined in terms of mean and variance and standard deviation, as shown in Table 1.

Table 1: Descriptive statistics of variables five years

Type of variable	Variable	N	Max	Min	Mean	SD	Variance
Independent variable	Stock expected return	130	-53.24	699.21	47.12	94.31	8895.14
	prices volatility	115	-3.81	6.55	3.28	1.62	2.62
Intermediary variables	(MVM) Natural log of stock price	130	9.97	14.24	11.92	1.02	1.05
	(BM) Book to market value	126	-29.91	2.51	-1.75	6.42	41.27
	(ROE) Percent return on investment	130	-1040.82	2829.31	45.23	270.19	73004.60
	Company's age	130	73.00	468.00	187.81	95.73	9163.33
	Financial leverage	130	0.19	3.64	0.89	0.75	0.56
Dependent variable	Operational risk (cardinal)	130	-185.29	326.70	-1.94	118.17	13965.26
	Operational risk (ordinal)	130	1.00	2.00	1.32	0.47	0.22

Stock expected return variables had the lowest and highest ratio of -53.24 and 699.21, the mean of 47.12 with a standard deviation of 94.31.

Stock price volatility had the lowest and highest ratio of -3.81 and 6.55, with a mean of 3.28 and standard deviation of 1.62.

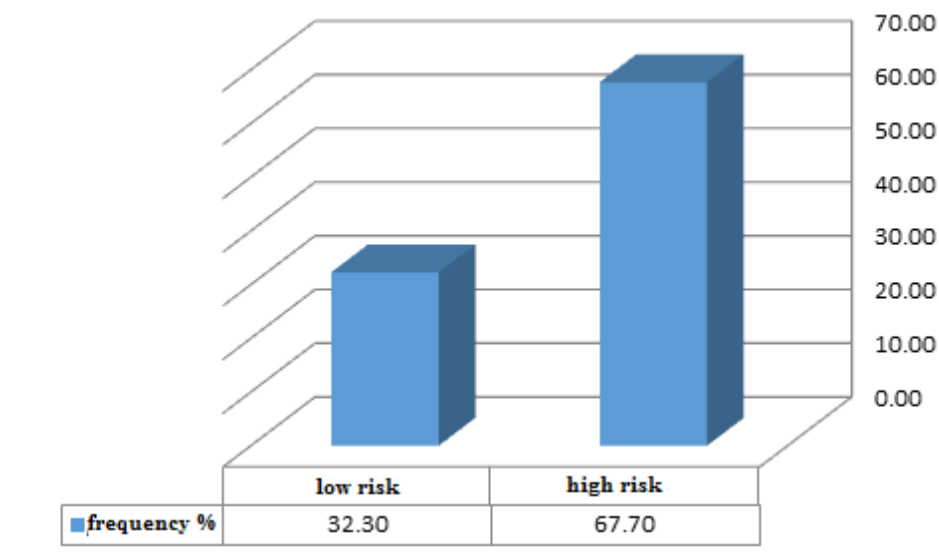
Operational risk and the dependent variable (according to ratings) had the lowest and highest ratio of -185.29 and 326.70, the mean of -1.94 and the standard deviation of 118.17.

According to the result in Table 1, the dependent variable of operational risk based is explained on corporate default risk using Zimiskji model. In this model, if the score of operational risk is less than 0.5, the default risk is high and if it is more than 0.5, the default risk is low. Therefore, based on these data, the model range has become the order of ranking.

The results of the descriptive analysis of the results of operational risk variables based on descriptive data are shown in Table 2.

Table 2: Descriptive analysis of operational risk

Operational risk	frequency	Frequency percent
high	88	67.7
low	42	32.3



c) *Results of testing the hypotheses*

i. *The first hypothesis*

Hypothesis 1: there is a significant relationship between the stock expected return and operational risk the companies.

Since the dependent variable is ordinal and has a value of 0 and 1, therefore the logistic regression was used. The results are shown in Tables 4.

Table 4 : variable frequency values

The value of the variable	N
High Risk (0)	88
Low risk (1)	42

As can be seen in the table above, 88 companies were high-risk and 42 were low risk companies.

Table 5 : reviews the risk probability.

Table 5 : low risk probability

Statistics	Beta	SD	Wald statistics	df	p-value	percent
Results	0.729-	0.190	14.702	1	0.000	0.482

As can be seen in Table 5, the probability of lower risk is 48 percent.

Table 6 : shows the Chi-square test results to assess the model fitness.

Table 6 : the Chi-square test (the model fitness)

	Chi-square	df	Sig.
Step	104.986	6	0.000
Block	104.986	6	0.000
Model	104.986	6	0.000

As can be seen in the table above, the significance level of less than 0.05 indicates the impact of the independent variables on the dependent variable (operational risk) and represents a good fitness for the model.

Nagelkerke R Square coefficient is shown in Table 7 and is equal to the linear regression coefficient of 78.9 percent. That is, 82.9% of the changes in the dependent variable (operational risk) are determined by the independent variables.

Table 7 : Logistic Regression

Stage	Log likelihood 2-	Cox & Snell R Square	Nagelkerke R Square
first	53.994	0.565	0.789

According to the results of Table 7, the first hypothesis is accepted and it can be said that there is a significant relationship between operational risk and stock expected return.

Table 8 : shows the independent variables in the model and parent test results.

Table 8 : the results of the impact of the independent variables

Variable- statistics	B	SD	Wald	df	Sig
stock expected return	-.005	.004	1.289	1	.256
Natural log of stock price	-2.876	.976	8.678	1	.003
Book to market value	-.178	.521	.116	1	.733
(ROE)	.001	.001	1.075	1	.300
Companies age	.001	.003	.038	1	.845
Financial leverage	5.145	1.660	9.600	1	.002
Intercept	28.461	10.921	6.792	1	.009

According to the parent statistics and significance level, the natural logarithm of the stock price and financial leverage had the greatest impact on operational risk at the level 5 percent,

The coefficients of the independent variables, the negative coefficient of stock expected return, the natural logarithm of the stock price, the book value to the equity suggested that firms with higher operational

risk had lower stocks expected return, the natural logarithm of stock prices and the ratio of book value to market value of equity. However, they have higher financial leverage and return on investment.

Hypothesis 2: there is a significant relationship between the price fluctuations and operational risk the companies.

Since the dependent variable is ordinal and has a value of 0 and 1, therefore the logistic regression was used. The results are shown in Tables 14.

d) *The Second hypothesis*

Table 14 : variable frequency values

The value of the variable	N
High Risk (0)	88
Low risk (1)	42

As can be seen in the table above, 88 companies were high-risk and 42 were low risk companies.

Table 15 : reviews the risk probability.

<i>Table 15 :</i> low risk probability						
Statistics	Beta	SD	Wald statistics	df	p-value	percent
Results	0.729-	0.190	14.702	1	0.000	0.482

As can be seen in Table 10, the probability of lower risk is 48.2 percent.

Table 16 : shows the Chi-square test results to assess the model fitness.

<i>Table 16 :</i> the Chi-square test (the model fitness)			
	Chi-square	df	Sig.
Step	70.665	6	0.000
Block	70.665	6	0.000
Model	70.665	6	0.000

As can be seen in the table above, the significance level of less than 0.05 indicates the impact of the independent variables on the dependent variable (operational risk) and represents a good fitness for the model.

Nagelkerke R Square coefficient is shown in Table 17 and is equal to the linear regression coefficient of 78.9 percent. That is, 70.3% of the changes in the dependent variable (operational risk) are determined by the independent variables.

Table 17 : Logistic Regression

Stage	Log likelihood 2-	Cox & Snell R Square	Nagelkerke R Square
First	52.499	0.471	0.703

According to the results of Table 17, the first hypothesis is accepted and it can be said that there is a significant relationship between operational risk and cash assets.

Table 18 : shows the independent variables in the model and parent test results.

<i>Table 18 :</i> the results of the impact of the independent variables					
Variable- statistics	B	SD	Wald	df	Sig
stock expected return	-.005	.004	1.289	1	.256
Natural log of stock price	-2.876	.976	8.678	1	.003
Book to market value	-.178	.521	.116	1	.733
(ROE)	.001	.001	1.075	1	.300
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According to the parent statistics and significance level, the natural logarithm of the stock price and financial leverage had the greatest impact on operational risk at the level 5 percent,

The coefficients of the independent variables, the negative coefficient of stock expected return, the natural logarithm of the stock price, the book value to the equity suggested that firms with higher operational risk had lower stocks expected return, the natural logarithm of stock prices and the ratio of book value to market value of equity. However, they have higher financial leverage and return on investment.

VII. CONCLUSION

In this part of the research findings are discussed compared to the findings of similar studies. The first hypothesis: One of the basic criteria to decide on the capital market is return on equity. The return on equity is itself has informational content and most investors use it in financial analysis and predictions. The expected return on equity is a measure of investor sentiment to invest in the capital market and the effect of this variable is important on operational risk and the default risk of the company.

The results indicated the relationship between the expected return on equity and operational risk based on the default risk. Therefore, the companies with high operational risk have low stock expected returns. In fact, we can say that investors expected low return from these companies. Default risk reflects the company's lack of liquidity. In similar studies, such as the research by Basu (1975), have shown that the P / E ratio and stock returns are positively correlated and companies with higher P / E ratios work more efficiently. Kinny and Mian in their study (1995) showed that the low quality of earnings increases information asymmetry and thus reduces the liquidity of shares. Bahrami (2010) showed that changes in the capital structure had a significant negative correlation with changes in the liquidity of shares. The overall result of this hypothesis with the results of similar studies suggested that companies with high default risk had low earnings quality and liquidity which contributes to a reduction in the expected return on the stock of these companies.

The Second hypothesis

One of the most important factors that determine the price of each option is the stock price volatility. With regard to other constant factors, the greater the probability of the stock price volatility, the prices option will be higher. Conversely, if the stock price volatility is lower, the price option will be lower and the price will be closer to the market line price (Price option).

The results reflected the fact that companies with high operational risk have low stock prices volatility which is because of the lack of incentive for investors to invest in shares of the Company. And so this leads to the low incentive for buying and selling shares in the capital market which is an important sign of a company's stock trading halt. The study by Doust

Ashena (2005) showed that turnover of stock and stock return volatility is increased by applying a trading halt and the price discovery process after the trading halt happens on the stock exchange.

Kim et al (2008) studied the limit of the temporary halt in trading compared to the stock prices of Spanish Exchange and concluded that the temporary suspension of trading reduces the sales price gap and increases the orders at limit price. Generally, based on the result of the testing this hypothesis, it can be stated that companies with high operational risk and consequently high default risk could reach lower volatility by creating a trade-off in stock market shares which is close to the real price.

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