Systematic Risk Determinants: A Case of Manufacturing Sector of Pakistan (2009-2014)

Sajid Iqbal[a] , Dr. Nadeem Iqbal[b] , Nabeela Khan[c]

[a] Faculty of Management Sciences Indus International Institute DG-Khan
[b] Faculty of Management Sciences Ghazi University DG-Khan
[c] Faculty of Management Sciences Indus International Institute DG-Khan

ABSTRACT

The current study aims to investigate the antecedents of systematic risk. Liquidity, leverage, operating efficiency, profitability and firm size are used as determinants of systematic risk. For systematic risk proxy of beta is used to measure it. While, descriptive statistics, correlational analysis and common effect model is used to identify the nature of relationship among determinants of systematic risk. Thus, all hypotheses are accepted and one hypothesis is rejected. Hence, study revealed its results with respect to historic investigations.

Key Words: Systematic Risk, Beta, Determinants, Correlation, Common effect model

INTRODUCTION

Risk is the vital phenomena in standard finance that pinches decisions towards investment and on the bases of standard finance argument as more the level of risk raises the margin of return also rise. And it is claimed by utility theory that individuals feels glade to be risky oriented for the purpose to enjoy leisure of excessive returns.

Thus, there are two natures of risks systematic and unsystematic risk. Unsystematic is economic oriented risk and non-diversifiable. While, systematic is company oriented risk and is reduced by managing firm specific factors. In past, various studies are done on systematic risk (Lee and Jang, 2006: Gu and Kim 2002) but in Pakistani context it is less investigated. The only one investigation is found in this concern by (Iqbal and Shah, 2009).

Such determinants of systematic risk was identified by (Logue and Merville, 1972) and later investigated by (Hong and Sarkar, 2007). The determinants of systematic risk consist of profitability, leverage, operating efficiency, liquidity and firm size mainly. Profitability is the net profit earned by the company, leverage is the amount of targeted support capital of investment in the firm as average. Moreover, liquidity is pronounced as amount of selling off the corporate assets and the firm size pronounced as size of the company that is acquired or measured by using natural log of net sales of the company.

By considering the past investigations and their results the current study aimed to investigate the determinants of systematic risk in Pakistani context specifically. Moreover, the study aimed to investigate the manufacturing sector of Pakistan and to identify the nature of decisions associated with companies by minor or major change because of systematic risk. Moreover, the study will reveal key implications for theorists and practitioners.

The scheme of the study explains the literature and objective of study in part one, clarifies methodology of study in part two, elaborates and concludes the results in part three. Thus, part four explains the findings and conclusion of the study.

RESEARCH METHODOLOGY

The study is exploratory in nature that we want to explain nature of systematic risk determinants in Pakistani context specifically. In current study population of the study consists of 499 listed companies at Karachi stock exchange Pakistan. And the sample of the study consists of on 114 companies of manufacturing sector of Pakistan.

The data is acquired from yahoo finance, business recorder database and state banks of Pakistan data base. Moreover, data is used from financial statements of the companies including balance sheet statements of companies with the data range of six years i-e (2009-2014).

We use connivance sampling technique and judgmental sampling technique to acquire data easily, to observe the nature of data and targeted results. In current study as research instruments stepwise regression method is used that each variable will be being added in the model on the bases of its estimation power.

So the hypothesis of the study suggested by historic investigations are given as below,

H1: There is negative relationship of liquidity with systematic risk.

H2: There is positive relationship between leverage and systematic risk.

H3: There is positive relationship between operational efficiency and systematic risk.

H4: There is positive relationship between profitability and systematic risk.

H5: There is negative relationship between firm size and systematic risk.

The systematic risk is calculated through beta and beta is by regressing averaged monthly returns. Thus, the beta calculation model is,

$$beta = Returns = Ln\left[\frac{Pt}{Pt-1}\right]$$

Moreover, measurements models of determinants are as follows,

$$1).\, Liquidity\ Ratio = \left[\frac{Current\ Assets - Inventory}{Current\ Liabalities}\right]$$

$$2).\, Profitabality = \left[\frac{Earnings\ Before\ Taxes}{Total\ Assets}\right]$$

$$3).\, Firm\ Size = Ln\ (Total\ Sales)$$

$$4).\, Levarege\ Ratio = \left[\frac{Short\ Term\ Debt + Long\ Term\ Debt}{Equity}\right]$$

$$5).\, Operating\ Efficiency = \left[\frac{Total\ Sales}{Average\ Total\ Assets}\right]$$

The above mentioned hypothesis, variables and measurement models the made a sensed ground of study model for investigation that consists of above variables with their exponents and factor loadings. The schematic model of study is as follows,

$$Y = \propto\, + \Delta 1\,(LR) + \Delta 2\,(Prof) + \Delta 3\,(FS) + \Delta 4\,(LR) + \Delta 5\,(OE) + e \qquad (01)$$

The above equation (01) explains the study investigation statistical model where Y represents the dependent variable as systematic risk – beta. And LR is pronounced as liquidity ratio, Prof is pronounced as profitability, FS is pronounced as firm size, LR is pronounced as leverage ratio and OE is mentioned as operating efficiency respectively. Thus, more specifically the simplified model equation is,

$$b = \propto\, + \Delta 1\,(Liquidity\ Ratio) + \Delta 2\,(Profitabality) + \Delta 3\,(Firm\ Size) + \Delta 4\,(Leverage\ Ratio) + \Delta 5\,(Operating\ Efficiency) + e \qquad (02)$$

RESULTS & ANYALISES

Table 01
Sample Sector Representation

Sr. No	Sector Name	Sector Percentage
1	Automobiles Sector	23%
2	Food & Beverage Sector	47%
3	Chemical Sector	18%
4	Electronics & Electric Sector	12%
5	Pharmacy Sector	12%
6	Cement Sector	08%
	Total Percentage	100%

Table 02
Descriptive Statistics

	beta	Liquidity	Leverage	Op.Efficieicny	Profitability	Firm Size
Mean	0.634	1.123	0.683	1.239	0.072	6.337
S. Dev	3.376	2.541	0.676	0.749	0.37	1.64
Min	-13.86	-0.09	0.061	0.001	-0.281	-36.44
Max	13.74	19.78	3.533	4.017	3.89	09
N	114	114	114	114	114	114

The table 02 explains the descriptive percentages of the study. the study variables are systematic risk (beta), liquidity, leverage, operating efficiency, profitability and firm as. Excluding beta all other variables are antecedents of the study variable systematic risk. Thus the mean value of beta is 0.634, liquidity 1.123, leverage 0.683, operating efficiency 1.239, profitability 0.072 and firm size is 6.337. the standard deviation value of beta is 3.376, liquidity 2.541, leverage 0.676, operating efficiency 0.001, profitability 0.37 and firm size 1.64. While, the total sample size is 114 in current study.

Table 03
Correlation Analyses

	1	2	3	4	5	6
beta	1					
Liquidity	-0.225**	1				
Leverage	-0.0021**	-0.0361**	1			
Op.Efficieicny	-0.019**	-0.038**	-0.026**	1		
Profitability	0.21**	0.074**	0.122**	0.167**	1	
Firm Size	0.078**	-0.123**	0.130**	0.144**	0.176**	1

*. Significance at the level of 0.05, ** Significance at the level of 0.01
*** Significance at the level of 0.001

The table 03 explains the correlation analysis of the study that shows six variables of the study. The systematic risk (beta) is correlated with liquidity with 01. Liquidity is correlated with leverage as -0.225** (p<0.001). Leverage is correlated with operating efficiency with -0.0021** (p<0.001) and with profitability -0.0361** (p<0.001). Operating efficiency is correlated with beta -0.019**, with liquidity -0.038** (p<0.001) and with leverage -0.026** (p<0.001). Profitability is correlated with beta at 0.21** (p<0.001), with liquidity -0.074** (p<0.001), with leverage at 0.122** (p<0.001) and with operating efficiency at 0.1667** (p<0.001). And Firm size is correlated with beta at 0.078** (p<0.001), with liquidity at -0.123** (p<0.001), with leverage at 0.130** (p<0.001), with operating efficiency at 0.144** (p<0.001) and with profitability at 0.176** (p<0.001). Moreover, the model has complex nature and bulk of observations that leads multicollinierity in the data. But the study found no multicolinierity in the study correlation.

Table 04
Model Summery

Model	R	R. Square	Adjusted R Square	Durbin Watson
1	.772	.763	.776	2.421

The table 03 clarifies the values of model summery where value of R is 0.772, Value of R^2 is 0.763 and adjusted r-square value is 0.776 that is less than 11% and Durbin Watson value is 2.421 also less than 2.51. Thus these r-square and durbin Watson values shown model fit for the study.

Table 05
Common Effect Model

Variable Name	Coefficient	Standard Error	t-Stats
C	0.865	0.6734	1.12
Liquidity	-0.3077	0.0429	-6.33**
Leverage	-0.4367	0.2406	-1.41
Op.Efficieicny	0.3377	0.1166	-2.44**
Profitability	1.7686	0.2323	3.77**
Firm Size	-0.3444	0.1429	0.42**
F-stats	2.004**	Observations	1889

*. Significance at the level of 0.05, ** Significance at the level of 0.01
*** Significance at the level of 0.001

The table 05 explains the results of significance of variables and hypothesis provision. The hypothesis one was that **"There is negative relationship of liquidity with systematic risk"** and the results shown in above table that there is -0.3077 inverse correlation of liquidity with systematic risk (beta) and the t-statistics of liquidity is -6.33** and the hypothesis is accepted.

The second hypothesis of study is that *"There is positive relationship between leverage and systematic risk"* and the leverage has shown negative correlation with systematic risk (beta) with the value of -0.4367. Thus, the hypothesis is rejected.

The third hypothesis is **"There is positive relationship between operational efficiency and systematic risk"** and the results shown the hypothesis as accepted with the value of 0.3377.

The fourth hypothesis of the study is **"There is positive relationship between profitability and systematic risk"** and the results shown in the table 05 as hypothesis accepted with the value of 1.7686.

The fifth hypothesis of the study is that **"There is negative relationship between firm size and systematic risk** and the results shown hypothesis as accepted with the value of -0.3444. Moreover, over all f-stats of the model is 2.004** and the sample observations consists of 1889 items. Hence, the study revealed its findings in sequence with historic investigations except relationship of leverage with systematic risk because its hypothesis is rejected in current investigation.

CONCLUSION

The study investigated the systematic risk antecedents and systematic risk is measured by the proxy of beta. The measurements model of beta is already mentioned in research methodology. The results had shown all the hypothesis of the study significant with systematic risk measurement proxy i-e beta. Only one hypothesis is rejected in current investigation that leverage has not significant correlation with systematic risk. But study has shown significant relationship of all other hypothesis with systematic risk as like historic investigations. The future research could be conducted on extended sample size and on financial sector of Pakistan. Moreover, comparative study can be done on such model as well.

REFFRANCES

Gu, Z., & Kim, H. (1998). Casino firms' risk features and their beta determinants. *Progress in Tourism and Hospitality Research, 4, 357-365.*

Hong, G. and Sarkar, S. (2007). Equity systematic risk (Beta) and its determinants. *Contemporary Accounting research. Vol.24. No.2, pp.423-466.*

Logue, L., & Merville, J. (1972). Financial policy and market expectations. *Financial Management, 1(3), 37-44.*

M. J. Iqbal and S. Z. A. Shah, (2009). Determinants of Systematic risk. *The journal of Commerce. Vol. 04 No. 01*

The IISTE is a pioneer in the Open-Access hosting service and academic event management. The aim of the firm is Accelerating Global Knowledge Sharing.

More information about the firm can be found on the homepage:
http://www.iiste.org

CALL FOR JOURNAL PAPERS

There are more than 30 peer-reviewed academic journals hosted under the hosting platform.

Prospective authors of journals can find the submission instruction on the following page: http://www.iiste.org/journals/ All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Paper version of the journals is also available upon request of readers and authors.

MORE RESOURCES

Book publication information: http://www.iiste.org/book/

Academic conference: http://www.iiste.org/conference/upcoming-conferences-call-for-paper/

IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digtial Library , NewJour, Google Scholar