Empirical Evidences of Market Risk Measurement in an Indian Firm

Dr.L. Venkatesan, Assistant Professor in Commerce, C.Kandaswami Naidu College for Men, Anna Nagar East, Chennai.
E-mail: lvenkatprema@gmail.com

I. Introduction

In the present globalized era, risk management plays a significant role. It exists when the result of uncertainty in the happenings and not happening of an event. Managing the risk in the context of current challenges is a complex matter and a function of appropriate policies, procedures and culture. The process of identifying, assessment, prioritization of risks and prudent application of resources to control and minimize the risk is the probability and/or impact of unexpected events. In general terms, high the risk, higher the rewards, sometimes higher the risk higher is loss (this is uncertainty managing).

Managing the risk is the process of setting of policies, processes and instruments for measuring, monitoring and controlling the existing risk in organisations.

The general process involved in management of risk involves identification of risk by each functional area through corporate policy, categories of risk by risk profile, anticipating the direction the risk expected to take within the next twelve months, establish and implement system to monitor risk and procedure to control the risk identified.

Major types of risk involved in the industries are market risk, liquidity risk, credit risk, operational risk, interest rate risk, foreign exchange risk.

The researcher for the purpose of this study, selected market risk that is the most volatile of all risks and most dreaded risk compared to other risk.

This risk arises from the possibility of losses resulting from unfavorable market movements. This study is based on secondary data. Data were collected from the annual reports of XYZ company Ltd., (name changed) for a period of five years 2012-13 to 2016-17. During the span of the five years, the researcher calculated market risk on application of ratio analysis; the results derived from application of ratios were clustered and later compared with the benchmark values and analyzed the level of existence of market risk in the XYZ Co., Ltd., for the study period.

II. Review of literature

Munawir (2010) in his research stated that the financial performance is one of the basic financial condition assessments for analyzing the company's financial ratios.

Amarjit Gill (2010) wanted to finding regarding the determinants of dividend payout ratios by examining the same for the American service and manufacturing firms and concluded that for firms in the services industry, the dividend payout ratio is the function of profit margin, sales growth, and debt-to-equity ratio. For manufacturing firms we find that dividend payout ratio is the function of profit margin, tax, and market-to-book ratio.

Muhammad Anhar (2015) analyzed in his study through application of ratios namely earning per share, price-earnings ratio, book value, price-book value ratio, debt-equity ratio, return on assets, return on equity and net profit margin are considered for measuring the performance of the company. Based on the results of the ratios, the researcher further applied exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA) and goodness of fit test analysis.

Koh way han (2017) in the investigation of internal and external factors influencing the performance of the company, on application of regression analysis and correlation concluded that return on asset measures the market risk with the highest impact to the company's performance.

III. Objectives of the Study

The main aim of this research is to measure the prevailing market risk in XYZ Co. Ltd.,. The study gives an innovative methodology to measure the market risk.

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IV. Research Methodology

The researcher uses secondary data. The data is collected from the annual reports available in the website from the period 2012-2013 to 2016-2017.

Tools Used to Measure Risk

1. Ratio Analysis is exploited to compare the financial position of XYZ Co., Ltd.,
2. The K-means cluster analysis is used to segment the years with respect to different financial ratios.

Scope and Limitations of the Study

1. The study is restricted to only one company namely, XYZ Co., Ltd.,
2. The study is based only on market risk measures.
3. The secondary data was taken only for the period of 5 years namely 2012-13 to 2016-17.
4. The study used the secondary data for analysis and interpretations.

V. Analysis and Discussion

The study uses financial ratio analysis and cluster analysis to exactly measure the existence of market risk prevailing in XYZ co. Ltd., The financial ratios are considered as the indicator for the existence of risk. The application of cluster analysis is able to derive highest, moderate and low ratio values for the corresponding years as shown in the tables below.

Table 1: List of Ratios Used For Measuring Market Risk in Companies

Sl. No.	**Ratios**	**Formulas**
1	Earnings per share	Net Income or Total earnings / outstanding shares
2	Market Ratio	Market price per share / Book value per share $\text{Book Value Per Share} = \frac{\text{Total Shareholder Equity} - \text{Preferred Equity}}{\text{Total Outstanding Shares}}$
3	Dividend payout ratio	Yearly dividend per share / EPS Dividends /Net income
4	Price per earnings ratio	Market price per share / EPS
5	Net profit margin ratio	Net profit before taxes / net sales *100
6	Debt to equity ratio	Total liabilities / shareholders' equity
7	Advance to asset ratio	Total advances /Total asset
8	Total investment to total asset ratio	Total investments /Total asset
9	Business/Revenue/sales per employee ratio	Deposit + advance / number of employees
10	Net profit to total asset ratio	Net profit /total asset
11	ROA	Net income before taxes / total asset
12	ROE	Net income / average shareholders' equity
13.	Operating profit margin ratio	Operating income/net sales
14.	Gross profit ratio	GP / net sales

The research encounters 14 financial ratios for a span of five years from 2012-2013 to 2016-17 for XYZ company Ltd., on application of K-means Cluster Analysis for identifying 14 ratios discriminating themselves into three groups for the span of 5 years. The financial ratios are identified as strong, moderate, and weak, based on its values.

For the study only the strong and weak is taken as the moderate values are ignored since they are between two extremities of strong and weak ratios, suitable inference cannot be derived from measurement of risk. The study is also based on the identification of market risk prevailing in the company taken for the study.

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They are compared with the accepted benchmark averages. The ratios which satisfy the benchmark values are ignored and the ratios deviating from the benchmark values are taken for further analysis. The following tables explain the rules applicable to the 14 ratios.

Table 2:Final Cluster Centers			
	Cluster		
	1	2	3
EPS	(L)3.97	(H)11.03	(M)7.32
Market Ratio	(L)2.26	(M)7.84	(H)7.93
Dividend payout ratio	(H)37.30	(L)22.78	(M)25.96
Debt to Equity Ratio	(L)1.54	(M)1.66	(H)1.80
Advance to asset ratio	(M)10.36	(L)12.68	(H)16.87
Total investment to total asset ratio	(H)26.49	(M)24.89	(L)21.99
Business per employee	(L)4620.00	(H)5253.50	(M)5048.00
Operating performance ratio	(L)1.74	(H)2.44	(M)2.09
ROA	(L)5.53	(H)8.51	(M)7.55
ROE	(L)13.98	(H)22.60	(M)21.14
Price per share Ratio	(L)15.73	(M)32.68	(H)37.49
Operating profit margin	(L)5.51	(H)6.52	(M)5.71
Net profit margin	(L)2.30	(H)3.67	(M)3.29
Gross profit ratio	(L)3.74	(H)4.92	(M)4.31

The 14 ratio values are subject to cluster classification to measure the very strong (S) and very weak (W) ratio values for the span of 5 years as the moderate value (M) does not have significance whereas, the strong and weak ratios are considered for the study.

Table 3:Number of Cases In Each Cluster			
Cluster	1	2years	2012-13 & 2013-2014 (As per SPSS Statement)
	2	2 years	2015-2016, 2016-2017
	3	1 year	2014-15
Valid		5 years	

From the above table, it is found that the five years taken for the study 2012-2013 to 2016-17 is segregated into three different years namely, the first cluster consists of two years 2012-13, 2013-14. The second cluster consists of two years namely, 2015-2016, 2016-17, and the third cluster consists of one year's namely, 2014-15.

Table 4: Strong and Weak Ratios for the First Cluster for the Period 2012-13 and 2013-14

Sl.No.	Ratios	Actual ratio	Accepted benchmark	Result	Indications
1.	Strong ratio: Dividend payout ratio	37.30	35.23	Increase in 2.07%	Lesser is favorable.
2.	Strong Ratio: Total Investment to total asset ratio	26.49	24.92	Benchmark satisfied	Higher is favorable
3.	Weak Ratio: EPS	3.97	7.09	Less 3.12%	Higher is favorable
4.	Weak Ratio: Market ratio	2.26	4.9	Less 2.64%	Higher is favorable
5.	Weak Ratio: Debt to equity ratio	1.54	1.66	Benchmark satisfied	Not be above 2 or less than the benchmark is less risky.
6.	Weak Ratio: Business per employee	4620	4912	Benchmark satisfied	Lesser is favorable
7.	Weak Ratio: Operating performance	1.74	2.15	Less 0.41%	Higher is favorable
8.	Weak Ratio: ROA	5.53	6.22	Less 0.69%	Higher is favorable
9.	Weak Ratio: ROE	13.98	16.18	Less 2.2%	Higher is favorable
10.	Weak Ratio: Price per share	15.73	26.02	Less 10.29%	Higher is favorable
11.	Weak Ratio: Operating profit margin	5.51	6.13	Less 0.62%	Higher is favorable
12.	Weak Ratio: Net profit margin	2.30	2.61	Less 0.31%	Higher is favourable
13.	Weak Ratio: Gross profit margin	3.74	4.2	Less 0.46%	Higher is favourable

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In the first cluster, among the 14 ratios those that satisfy the norms of the benchmarks are ignored and only those ratios which are deviated (i.e., highly strong ratios and highly weak ratios) from the benchmark are taken for further analysis. The following is the strong and weak ratios taken for the study namely the strong ratio consists of dividend payout ratio and weak ratio consists of earning per share ratio, market ratio, operating profit ratio, return on Assets, ratio of Equity, price per share ratio, operating performance ratio, net profit ratio, gross profit ratio.

Table 5: Strong and Weak Ratios for the Second Cluster for the Period 2015-16 and 2016-17

Sl.No.	Ratios	Actual ratio	Accepted benchmark	Indications
1.	Strong ratio: EPS	11.03	7.09	Higher
2.	Strong Ratio: Business per employee	5253	4912	Lesser
3.	Strong Ratio: Operating performance ratio	2.44	2.15	Higher
4.	Strong Ratio:ROA	8.51	6.22	Higher
5.	Strong Ratio: ROE	22.60	16.18	Higher
8.	Strong Ratio: Net profit margin	3.67	2.61	Higher
9.	Strong Ratio: Gross profit ratio	4.92	4.2	Higher
10.	Weak Ratio: Dividend payout ratio	22.78	35.23	Lesser
11.	Weak Ratio: Advance to asset ratio	12.68	12.47	Higher

In the second cluster, among the 14 ratios those that satisfy the norms of the benchmarks are ignored and only those ratios which are more deviated (i.e., highly strong ratios and highly weak ratios) from the benchmark are taken for further analysis. The following is the strong and weak ratios taken for the study namely the strong ratio consists business per employee.

Table 6: Strong and Weak Ratios for the Third Cluster for the Period 2014-15

Sl.No.	Ratios	Actual ratio	Accepted benchmark	Indications
1.	Strong ratio : Market ratio	7.93	4.9	Higher
2.	Strong ratio: Debt to equity ratio	1.80	1.66	Lesser
3.	Strong ratio: Advance to asset ratio	16.87	12.47	Higher
4.	Strong ratio: Price per share ratio	37.49	26.02	Higher
5.	Weak ratio: Total investment to total asset ratio	21.99	24.92	Higher

In the third cluster, among the 14 ratios those that satisfy the norms of the benchmarks are ignored and only those ratios which are more deviated (i.e., highly strong ratios and highly weak ratios) from the benchmark are taken for further analysis. The following is the strong and weak ratios taken for the study namely the strong ratio consists debt to equity ratio

Table 7: Consolidated Statement of Cluster 1, Cluster 2 And Cluster 3 Ratios That DDO Not Satisfy the Benchmark Values

Cluster 1 (2012-13, 2013-14)	Cluster 2 (2015-16, 2016-17)	Cluster 3 (2014-15)
Strong ratio: Dividend payout ratio	Strong ratio: Business per employee	Strong ratio: Debt to equity ratio
Weak Ratio: EPS		
Weak Ratio: Market ratio		
Weak Ratio: Operating performance		
Weak Ratio: ROA		
Weak Ratio: ROE		
Weak Ratio: Price per share		
Weak Ratio: Operating profit margin		
Weak Ratio: Net profit margin		
Weak Ratio: Gross profit margin		

From the above table, the researcher analyzed that the above mentioned ratios in cluster 1, 2, and 3 do not satisfy the bench mark values. The study identified this ratio as the major cause for the existing market risk sample company taken for the study. The study found that during the year 2012-13, 2013-14 the company was affected by market risk as the following ratios dividend payout ratio, EPS, market ratio, operating performance ratio, ROA, ROE, price per share, operating profit margin, net profit margin and gross profit margin did not satisfy the bench mark values, whereas advance to total asset ratio satisfied the bench mark values. The results of the cluster1 prove the company faced severe market risk during the year 2012-13 and 2013-14. Similarly, in cluster2, for the year 2015-16 and 2016-17, among the overall 14 ratios, the study found that only one ratio business per employee ratio was the major cause for the market risk during the year. The study shows that remaining 13 ratios were risk free

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ratios. The company has developed some better strategies to reduce the market risk during these years 2015-16 and 201617. Further in the cluster 3, during the period 2014-15, after scrutinizing the 14 ratio clusters, the study found that only one ratio namely debt to equity ratio was the cause for the existing market risk during this period. Therefore it is concluded that that company can maintain the same strategy followed during the year 2014-15, 2015-16 and 2016-17 and focus majority on these ratios namely business per employee ratio and debt to equity ratio majorly and maintain the rest 12 ratios is the same strategy developed by the company.

VI. Findings and Conclusion of the Study

During the year 2012-13 and 2013-14, the company has been severe to market risk. It was during this year the dividend payout ratio showed an excess in payment of dividend. The shareholders were allotted more dividends during these periods. And the rest of the ratios showed a downfall trend.

EPS during this year earned less than 3.12%, this shows the net income of the company earned is reduced, thereby the company has to be cautious while sanctioning its dividend. It is only when the company EPS is higher than the benchmark values, the company can allot sufficient dividend to its shareholders. They are inter-related with each other.

Market ratio also showed a decrease in the values by 2.64%, the market price per share earnings is less compared to the book value of the shares.

Operating performance showed a slight decrease in the values to 0.41%, ROA decreased to 0.41%, net income before tax is less compared to the total asset. ROE also showed a decrease in value to 2.2%, here also the net income in less compared to the shareholders equity values, price per share earned showed more difference of 10.29%,the market price earnings per share is less than the EPS values, operating profit margin decreased to 0.62% as operating income earned is less than the net sales, net profit margin decreased to 0.31% as the net profit earned before tax is less than the total sales, gross profit margin to 0.46% as it also proves the gross profit earned is less than the net sales.

During the year 2015-16 and 16-17, the company has appointed more employees than required, analysis of this ratio showed that the number of employees were more than the deposits and advances received by the company. Similarly, during the year 2014-15, the total liabilities of the company was more than the shares-holders equity resulting to an increase in debt equity ratio.

Suggestion

The Risk managers have to alert the companies when there is a fluctuation in the market ratios.

All the ratios taken for the study are from reputed journals and books. Focusing on these ratios constantly by the companies can safely move further.

The company needs to appoint an efficient risk manager to give alert signs on the day to day transactions for the company.

The risk managers have to maintain smooth relationship with different departments of the company to study them in brief.

Based on the reports produced by the risk managers, the marketing department heads need to interact with their sales teams and develop sales strategies for increasing the sales turnover that would in turn increase the gross profit, net profit and operating profit ratios.

Proper training sessions are required for the sales teams, who solely are important for the increase in the profit margin of the company compared to all other departments.

Scope for Further Research

The managers, investors, consultants, share analyst, top level managers of the companies need focus on these fourteen ratios taken for the study to measure the company's marketing performance.

References

[1] Marrison, C. Fundamentals of Risk measurement, 2002.
[2] Battacharya, H. Total management By Ratios"www.sagepublications.com, 2007.

ISSN 1943-023X
Received: 30 October 2018/Accepted: 27 November 2018

[3] Anhar, M. Indicators of Company Performance, Investors Expectation and Investment Risk in Predicting Stock Return at Indonesia Stock Exchange. *Indicators*, 2015.

[4] Tugas, F.C. A Comparative Analysis of the Financial Ratios of Listed Firms Belonging to the Education Subsector in the Philippines for the Years 2009-2011. *International Journal of Business and Social Science* **3** (21) (2012) 1-18.

[5] Koh, W.H. Study of Relationship of Company's Performance with Internal and External Factors on Maxis Berhad, 2017.

[6] Gill, A., Biger, N. and Tibrewala, R. Determinants of dividend payout ratios: evidence from United States. *The Open Business Journal* **3** (1) (2010) 8-14.

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