I J A B E R, Vol. 14, No. 6, (2016): 4345-4367

THE BEHAVIOUR OF MACRO AND MICRO ECONOMIC VARIABLES AND THE IMPACT ON SYSTEMATIC RISK OF NON-BANKING FINANCE COMPANIES

M. Appala Raju*

Abstract: The reforms initiated by the Indian Government during 1990 have brought in drastic changes in the financial sector functioning so as to make competitive with financial markets worldwide. The Indian financial Sector has expanded and acquired greater depth to get itself competitive with new participants in the market. The new liberal business policies introduced by the government due to financial reforms have brought in fundamental changes in the structure and functioning of Banking and Non-Banking Institutions, their business models and the products and services offered by them. Global economic developments have altered the macro economic conditions of the respective nations and make the nations and their economies vulnerable to economic shocks in the form of systematic risk associated with their business activities. Macro-economic factors at broader level and micro economic factors at the firm level have had effect on the risk level, assessing risk, measuring and managing risk has become paramount for banks and others Non-Banking financial Institutions alike. Individual influence of factors on the systematic risk as there is weak relationship with Beta but combined effect of factors is very positive on the systematic risk of the companies.

Keywords: *Systematic Risk; Inflation; Macro Economic Factors; Government Deficit: financial Sector; Leverage; systemic.*

INTRODUCTION

Macroeconomic performance is linked with financial stability of the entire financial system. Economic growth and development depends on the strong and stable financial system. Economic and financial systems are judged as stable and strong when these are able to absorb and withstand the financial shocks, which occur in the course of functioning of the systems. Due to openness of different countries economic system and integration of the financial markets , the stability if the financial system depends and influenced not only by domestic economic factors but international factors as well. The factors external to the system that influence the functioning of these financial systems are outside the control termed as system

* Professor, Department of Management Studies, Christ University. *E-mail: rajumar25@rediffmail.com* Mobile: 7022384377, Office: 91 80 40129427, Fax : 91 80 4012 9000

risk. If the financial sector is unable to withstand the external shocks, it may affect the systemic stability and possibility of the system facing the system risk.

After the liberalization of Indian economy in 1991, a number of radical developments have taken place in the banking sector which has a significant impact on the functioning and development of the banking system. Many of the developments are in the context and consequence of financial sector reforms – like monetary and credit policy, prudential guidelines, development of markets like Government Securities Market. With the opening of the economy in general and banking sector in particular , there was an onslaught of competition in the form of entry of foreign banks, new banks under private sector, there is metamorphic change in the functioning of Banks. To get wider acceptance both at national and international levels prudential norms and guidelines have been made to introduce greater transparency in the functioning of the banking system.

Diversification has taken place in the financial sector with the participation of number of players outside the core banking sector. A central feature of this diversification is the emergence of Non-Banking Finance companies (NBFCs), consisting of finance companies, leasing companies, merchant banks and trust and investment companies. These institutions are also categorized as financial intermediaries subject to prudential regulatory norms in India. Though the functioning of NBFCs by and large remain financial sound, but the recent global financial crises brought to the fore, the role of such financial institutions in the financial system and the contribution to the systemic risk and stability.

With the open economic system and integration of financial markets, there has been ample scope created for new avenues of business which were hitherto unavailable to the banking sector. To meet the financial needs of varied forms of business and to facilitate trade commerce and business in much bigger way as lease financing, hire purchase financing, primary dealings etc. NBFCs role has become very important. The complex range of activities of these companies has posed lot of challenges to the regulatory to avoid the possible risk factor *i.e.*. systemic risk. Lot of policy changes have been brought in in the regulatory frame work by countries like Australia, France, Hong Kong, Indonesia, Malaysia, Singapore, Thailand etc.

LITERATURE REVIEW

(Al-Qaisi, 2011), examined the determinants of systematic risk. He aimed to find out if emerging financial markets and the developed stock markets are exposed to the same financial factors that affect systematic risk value. Amman stock exchange is used for this study. The risk of investing in any stock mainly comprises of two distinct risks. In this study, the researcher has used Capital Asset Pricing Model to

explain one of them being systematic risk. Sharpe figured out that a portfolio's expected return depends solely on its beta, which indicates its relationship with the overall market. Whereas, with the use of CAPM, measuring portfolio risk and expected return associated with the risk becomes easy. The estimated betas are then related to their respective financial variables. Based on correlation analysis and cross section regression analysis, it is found that company size is the only significant factor in determining the beta values. The inverse relationship between the financial leverage and Beta is consistent with the distinguished features of Jordan economy during the study period characterized with recession.(Dilip K. Patro, 2000), aimed at finding how risk exposures and risk-adjusted returns of country equity indexes are related to country-specific macroeconomic and financial factors for a sample of 16 OECD countries for the period 1980–1997. They used an estimation process involving two steps, where in for the first step, the time-varying world market betas and alphas are estimated using a Garch model. The weekly data on equity indexes and exchange rates were used to obtain relatively precise estimates of the annual betas and alphas.

Therefore, for the second step, the estimated betas and the alphas were regressed on annual country-specific macroeconomic and financial variables. Thereby, this provides an econometric relation between the world market betas and alphas and the macroeconomic and financial variables. This also allows for a possible economic interpretation of the impacts of these variables on world market risks. The findings show that a significant portion of the variation is beta is due to changes in the macroeconomic and financial variables. Higher exports give a positive exposure, whereas higher imports give a negative exposure. Findings also proved that countries with higher government surplus have a lower beta, as higher taxes imply higher beta; but countries with higher dividend yield have a lower beta.

(Scordis, 2008), illustrates that the relationship between cash flow volatility and systematic risk depends on the relative value of the firm's growth opportunities in relation to the firm's assets. The research study used a sample of 542 observations for a panel study, from insurance firms in United States. The objective was to investigate the relationship between the cash flow volatility and systematic risk, which depends on the relative value of the firm's growth opportunities. This relationship has implications for both education and practice of risk management. Since risk reduction by the firm's managers reduce the type of risk that shareholders themselves can eliminate by holding diversified portfolios, reduction in risk leaves the shareholder's cost of capital unchanged. The empirical results of the study confirm that a reduction in the total operating cash flow risk leads to either a reduction or an increase in the stock's beta. The findings gave a suggestion that an

insurance firm with an asset value that is large in relation to its future opportunities will enjoy a lower cost of equity capital, when the total risk of operating cash flow is reduced, because of lower stock beta. The study also suggests that cash flow volatility reduction programs such as reinsurance or hedging should be individually crafted for each firm and for specific periods in the firm's life. (Vadde, 2011), analyses the performance of non-government financial and investment companies during the year 2008-09. This study is based on the audited annual accounts of 1,215 companies. These companies had closed their accounts during the period April 2008 to March 2009. Non-banking financial and investment companies provide support to the capital market through investment holding, share trading and also through merchant banking activities, to the credit market through short and medium-term loans and also help in acquiring long-term assets through lease and hire purchase activities. The presence of a large sized company, *viz.*, Housing Development Finance Corporation (HDFC) Limited in the study would exert considerable influence on the overall performance of the companies in this group in terms of various quantitative measures.

The study observed that growth in income, decelerated during the year 2008-09. Business of selected non-banking financial and investment companies expanded at a slower pace during 2008-09. The share of 'Investments' in total uses of funds increased during 2008-09 on account of investments in the mutual funds and shares and debentures of other Indian companies. (Kleytman, 2010), stated that the new regulation 26 on Financial Institutions issued by the Bulgarian National Bank introduced stricter regulation of non-banking financial institutions. Financial institutions in Bulgaria have to comply with capital and organizational requirements and register in a register maintained by Bulgarian National Bank. According to Bulgarian Law, a financial institution is a non-banking institution performing one or more of the activities specified in the law. Providing financial leasing services or money transfer services, trading with capital market instruments, currency and precious metals, futures and options, consulting services on capital structure and providing loans using funds not accumulated by deposits from the public or other funds attracted from the public are the few activities. The financial institutions are subject to extensive reporting requirements, which includes the quarterly submission of financial information and also the submission of their general terms and conditions. Each financial institution must have a clear organizational structure and effective procedures concerning risk management and internal control. (Luthra and Mahajan, 2014), studied the impact of macroeconomic factors on BSE Bankex. Macro-economic factors are GDP growth rate, Inflation, Gold prices and also exchange rate. The study has aimed to find the regression co-efficient between the share prices and various factors affecting it. The researcher has developed a multiple regression model using SPSS for the same.

The findings of the study showed that inflation, exchange rate and GDP growth rate affect the Bankex positively. Though gold prices affect the BSE Bankex negatively, none of these variables have a significant impact on the stock prices of the banks.(Rao, 2006), researches on the impact of monetary policy on the profitability of banks in the context of financial sector reforms in India using multiple regression analysis. The study indicates a greater impact of general credit control on the private sector banks however the regression coefficient is insignificant to explain the relationship between bank profitability and the monetary policy instrument in the case of public sector banks. The monetary transmission process links monetary policy actions to the ultimate objectives of the policy. The researcher also concluded that the overall system and the macroeconomic conditions are in the same line as the policy expectations of the nation. Though India has to improve comparatively about its financial sector reforms, the Reserve Bank of India will continue to keep a watch on the both domestic and external situations of the country.

The monetary policy of the Nation continues to be one of the most important aspect for a flexible interest rate environment within the borderline of macroeconomic stability. The money transmission process links monetary policy actions to the ultimate objectives of the policy. Purpose of the study is to indicate the impact of monetary policy on the profitability of banks in the context of financial sector reforms in India. (Ghosh, 2010), aims to examine the primary factors responsible for affecting Bombay Stock Exchange in India. It also concentrates on the factors influencing BSE. Few of the determinants what the researcher concentrated on were oil prices, gold prices, (CRR) Cash reserve ratio, food price inflation, call money rate, FDI- Foreign Direct Investment, Foreign portfolio investment, dollar price and Foreign exchange reserve. The researcher has used multiple regression model and factor analysis to interpret the findings. The findings were that the external reserve and the inflation inertia were the main two factors which significantly affected BSE Sensex.

The oil prices and the Cash reserve ratio play a significant role in the fluctuations in Sensex too. The rise in oil price create inflation inertia which generates stoichastity in Sensex. The researchers have considered the multi-collinearity problem among various independent variables and have attempted to eliminate it.(Sireesha, 2013), through her investigation on the effect of Macro Economic variables on stock returns in India, found that the returns of stock, gold and silver are interdependent on the stock variation of Indian stock market. The major economic indicators which also gives an impact on stock market are largely influenced by broad money supply, inflation, credit / deposit ratio and fiscal deficit apart from political instability. FII's presence has contributed significantly to the advancement of increasing

sophistication of our markets. The researcher also found that Time variations in market volatility can often be explained by macroeconomic and micro structural factors such as joint impact of trading volume, rate of exchange and the rate of gold standard and has proved that there is a clear link between macroeconomic fundamentals and stock market volatilities, with fundamentals translating into volatile stock market changes.(Cohn, 1973), in their empirical study found that common stocks have Risk that has is segregated into two components which are systematic component and the unsystematic component. Systematic risk, often referred to simply as "beta" has been the time series regression coefficient relating rates of return of individual securities and portfolios to the overall stock market rates of return.

The study has formulated and tested the systematic riskiness of firm's common shares, *i.e.*. beta directly related to the macroeconomic environment. In the study they could not arrive at a positive solution as the macroeconomic environment was changing frequently. The tests considered the relationship between betas only two macro variables. Other macro variables, such as money supply and balance or payments also influence the relationship between the rates of return on individual securities and the rate of return of the market. The researchers concluded by proving at least for few firms, the systematic risk of their shares relates to the macroeconomic environment(Chen, 2003), through his research paper, studied the impact of consumption growth risk as a measure of risk other than market beta. The research analyzes seven industry sub-sectors in the Taiwan stock market. They used CAPM and consumption based CAPM to conduct this study.

The relationship between the stock returns and beta was found to be statistically significant at 1% level, which infers that beta alone can explain almost 50% of the movements in the equity returns. Whereas in CAPM, it fails to explain the hypotheses. The data collected used for the study was monthly time series, which includes stock price indices, dividend payments, risk -free rates and the consumer price index over the period July 1991 to March 2000. The Durbon Watson bound tests performed does not indicate residual autocorrelation. The joint hypotheses from different authors did not support CCAPM. They further evaluated the models based on the implied equity returns. Historical data was collected and it was compared with the equity returns, and it was concluded that CAPM outperforms CCAPM. It outperforms CCAPM in its ability to predict the mean returns and return variation. The reason justified by the authors is that not many consumers participate in the stock market and thereby, the overall per capita substitution growth should be substituted.

(Bowman, 1979), has tried to explain the relationship between the financial and accounting variables on the basis of market-based risk. However, there has been very little research which has gone into the relationship between financial

variables and market based measure of risk. The assumption made while using Capital Asset Pricing Model is that firms are able to borrow and also lend at the same risk-free interest rate, similar to the individual investors. The results showed that the variability of earnings will not have a direct relationship with market risk. Usually, the payout ratio does have a significant and a negative correlation with beta. Also, the research has proved that the payout ratio is adjusted according to its movement with earnings. Thereby, it does not have significant correlation with beta. Therefore, the research tests the hypotheses and concludes by proving that there is a relationship between systematic risk and the firm's leverage and the accounting beta. It is also proved that earnings viability, growth size, dividend policy are not the determinants of systematic risk. The paper also suggests that additional relationships between systematic risk and other variables can be obtained by having more assumptions.

The research paper used the assumptions of the capital asset pricing model and also used additional assumptions that corporations can also borrow and lend at the risk-free interest rate. (Gabriel, 2011), Investigates the empirical determinants of systematic risk with the help of few characteristics of the firm. The research took findings from 15 companies listed on the Bucharest Stock Exchange. The characteristics which were analyzed from these 15 companies were operating efficiency, debt leverage, growth, firm's size, liquidity, profitability and dividend record. After the empirical study, a high degree of causality between the systematic risk and the aforementioned financial characteristics was found. The study aimed to include firm specific variables in their study and their relation to systematic risk. The financial ratios are found to be determinant factors for beta coefficient, based on the statistical tests of significance. It also proves that they are directly related to prove the predictability of systematic risk of a financial instrument. The findings from the 15 companies of Bucharest Stock Exchange prove that the determinants such as operating efficiency, liquidity, growth and firm size are negatively related to systematic risk. Only debt leverage was found to be positively associated to systematic risk. Linear regression analysis was conducted to find the yearly betas for each company.

The study was conducted during the period January 2010 to December 2010, of the companies listed on BVB. The relationship was tested using EViews software, and the regression model was interpreted to establish a relationship. It was also found that the results obtained were in par with the results of the previous empirical researches. The only relationship disproved by the study is the negative relationship between systematic risk and firm profitability. The research paper concluded by proving that the systematic risk is significantly determined by the financial characteristics selected for the research.(Eldomiaty and Dhahery, 2009), investigates the relationship between a firm's fundamental information and the factors that affect bank's systematic risk. This analysis was taken place on the companies which

was listed on the DFM general Index. The extensive reviews of the literature and the results from this study were in line with each other. Both the studies drew from the research that there is a close relationship between changes in stock prices and the financial information of the company. Stock prices changes occur due to changes in the systematic risk, thereby influencing the market and the fundamental variables of the company. The paper draws conclusions from variables such as book value, growth rate and beta. The researchers proved that book value of a firm's assets and its growth rate are powerful determinants of systematic risk. The reason for an increase in systematic risk in the banking and insurance sectors is due to the lack of interest to add to firm's assets.

Thereby beta explains most of the market anomalies through this research paper. (Gahlon and Gentry, 1982), investigates using CAPM to understand the relationship between a security's risk and its underlying real assets. This research paper attempts to add value to the existing model of CAPM by developing another model. It analyzes the model and demonstrates the degree of operating leverage and financial leverage. It also establishes a relationship between coefficients of variation of revenue and cash flow correlation coefficient, and its effect on three main variables, such as- Security's systematic risk. Expected return and value. The developed model in this research study analyzes the operating and financial leverages as real – asset risk measures. The study makes the concepts evident that the sources of systematic risk are revenue variability, magnification by operating leverage and financial leverage, and also the degree of sensitivity of the firm's cash flow to developments in the economic and financial environment.

4.1. Conceptual Framework of the Study

This research project is based on a study to understand the behavior of the macroeconomic and micro economic variables which affect the systematic risk of non-banking financial companies. Literatures from various journal were studied and concluded that not much research is done on the effect of the macro factors is done on specific sectors. Hence, that is the research gap which this research study is aiming at.

The top 10 non-banking financial companies trading in Bombay stock exchange were selected and their beta was calculated from the daily returns of past 5 years, ranging from 1-01-2010 to 31-12-2014. Calculation of few other micro economic variables were also done. The sorted data was analyzed using tools such as SPSS software and Eviews.

Correlation analysis was done to understand the correlation between variables used to understand its effect on systematic risk. Regression analysis was done to understand which of the variables affects the beta of the company. The assembled data on the underlying variables was employed on regression to estimate the

quantitative effect of the independent variables upon the dependent variables. This analysis also assesses the statistical significance of the estimated relationships. This signifies the degree of confidence that the true relationship is close to the estimated relationship.

4.2. Research Method

The sample study for this research comprises of 10 non-banking financial companies listed on Bombay Stock exchange. The entire data is gathered using financial reports of the selected companies.

4.3. Variables Description

The variables used in this study include the dependent variable as Beta. The independent variables considered are Government deficit, company size, inflation, Operating leverage, financial leverage, market capitalization and dividend yield.

1. Beeta: The systematic risk of the company is represented by beta. Beta was calculated by using the daily stock returns of all the companies. Each year's beta was calculated by calculating variance and co-variance.

   $$\beta = \text{Covariance}/\text{Variance}$$

2. **Government deficit:** The data of the government deficit was collected from World Bank and Reserve Bank of India. The average of the yearly percentage was taken to run the analysis of the industry.
3. **Company Size:** The size of the company was measured on the basis of the total assets of the company. The data was collected from the balance sheet of the respective companies.
4. **Inflation:** The rate of inflation was collected from reliable sources such as Reserve bank of India and Capitaline website. The average of the yearly inflation was taken to perform the analysis.
5. **Operating leverage:** The operating leverage is the percentage change in earnings before interest and tax for a given % change in sales. Operating leverage increases as fixed costs rise and variable costs fall. Companies which haslower variable costs and higher fixed costs have higher operating leverage. By increasing the riskiness of cash flows and leads to higher betas. The operating leverage was calculated using the formula –

   Operating Leverage = Fixed assets/ Total assets

6. **Financial leverage:** The financial leverage was calculated using the formula–

   Financial Leverage = Total debt/ Book Value.

7. **Market capitalization:** The market capitalization of the company was calculated using the formula-

   Market capitalization = No. of outstanding shares * Market price

8. **Dividend Yield:** The dividend yield was calculated by using the data from their financial reports.

   Dividend Yield = Cash dividend/ Profit after tax (PAT)

4.4. Regression Model

$$\text{Beta} = \alpha + \beta_1(GD) + \beta_2(S) + \beta_3(I) + \beta_4(OL) + \beta_5(FL) + \beta_6(MC) + \beta_7(DY) + €$$

Where,

β = Beta

GD = Government deficit

S = Company Size

I = Inflation

OL = Operating leverage

FL = Financial leverage

MC = Market capitalization

DY = Dividend yield

DATA ANALYSIS AND INTERPRETATION

The data of 10 Non-banking financial companies are taken for analysis. The time period ranges from 01-01-2010 to 31-12-2014. In order to find the economic determinants that affect the systematic risk and also to find the correlation among the variables, correlation and regression analysis are used for the study.

The regression equation used for the study is:

$$\text{Beta} = \beta_0 + \beta_1 FL + \beta OL + \beta S + \beta DIV + \beta MC + \beta I + \beta GD + \varepsilon$$

The Pearson's for the correlation between the beta and government deficit is 0.189 and in case of Spearman's, it is –0.71. This means that there is a weak relationship between the two variables. The change of one variable is not going to affect the other variable in a significant manner. Since Spearman's show a negative value, government deficit is not directly proportional to the systematic risk of the companies. Thereby, increase in government deficit may or may not decrease the beta of the non-banking financial companies.

Table 1
Correlation between Beta and Government Deficit

		Beta	GovtDeficit
Beta	Pearson Correlation	1	.189
	Sig. (2-tailed)		.600
	N	10	10
GovtDeficit	Pearson Correlation	.189	1
	Sig. (2-tailed)	.600	
	N	10	10

			Beta	GovtDeficit
Spearman's rho	Beta	Correlation Coefficient	1.000	-.071
		Sig. (2-tailed)	.	.845
		N	10	10
	GovtDeficit	Correlation Coefficient	-.071	1.000
		Sig. (2-tailed)	.845	.
		N	10	10

The Pearson's for the correlation between the beta and the company size is 0.156 and in case of Spearman's, it is 0.334. This means that there is a weak relationship between the two variables. The change of one variable is not going to affect the other variable in a significant manner. Since both Pearson's and Spearman's show a positive value, size of the company is directly proportional to the systematic risk of the companies. Thereby, increase in size may increase the beta of the non-banking financial companies.

The Pearson's for the correlation between the beta and the dividend yield is 0.174 and in case of Spearman's, it is 0.395. This means that there is a weak relationship between the two variables. The change of one variable is not going to affect the other variable in a significant manner. Since both Pearson's and Spearman's show a positive value, size of the company is directly proportional to

Table 2
Correlation between Beta and Size

		Beta	Size
Beta	Pearson Correlation	1	.156
	Sig. (2-tailed)		.666
	N	10	10
Size	Pearson Correlation	.156	1
	Sig. (2-tailed)	.666	
	N	10	10

			Beta	Size
Spearman's rho	Beta	Correlation Coefficient	1.000	.334
		Sig. (2-tailed)	.	.345
		N	10	10
	Size	Correlation Coefficient	.334	1.000
		Sig. (2-tailed)	.345	.
		N	10	10

the systematic risk of the companies. Thereby, increase in dividend yield may increase the beta of the non-banking financial companies.

The Pearson's for the correlation between the beta and the market capitalization is 0.110 and in case of Spearman's, it is 0.261. This means that there is a weak relationship between the two variables. The change of one variable is not going to affect the other variable in a significant manner. Since both Pearson's and Spearman's show a positive value, size of the company is directly proportional to the systematic risk of the companies. Thereby, increase in market capitalization may increase the beta of the non-banking financial companies.

The Pearson's for the correlation between the beta and operating leverage is 0.044 and in case of Spearman's, it is –0.188. This means that there is a weak relationship between the two variables. The change of one variable is not going to affect the other variable in a significant manner. Since Spearman's show a negative value, operating leverage is not directly proportional to the systematic risk of the companies. Thereby, increase in operating leverage may or may not decrease the beta of the non-banking financial companies.

Table 3
Correlation between Beta and Dividend Yield

		Beta	DivYield
Beta	Pearson Correlation	1	.174
	Sig. (2-tailed)		.630
	N	10	10
DivYield	Pearson Correlation	.174	1
	Sig. (2-tailed)	.630	
	N	10	10

			Beta	DivYield
Spearman's rho	Beta	Correlation Coefficient	1.000	.395
		Sig. (2-tailed)	.	.258
		N	10	10
	DivYield	Correlation Coefficient	.395	1.000
		Sig. (2-tailed)	.258	.
		N	10	10

The Pearson's for the correlation between the beta and financial leverage is –0.013 and in case of Spearman's, it is 0.334. This means that there is a weak relationship between the two variables. The change of one variable is not going to affect the other variable in a significant manner. Since Pearson's show a negative value, financial leverage is not directly proportional to the systematic risk of the companies. Thereby, increase in operating leverage may or may not decrease the beta of the non-banking financial companies.

Regression Analysis

The regression test was performed to study the relation of Government deficit, Size, Dividend yield, Market capitalization, Inflation, Operating leverage and Financial leverage with Beta.

Table IV
Correlation between Beta and Market Capitalization

		Beta	MarketCap
Beta	Pearson Correlation	1	.110
	Sig. (2-tailed)		.762
	N	10	10
MarketCap	Pearson Correlation	.110	1
	Sig. (2-tailed)	.762	
	N	10	10

			Beta	MarketCap
Spearman's rho	Beta	Correlation Coefficient	1.000	.261
		Sig. (2-tailed)	.	.466
		N	10	10
	MarketCap	Correlation Coefficient	.261	1.000
		Sig. (2-tailed)	.466	.
		N	10	10

Dependent variable = Beta

Sample size = 70

Method = Least square method

Correlation matrix is developed to rule out the problem of multi-collinearity. The above table indicates that government deficit shows mild negative relation with company size, market capitalization and financial leverage as they have correlation coefficients of –0.453, –0.701 and –0.577 respectively. There is a positive relation between government deficit and beta as they have a correlation coefficient of 0.189. There is also a mild positive relation with dividend yield and operating leverage with correlation coefficients of 0.406 and 0.303 respectively. This means that changes in government deficit does have an impact on beta, dividend yield and operating leverage.

Table 5
Correlation between Beta and Inflation

		Beta	Inflation
Beta	Pearson Correlation	1	.[a]
	Sig. (2-tailed)		.
	N	10	10
Inflation	Pearson Correlation	.[a]	.[a]
	Sig. (2-tailed)	.	
	N	10	10

			Beta	Inflation
Spearman's rho	Beta	Correlation Coefficient	1.000	.
		Sig. (2-tailed)	.	.
		N	10	10
	Inflation	Correlation Coefficient	.	.
		Sig. (2-tailed)	.	.
		N	10	10

Therefore, government deficit, dividend yield and size affect the systematic risk of the company to a great extent. They have a directly proportional relationship; the coefficients indicates the extent to which the independent variable is going to have an effect on the dependent variable. In case of market capitalization, financial leverage and operating leverage, the coefficients are 0.110, 0.044 and –0.013. Thereby, they would have a comparatively weaker relationship when compared to other variables. Since financial leverage is negative, it will have a negative weak relation.

Table 6
Correlation between Beta and Operating Leverage

		Beta	OperLeverage
Beta	Pearson Correlation	1	.044
	Sig. (2-tailed)		.905
	N	10	10
OperLeverage	Pearson Correlation	.044	1
	Sig. (2-tailed)	.905	
	N	10	10

			Beta	OperLeverage
Spearman's rho	Beta	Correlation Coefficient	1.000	-.188
		Sig. (2-tailed)	.	.602
		N	10	10
	OperLeverage	Correlation Coefficient	-.188	1.000
		Sig. (2-tailed)	.602	.
		N	10	10

Variables entered for the analysis

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	FinanLeverage, OperLeverage, DivYield, GovtDeficit, Size, MarketCap[b]	.	Enter

a. Dependent Variable: Beta

b. All requested variables entered.

Table 7
Correlation between Beta and Financial Leverage

		Beta	FinancialLeverage
Beta	Pearson Correlation	1	-.013
	Sig. (2-tailed)		.972
	N	10	10
FinancialLeverage	Pearson Correlation	-.013	1
	Sig. (2-tailed)	.972	
	N	10	10

			Beta	FinancialLeverage
Spearman's rho	Beta	Correlation Coefficient	1.000	.334
		Sig. (2-tailed)	.	.345
		N	10	10
	FinancialLeverage	Correlation Coefficient	.334	1.000
		Sig. (2-tailed)	.345	.
		N	10	10

4.5. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.961[a]	.924	.771	.36819	.924	6.055	6	3	.084	2.152

a. Predictors: (Constant), FinanLeverage, OperLeverage, DivYield, GovtDeficit, Size, MarketCap

b. Dependent Variable: Beta

Interpretation

- Adjusted *R* square measures the proportion of the variance in the dependent variable, *i.e.* Beta that is explained by variations in the

Table 8
Descriptive Statistics

	Mean	Std. Deviation	N
Beta	1.3040	.76966	10
GovtDeficit	-3.6554	.00000	10
Size	41781.8054	41511.18467	10
DivYield	.3319	.28388	10
MarketCap	13490.4156	9046.16745	10
Inflation	.0947	.00000	10
OperLeverage	.0078	.01054	10
FinanLeverage	264.6521	245.32777	10

Correlation Matrix of all variables

Correlations

		Beta	GovtDeficit	Size	DivYield	MarketCap	Inflation	OperLeverage	FinanLeverage
Pearson Correlation	Beta	1.000	.189	.156	.174	.110	.	.044	-.013
	GovtDeficit	.189	1.000	-.453	.406	-.701	.	.303	-.577
	Size	.156	-.453	1.000	-.329	.875	.	-.417	.891
	DivYield	.174	.406	-.329	1.000	-.440	.	-.134	-.287
	MarketCap	.110	-.701	.875	-.440	1.000	.	-.563	.861
	Inflation	.	.	.	.	.	1.000	.	.
	OperLeverage	.044	.303	-.417	-.134	-.563	.	1.000	-.273
	FinanLeverage	-.013	-.577	.891	-.287	.861	.	-.273	1.000
Sig. (1-tailed)	Beta	.	.300	.333	.315	.381	.000	.452	.486
	GovtDeficit	.300	.	.095	.122	.012	.000	.198	.040
	Size	.333	.095	.	.176	.000	.000	.115	.000
	DivYield	.315	.122	.176	.	.102	.000	.356	.211
	MarketCap	.381	.012	.000	.102	.	.000	.045	.001
	Inflation	.000	.000	.000	.000	.000	.	.000	.000
	OperLeverage	.452	.198	.115	.356	.045	.000	.	.223
	FinanLeverage	.486	.040	.000	.211	.001	.000	.223	.
N	Beta	10	10	10	10	10	10	10	10
	GovtDeficit	10	10	10	10	10	10	10	10
	Size	10	10	10	10	10	10	10	10
	DivYield	10	10	10	10	10	10	10	10
	MarketCap	10	10	10	10	10	10	10	10
	Inflation	10	10	10	10	10	10	10	10
	OperLeverage	10	10	10	10	10	10	10	10
	FinanLeverage	10	10	10	10	10	10	10	10

independent variables. In this study, the "Adjusted R- Square" shows that 77.1% of the variance is explained.

- R-square Measures the proportion of the variation in the dependent variable, *i.e.* Beta thatis explained by variations in the independent

variables. In this study, the "*R*-Square"' tells us that 92.4% of the variation (and not the variance) is explained.

- Standard Error of Estimate Standard error of the estimate measures the dispersion of the dependent variables estimate around its mean. In this study, the "Standard Error of the Estimate" is 36.8%.

Anova table

The above table indicates the soundness of research model used in this study. The significance level is denoted by the value "Sig" in the above table. The significance level found out from the analysis is 0.084; it is more than 0.05. Thereby, it does not have a great fit, as it indicates the variables do not have a statistically significant difference among them. They do not have a strong relationship, but the significance level indicates a slightly weak relationship between the variables only, as 0.084 is a little more than the accepted significance value.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.925	6	.821	6.055	.084[b]
	Residual	.407	3	.136		
	Total	5.331	9			

a. Dependent Variable: Beta

b. Predictors: (Constant), FinanLeverage, OperLeverage, DivYield, GovtDeficit, Size, MarketCap

Coefficients of the Variance

The table "Coefficients" provides information on the confidence with which we can support the estimate for each such estimate. The above table shows that government deficit is positively related to beta. The *t* statistics value is 2.026 and

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	25985075.72	12828746.56		2.026	.136	-14841721.37	66811872.81
	GovtDeficit	7108636.242	3509510.001	.539	2.026	.136	-4060190.895	18277463.38
	Size	1.063E-005	.000	.573	1.231	.306	.000	.000
	DivYield	3.399	.721	1.254	4.717	.018	1.106	5.692
	MarketCap	.000	.000	3.708	4.987	.016	.000	.001
	OperLeverage	121.677	24.256	1.666	5.016	.015	44.484	198.871
	FinanLeverage	-.008	.002	-2.592	-4.782	.017	-.014	-.003

a. Dependent Variable: Beta

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.3659	2.9499	1.3040	.73972	10
Residual	-.34197	.26271	.00000	.21257	10
Std. Predicted Value	-1.268	2.225	.000	1.000	10
Std. Residual	-.929	.714	.000	.577	10

a. Dependent Variable: Beta

significance is 0.136. Thereby, the significance value is more than 0.05, which proves that the result is not statistically significant. It accepts the null hypothesis.

Company size is also positively related to beta. The coefficient of the company size is 1.06 to the exponent of –5, and the *t*-statistics is 1.2. The significance value is 0.136, which proves that the result is not statistically significant. It accepts the null hypothesis.

Dividend Yield has a coefficient value of 3.399. It has a very good positive relation with beta. However, the *t*-statistics value is 4.717 and the significance is 0.018. Since the significance value is more than 0.05, the result proves the value is statistically significant. Therefore, the alternate hypothesis is accepted

Market capitalization also has a very good positive relation with beta. The t-statistics value is 4.987 and the significance value is 0.016. Since the accepted significance for variables to be statistically significant is 0.05, the market capitalization prove to be significant. It accepts the alternate hypothesis.

Operating Leverage also has a very good positive relation with beta. The t-statistics value is 5.016 and the significance value is 0.015. Since the accepted significance for variables to be statistically significant is 0.05, the operating leverage prove to be significant. It accepts the alternate hypothesis.

Financial Leverage also has a very good positive relation with beta. The t-statistics value is -0.4782 and the significance value is 0.017. Since the accepted significance for variables to be statistically significant is 0.05, the financial leverage proves to be significant. It accepts the alternate hypothesis.

SUMMARY OF FINDINGS

The various variables which influence the macro economy and micro economy were taken into consideration, in order to find the relation and its impact on the systematic risk of the companies. All the macroeconomic variables and the micro economic variables do not show significance with respect to beta of the companies. As we study the analysis, it is found that the variance in the values of the

interdependent variables is really high. There is a high standard deviation between the variables. Few show a significant impact, whereas few others do not. The *R* square found through the analysis was 0.924, thereby it shows a good fit of the data to the model. This also indicates 92.4% of the variation in beta can be explained through the variation of these factors and their variability.

After conducting regression analysis and finding the coefficients, it was found that all variables except government deficit and Size of the company make a difference in the systematic risk and thereby affecting the beta of the company. The government deficit and size of the company would not affect non-banking financial companies to a great extent. Thereby they remain independent with respect to these two variables. Whereas other variables such as dividend yield, market capitalization, operating leverage and financial leverage proves to be influential in measuring the beta of the company.

- H_{01} is accepted. There is no relationship between Beta and govt. Deficit. The results prove that government deficit is positively related to beta. The t statistics value is 2.026 and significance is 0.136. Thereby, the significance value is more than 0.05, which proves that the result is not statistically significant. It accepts the null hypothesis.
- H_{02} is accepted. There is no relationship between Beta and Size. Company size is also positively related to beta. The coefficient of the company size is 1.06 to the exponent of -5, and the t-statistics is 1.2. The significance value is 0.136, which proves that the result is not statistically significant. It accepts the null hypothesis.
- H_{13} is accepted. There is a relationship between Beta and dividend yield. Dividend Yield has a coefficient value of 3.399. It has a very good positive relation with beta. However, the t-statistics value is 4.717 and the significance is 0.018. Since the significance value is more than 0.05, the result proves the value is statistically significant. Therefore,It accepts the alternate hypothesis.
- H_{14} is accepted. There is a relationship between Beta and Market capitalization. Market capitalization also has a very good positive relation with beta. The t-statistics value is 4.987 and the significance value is 0.016. Since the accepted significance for variables to be statistically significant is 0.05, the market capitalization proves to be significant. It accepts the alternate hypothesis.
- H_{15} is accepted. There is a relationship between Beta and Operating Leverage. Operating Leverage also has a very good positive relation with beta. The *t*-statistics value is 5.016 and the significance value is 0.015. Since

the accepted significance for variables to be statistically significant is 0.05, the operating leverage prove to be significant. It accepts the alternate hypothesis.

- H_{16} is accepted. There is a relationship between Beta and Financial Leverage. Financial Leverage also has a very good positive relation with beta. The *t*-statistics value is -0.4782 and the significance value is 0.017. Since the accepted significance for variables to be statistically significant is 0.05, the financial leverage prove to be significant. It accepts the alternate hypothesis.

CONCLUSION

The macro-economic variables of 10 non-banking financial companies were taken for the analysis. The variables were taken into consideration to find a relation between the variables and beta. All the variables selected do not show significance when analyzed with beta of the company, which means there are few variables which can give the predictive variables for the beta of the company. Therefore, these variables can be used as those factors which influence the company. The non-banking financial sector, as a whole is performing at an average rate at all times. There has not been any evidence of poor performance even during the financially bad times. This is one sector which does not get affected much by the macro economic variables is one major conclusion that can be drawn through the help of this research. Further researchers can help solve the uncertainty of the beta and the variables' behavior, if further researches are conducted on the impact of macroeconomic factors on beta value in the long run.

References

Al-Qaisi, K.M. (2011). The Economic Determinants of Systematic Risk in the Jordanian Capital Market . *International Journal of Business and Social Science,* Volume-2.

Bowman, R.G. (1979). The Theoretical Relationship between Systematic risk and Financial Variables. *The Journal of Finance,* Vol. 34.

Chen, M.H. (2003). Risk and return: CAPM and CCAPM. *The Quarterly Review of Economics and Finance*, 369-393.

Cohn, A.A. (1973). The Economic Determinants of Systematic Risk . *The Journal of Finance*, 439-447.

Dilip K. Patro, J.K. (2000). The Impact of Macroeconomic and Financial Variables on Market Risk: Evidence from International Equity Returns.

Eldomiaty, T.I., and Dhahery, M.H. (2009). The Fundamental Determinants of Systematic Risk and Financial Transparency in the DFM General Index . *Middle Eastern Finance and Economics*.

Gabriel, P. R. (2011). Analysis of the systematic-risk determinants for companies listed on Bucharest Stock Exchange.

Gahlon, J.M., and Gentry, J.A. (1982). On the Relationship between Systematic Risk and the Degrees of Operating and Financial Leverage. *Financial Management Journal,* Vol-11, 15-23.

Ghosh, A. (2010). Determinants of BSE sensex: A Factor Analysis Approach.

Kleytman, R. (2010). Non-banking financial institutions. *International Financial Law Review*.

Luthra, M., and Mahajan, S. (2014). Impact of Macro factors on BSE Bankex. *International Journal of Current Research and Academic Review*, 179-186.

Rao, P. (2006). Monetary Policy: Its Impact On The Profitability Of Banks In India . *International Business and Economics Research Journal* .

Scordis, N.A. (2008). The Impact of Cash Flow Volatility on Systematic Risk. *Journal of Insurance Issues*, 43-71.

Sireesha, P. B. (2013). Effect of Select Macro Economic Variables on Stock Returns in India. *International Journal of Marketing, Financial Services and Management Research, Vol.2*.

Vadde, S. (2011). Performance of Non-banking Financial Companies in India - An Evaluation. *Journal of Arts Science and Commerce*, 123-131.

Asian development Bank (1994). 'Financial Sector development in Asia', Manila, Philippines.

Faruci.s. (1993). Financial Sector Reforms in Asia and Latin American Countries', Washington, D.C., The world Bank.

Luckett, D.G., D.L. Schulze and R.W.Y. Wong (1994). ' Banking, finance and Monetary Policy in Singapore', Singapore: McGraw-Hill Book Co.