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**A COMPARATIVE ANALYSIS OF EQUITY RISK AND RETURN  
FOR THE SELECTED COMPANIES IN DIFFERENT SECTORS**

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## **Abstract**

Investment may be defined as an activity that commits funds in any financial form in the present with an expectation of receiving additional return in the future. The expectations bring with it a probability that the quantum of return may vary from a minimum to a maximum. This possibility of variation in the actual return is known as investment risk. Thus every investment involves an analysis of the return and risk. The aim of this study is to analyse the fluctuations in the share price of sample investment avenue.

## **1.0 Introduction**

Investment is an activity that is undertaken by those who have savings. Savings can be defined as the excess of income over expenditure. An investor earns or expects to earn additional monetary value from the mode of investment that could be in the form of financial assets. The three important characteristics of any financial asset are: 1) return: the potential return possible from an asset. 2) Risk: the variability in returns of the asset forms the chances of its value going down or up. 3) Liquidity: the ease with which an asset can be converted into cash. Investors tend to look at these three characteristics while deciding on their individual preference pattern of investments. Each financial asset will have a certain level of each of these characteristics. In this study also deals update the portfolio reviewed and adjusted from time to time in tune with market condition and analyze the risk and return on securities which help to test portfolio strategies before taking decisions.

## **2.0 Review of Literature**

Panagiotis Xidonas and John Psarras, [2009] have published the article titled Equity portfolio management within the MCDM frame. It has explained about the application of the techniques of multiple criteria decision making to the problems and issues of portfolio management. A large number of studies in the field of portfolio management have been compiled and classified according to the different multi criteria methodological approaches that have been used.

Pornchai Chunchachinda and Krishnan Dandapani, [1997] in this article explained Portfolio selection and skewness: Evidence from international stock markets” has found that the returns of the world's 14 major stock markets are not normally distributed, and that the correlation matrix of these stock markets was stable during the January 1988–December 1993 time period. Polynomial goal programming, in which investor preferences for skewness can be incorporated, is utilized to determine the optimal portfolio consisting of the choices of 14 international stock indexes. The empirical findings suggest that the incorporation of skewness into an investor's portfolio decision causes a major change in the construction of the optimal portfolio.

Joshua D. Coval and Tobias J. Moskowitz [1999] in the paper “Home Bias at Home: Local Equity Preference in Domestic Portfolios” has confirmed that the strong bias in favor of domestic securities is a well-documented characteristic of international investment portfolios, yet it shows that the preference for investing close to home also applies to portfolios of domestic stocks. Specifically, U.S. investment managers exhibit a strong preference for locally headquartered firms, particularly small, highly levered firms that produce nontrade goods. These results suggest that asymmetric information between local and nonlocal investors may drive the preference for geographically proximate investments, and the relation between investment proximity and firm size and leverage may shed light on several well-documented asset pricing anomalies.

Fama, Eugene F. and Kenneth R. French [1993] in their paper “Common risk factors in the returns on stocks and bonds” has identified five common risk factors in the returns on stocks and bonds. There are few stock-market factors have discussed such as an overall market factor, factors related to firm size and book-to-market equity.

Geert Bekaert and Campbell R. Harvey [2007] in the paper named “Emerging equity market volatility” has provided an approach that allows the relative importance of world and local information to change through time in both the expected returns and conditional variance processes. The time-series and cross-sectional models analyze the reasons that volatility is different across emerging markets, particularly with respect to the timing of capital market reforms. It has found out that capital market liberalizations often increase the correlation between local market returns and the world market.

Curcuro, Stephanie E. and Charles P. Thomas [2011] in the paper named “U.S. International Equity Investment and Past and Prospective Returns” has countered to extant stylized facts, using newly available data on country allocations in U.S. investors’ foreign equity portfolios. In this article found that (i) U.S. investors do not exhibit returns-chasing behavior, but, consistent with partial portfolio rebalancing, tend to sell past winners; and (ii) U.S. investors increase portfolio weights on a country’s equity market just prior to its strong performance.

Gary P. Brinson, L. Randolph Hood [1999] in their paper “Determinants of Portfolio Performance” has mentioned that in order to delineate investment responsibility and measure performance contribution, pension plan sponsors and investment managers need a clear and relevant method of attributing returns to those activities that compose the investment management process--investment policy, market timing and security selection. The authors provide a simple framework based on a passive, benchmark portfolio representing the plan's long-term asset classes, weighted by their long-term allocations. Returns on this "investment policy" portfolio are compared with the actual returns resulting from the combination of investment policy plus market timing and security selection. Data from 91 large U.S. pension plans over the 1974-83 period indicate that investment policy dominates investment strategy, explaining on average 93.6 per cent of the variation in total plan return. The actual mean average total return on the portfolio over the period was 9.01 per cent, versus 10.11 per cent for the benchmark portfolio. Active management cost the average plan 1.10 per cent per year, although its effects on individual plans varied greatly, adding as much as 3.69 per cent per year.

MAHINDRA & MAHINDRA AUTOMOBILES												
Year	Month	S&P CNX NIFTY	ROR (X)	PRICE	ROR(Y)	X*X	Y*Y	X*Y	R=X-Avg(X)	T=Y-Avg(Y)	R^2	T^2
2012	Jan	4920.016	0.0994	673.8	0.0535	0.0099	0.0029	0.005318	-0.05813	0.06201	0.0034	0.003846
	Feb	5409.09	-0.0204	709.85	-0.01359	0.0004	0.0002	0.000278	-0.17799	0.00508	0.0317	2.58E-05
	Mar	5298.484	-0.0083	700.2	0.01407	7E-05	0.0002	-0.00012	-0.16584	0.02258	0.0275	0.00051
	Apr	5254.48	-0.0548	710.05	-0.08091	0.003	0.0065	0.004434	-0.21234	-0.0724	0.0451	0.005242
	May	4966.507	0.02169	652.6	0.08374	0.0005	0.007	0.001816	0.13585	0.09225	0.0185	0.00851
	Jun	5074.214	0.02913	707.25	-0.00905	0.0008	8E-05	-0.00026	-0.12841	0.00054	0.0165	2.9E-07
	July	5222.011	0.02063	700.85	0.08889	0.0004	0.0079	0.001834	0.13691	0.0974	0.0187	0.009487
	Aug	5329.721	0.02918	763.15	0.13307	0.0009	0.0177	0.003883	0.12835	0.14158	0.0165	0.020044
	Sep	5485.265	0.03707	864.7	0.02284	0.0014	0.0005	0.000847	0.12046	0.03135	0.0145	0.000983
	Oct	5688.631	-0.0016	884.45	0.07072	3E-06	0.005	-0.00011	-0.15912	0.07923	0.0253	0.006278
	Nov	5679.623	0.03708	947	-0.01621	0.0014	0.0003	-0.0006	-0.12046	-0.0077	0.0145	5.93E-05
	Dec	5890.211	0.02256	931.65	-0.04551	0.0005	0.0021	-0.00103	-0.13497	-0.037	0.0182	0.001369
2013	Jan	6023.117	-0.0215	889.25	-0.01749	0.0005	0.0003	0.000376	0.17904	0.00898	0.0321	8.06E-05
	Feb	5893.588	-0.0189	873.7	-0.01419	0.0004	0.0002	0.000268	0.17643	0.00568	0.0311	3.23E-05
	Mar	5782.261	-0.0143	861.3	0.07291	0.0002	0.0053	-0.00104	0.17181	0.08142	0.0295	0.00663
	Apr	5699.76	0.064	924.1	0.04702	0.0041	0.0022	0.003009	0.09354	0.05553	0.0088	0.003083

	May	6064.522	-0.0466	967.55	0.00315	0.0022	1E-05	-0.00015	0.2041 1	0.0116 6	0.0417	0.000136
	Jun	5782.078	0.02199	970.6	-0.06099	0.0005	0.0037	-0.00134	0.1355 5	0.0524 8	0.0184	0.002754
	July	5909.243	-0.0675	911.4	-0.14061	0.0046	0.0198	0.00948 9	0.2250 3	-0.1321	0.0506	0.01745
	Aug	5510.438	0.05209	783.25	0.05643	0.0027	0.0032	0.00294	0.1054 5	0.0649 4	0.0111	0.004217
	Sep	5797.475	0.0494	827.45	0.073	0.0024	0.0053	0.00360 6	0.1081 4	0.0815 1	0.0117	0.006643
	Oct	6083.874	0.00736	887.85	0.06465	5E-05	0.0042	0.00047 6	0.1501 8	0.0731 6	0.0226	0.005353
	Nov	6128.635	0.01929	945.25	-0.00111	0.0004	1E-06	-2.1E-05	0.1382 5	0.0074	0.0191	5.48E-05
	Dec	6246.869	-0.0038	944.2	-0.05719	1E-05	0.0033	0.00021 7	0.1613 3	0.0486 8	0.026	0.00237
2014	Jan	6223.16	-0.02	890.2	0.0947	0.0004	0.009	-0.00189	0.1775 3	0.1032 1	0.0315	0.010652
	Feb	6098.745	0.0671	974.5	0.00636	0.0045	4E-05	0.00042 7	0.0904 4	0.0148 7	0.0082	0.000221
	Mar	6507.981	0.03792	980.7	0.09534	0.0014	0.0091	0.00361 5	0.1196 2	0.1038 5	0.0143	0.010785
	Apr	6754.736	0.04862	1,074.2 0	0.15016	0.0024	0.0225	0.00730 1	0.1089 2	0.1586 7	0.0119	0.025176
	May	7083.157	0.0649	1,235.5 0	-0.0714	0.0042	0.0051	-0.00464	0.0926 4	0.0629 6	0.0086	0.003964
	Jun	7542.84	0.01775	1,147.2 0	0.04746	0.0003	0.0023	0.00084 3	0.1397 8	0.0559 7	0.0195	0.003133
	July	7676.76	0.01441	1,201.6 5	0.17106	0.0002	0.0293	0.00246 4	0.1431 3	0.1795 7	0.0205	0.032244
	Aug	7787.35	0.03418	1,407.2 0	-0.03297	0.0012	0.0011	-0.00113	0.1233 6	0.0244 6	0.0152	0.000598
	Sep	8053.53	-0.0125	1,360.8 0	-0.04012	0.0002	0.0016	0.0005	0.1700 1	0.0316 1	0.0289	0.000999
	Oct	7953.114	0.05833	1,306.2 0	0.01344	0.0034	0.0002	0.00078 4	-0.0992	0.0219 5	0.0098	0.000482
	Nov	8417.058	-0.0126	1,323.7 5	-0.06746	0.0002	0.0046	0.00084 9	0.1701 2	0.0589 5	0.0289	0.003475
	Dec	8311.16	-1	1,234.4	-1	1	1	1	-	-	1.3399	0.983052

			5					1.1575 4	0.9914 9		
<b>SUM</b>		-0.4486		-0.30637	1.0555	1.1825	1.04324 5			2.0903	1.179939
<b>AVERAGE</b>		-0.0125		-0.00851						0.0581	0.032776

### 3.0 Research Design

#### 3.1 Objective

The primary objective is to perform a risk-return analysis of companies across different sectors listed in the National Stock Exchange

#### 3.2 Specific objectives

To calculate the returns offered by the selected companies.

To analyze the amount of risk involved in the securities of the sample companies.

To perform a comparative analysis of the performance of the selected companies.

To identify the sectors and companies best suited for investment

#### 3.3 Scope of the Study

The study covers all the information related to the investment in equity shares. It also covers the investor risk in the investment in various securities.

#### 3.4 Method of Data Collection

The Secondary data issued for this research. The data is collected from different secondary sources like websites, journals, newspapers, books, etc., the analysis used in this article has been done using selective technical tools. In Equity market, risk is analyzed and trading decisions taken on the basis of technical analysis. It involves collecting the share prices of selected companies for a period of three years.

#### 3.5 Sample and Source of Data Collection

For the study five sectors are selected namely Automobiles, Banking, Energy, FMCG and Information Technology. In each sector two companies were selected. The sectors and the companies are selected based on the volume of trading. All the companies are listed in the National Stock Exchange.

The following table shows the companies selected for the analysis and their respective sector.

**Table 1.0  
List of Companies**

Types of Companies	Company Name
Automobiles	Mahindra & Mahindra Tata Motors
Banking	ICICI SBI
Energy	ONGC RELIANCE
FMCG	HUL ITC
IT	INFOSYS TCS

### **3.6 Tools and Techniques**

The following statistical techniques were used for measuring the performance of the selected companies: Rate of Return (ROR), Standard Deviation (SD), Beta, Alpha, Coefficient of Correlation and Coefficient of Determination

### **4.0 Data Analysis and Interpretation**

The analysis using the stock prices is done for five different types of industries namely automobile, bank, energy, FMCG and IT. The companies in each field are selected as it is listed one among the CNX Nifty companies in its relevant field.

The analysis is made using the three years of stock prices of the company. From this, the calculations are made to find the company's beta value, alpha value, correlation coefficient, coefficient of determination, standard deviation and variance.

**Table 2.0**  
**Calculations in Mahindra & Mahindra Automobiles**

**Table 3.0**  
**Beta value of M&M**

1	Beta	
	$\Sigma xy$	1.043245
	$\Sigma x$	-0.44862
	$\Sigma y$	-0.30637
	$\Sigma x^2$	1.055473
	N	36
	$\Sigma y^2$	1.182546
	B	0.990042

**Table 4.0**  
**Alpha value of M&M**

2	Alpha	
	Avg(X)	-0.01246
	Avg(Y)	-0.00851
	B	0.990042
	A	0.003827

**Table 5.0**  
**Correlation Coefficient of M&M**

3	Correlation Coefficient	
	R	0.933886

**Table 6.0**  
**Determination Coefficient of M&M**

4	Coefficient of Determination	
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	$R^2$	0.872143
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**Table 7.0  
Standard Deviation of M&M**

5	Standard Deviation	
	SDx	0.173195
	SDy	0.18361

**Table 8.0  
Variance of M&M**

6	Variance	
	Vx	0.029997
	Vy	0.033713

VARIABLES	AUTOMOBILE		BANK		ENERGY		FMCG		IT	
	M&M	Tata Motors	ICICI	SBI	ON GC	Reliance	HU L	ITC	Infosys	TCS
B	0.990042	0.99678025	1.01312 4	0.944275	0.99 4654	0.97287 7	0.96 1634	0.96 7133	0.964164	0.969226
A	0.003827	0.008863233	-0.01438	-0.02929	0.00 61	-0.01139	0.00 5557	0.00 236	-0.01436	0.009353
R	0.933886	0.887266112	0.74296 4	0.674645	0.91 403	0.94292 6	0.91 686	0.93 7054	0.795297	0.913217
R <sup>2</sup>	0.872143	0.787241153	0.55199 6	0.455146	0.83 545	0.88911	0.84 0632	0.87 8071	0.632497	0.833966
SDx	0.173195	0.17319536	0.17319 5	0.173195	0.17 3195	0.17319 5	0.17 3195	0.17 3195	0.173195	0.173195
Sdy	0.18361	0.194572646	0.23617 3	0.242415	0 1 8 8	0.17869 7	0.18 1653	0.17 8755	0.20997	0.183818

					4					
					7					
					2					
Vx	0.029997	0.029996633	0.029997	0.029997	0.029997	0.029997	0.029997	0.029997	0.029997	0.029997
					0					
					.					
					0					
					3					
					5					
					5					
Vy	0.033713	0.037858514	0.055778	0.058765	0.031932	0.032998	0.031953	0.044088	0.033789	

**Table 9.0 Overall statistical measurement of performance**

#### 4.1 Analysis of the movement in the stock prices

The monthly stock price fluctuations for each year from 2012 to 2014 plotted as a graph has denoted that there is a gradual growth in the close price for each year for both the companies in the automobile sector (M&M, Tata Motors), energy industry (ONGC, Reliance), FMCG (HUL, ITC), and IT (Infosys, TCS). But there is a decrease in the closing price for the selected companies in the banking sector (ICICI, SBI) and IT sector (Infosys and TCS).

#### 4.2 Analysis of the Beta values of the companies

The comparison of the beta values in the selected companies of the automobiles has given that the beta value of the M&M is lesser than that of Tata Motors. The comparison of the beta values in the selected banks has provided that the beta value of ICICI is greater than that of SBI. The comparison of the beta values in the selected companies in the energy sector has revealed that the beta value of ONGC is greater than that of Reliance. The comparison of the beta values in the selected companies of the FMCGs has put forth that the beta value of HUL is lesser than that of ITC. The comparison of the beta values in the selected IT companies has mentioned that the beta value of Infosys is lesser than that of TCS.

#### 4.3 Analysis of the Rate of Return of the Companies

The average rate of return of the two selected companies (M&M, Tata Motors) in the automobile industry is greater than that of the markets average rate of return. The average rate of return of the two selected companies (ICICI, SBI) in the banking sector is lesser than that of the markets average rate of return. The average rate of return of the two selected companies (ONGC, Reliance) in the energy industry is lesser than that of the markets average rate of return. The average rate of return of the two selected companies (HUL, ITC) in the FMCG is greater than that of the markets average rate of return. The average rate of return of the two selected companies (Infosys, TCS) in the IT sector is lesser than that of the markets average rate of return.

#### **4.4 Analysis of the Standard Deviation of Returns of the companies**

The standard deviation of M&M, Tata Motors in the automobile industry is greater than that of the markets standard deviation. The standard deviation of ICICI, SBI in the banking field is greater than that of the markets standard deviation. The standard deviation of ONGC, Reliance in the energy industry is greater than that of the markets standard deviation. The standard deviation of HUL, ITC in the FMCG is greater than that of the markets standard deviation. The standard deviation of Infosys, TCS in the IT sector is greater than that of the markets standard deviation.

#### **5.0 Suggestions to the Investors**

It is advisable for the investors to invest in equity shares of the companies with comparatively lower beta value, and lesser standard deviation when compared with that of the market index value and other companies' values. The company details if selected for five years or above can give an even more accurate interpretation. This can be done by focusing only one particular field or sector and analyzing companies that is seen in CNX Nifty of that particular field.

#### **6.0 Conclusion**

Lower the beta, higher the performance of the stock and better is the equity for investment. One might expect a better performance by funds with low diversification because they apparently are attempting to beat the market by being unique in their selection or timing. From the inferences made, it is evident that Mahindra & Mahindra (automobile), State Bank of India (bank), Reliance (energy), Hindustan Unilever (FMCG), and Infosys (IT) were found to have comparatively lesser beta and standard deviation and hence has lesser risk among the selected companies of the five different sectors.

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