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RISK RETURN ANALYSIS OF NSE LISTED STOCKS

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ABSTRACT

Risk and return are the two important factors, which will have an impact on the investment decision. One cannot talk about investment return without talking about risk because investment decisions invariably involve a trade-off between the two. Risk refers to the possibility that the actual outcome of an investment will differ from its expected outcome. More specifically, most investors are concerned about the actual outcome being less than the expected outcome as the wider the range of possible outcomes, the greater the risks. Almost everyone recognizes that risk must be considered in determining value and making investment choices. In fact, valuation and an understanding of the tradeoff between risk and return form the foundation for maximizing shareholder wealth. The study is undertaken with the main objective of determining the risk return profile of 30 stocks listed on NSE. Only 30 top companies shares listed on NSE are considered in this paper.

KEYWORDS

Portfolio, Return, Risk etc.

INTRODUCTION

Every investment is characterized by risk and return. Risk is a situation involving explore to uncertainty. When an investor deploys his fund into some securities, he/she does so after analyzing the expected return. If actual return obtained is the same as the expected return, such an investment considered to be risk free i.e. an investment with no risk. Usually, higher the risk higher the return, lower the risk lower the return. However, a general understanding of this phenomenon is not sufficient to make appropriate decisions relating to investments. A more quantifiable analysis is required to understand investments better. The quantifiable analysis is done by use of simple arithmetic and statistics to analyses the relationship. Risk is defined as the chance that an investment's actual return will be different from expected. This includes the possibility of losing some or all of the original investment.

Those of us who work hard for every penny we earn have a hard time parting with money. Therefore, people with less disposable income tend to be, by necessity, more risk averse. On the other end of the spectrum, day traders feel that if they are not making dozens of trades a day, there is a problem. These people are risk lovers.

Component of Risk

For the purpose of batter analysis and understanding, the total risk in an investment can be split into two types, viz.,

- **Systematic risk**
- **Unsystematic risk**

Total Risk = Systematic Risk + Unsystematic Risk

Systematic Risk

A dictionary meaning of a systematic risk is "acting according to a fixed plan or system." Systematic risk is the risk that is caused by system-wide factor. Changes in economic conditions, changes in political system, changes in the social system etc. are some factor that affects the entire community. These are called system –wide the particular company and uncontrollable by the company. These market risks cannot be diversified away. Interest rates, recessions & wars are examples of systematic risk. The systematic risk is further subdivided into three types. They are: a) Market risk, b) Interest rate risk, c) Purchasing power risk, d) Market risk.

The risk that value of your investment will decline as a result of market conditions. This type of risk is primarily associated with stocks. You might buy the stock of a promising or successful company only to have its market value fall with a generally falling stock market. The types of market risk are: a) Absolute risk, b) Relative risk, c) Directional risk, d) Non-directional risk, e)Basis risk, f) Volatility risk

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Interest Rate Risk

The risk caused by changes in the general level of interest rates in the marketplace. This type of risk is most apparent in the bond market because bonds are issued at specific interest rates. Generally, a rise in interest rates will cause a decline in market prices of existing bonds, while a decline in interest rates tends to cause bond prices to rise. For example, say you buy a 30-year bond today with a 6% annual yield. If interest rates rise, a new 30-year bond may be issued with an 8% annual yield. The price of your bond drops because investors are not willing to pay full value for a bond that yields less than the current rate of interest. The types of interest-rate risk are depicted and listed below: a) Price risk, and b) Reinvestment rate risk.

Inflation or Purchasing Power Risk

The risk that returns on your investment will fail to outpace inflation. This type of risk is most closely associated with cash/stable value investments. Thus, although you may think a traditional bank savings account is relatively risk free, you actually could be losing purchasing power unless the interest rate on the account exceeds the current rate of inflation. The types of power or inflationary risk are: a) Demand inflation risk, and b) Cost inflation risk.

Unsystematic Risk

Unsystematic risk is due to the influence of internal factors prevailing within an organization. Such factors are normally controllable from an organization's point of view. It is a micro in nature as it affects only a particular organization. It can be planned, so that necessary actions can be taken by the organization to mitigate (reduce the effect of) the risk.

Business Risk

This is the risk that issuers of an investment may run into financial difficulties and not be able to live up to market expectations. For example, a company's profits may be hurt by a lawsuit, a change in management or some other event. The types of business risk are, a) Asset liquidity risk, and b) Funding liquidity risk

Asset liquidity risk is due to losses arising from an inability to sell or pledge assets at, or near, their carrying value when needed. For e.g. assets sold at a lesser value than their book value.

Funding liquidity risk exists for not having an access to the sufficient-funds to make a payment on time. For e.g. when commitments made to customers are not fulfilled as discussed in the SLA (service level agreements).

Financial or Credit Risk

Financial risk is also known as credit risk. It arises due to change in the capital structure of the organization. The capital structure mainly comprises of three ways by which funds are sourced for the projects. The types of financial or credit risk are: a) Exchange rate risk, b) Recovery rate risk, c) Credit event risk, d) Non-Directional risk, e) Sovereign risk, and f)Settlement risk

OBJECTIVES OF STUDY

The core objective of this study is to analyze the risk and return of 30 top stocks listed on NSE. However in order to achieve the main objective, the following specific objectives have been framed:

- To study the variation in the stock returns for the study period of one years.
- To rank the companies on the basis of return and risk
- To find out the risk and return of portfolio consisting of 30 stocks and compare it with risk and return of individual stock.
- To offer meaningful suggestions to the investors based on the findings of the study.

SCOPE OF STUDY

The study examines the stock returns of 30 top companies listed on NSE during the period, from March 2013 to March 2014. The study covers the risk return analysis of 30 top listed companies only.

METHODOLOGY USED

The study is purely based on secondary data collected from NSE Web Site and Money Control.com. The monthly share prices of 30 top companies listed on NSE, which are used to compile NSE NIFTY, are collected from March 2013 to March 2014. These data are used to calculate actual return, CAPM return and abnormal return of each of the 30 companies. Then, 30 companies are

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ranked according to the returns yielded by them. Standard deviations and coefficient of variation of these 30 companies are arrived at to rank them based on risk. This information is presented through tables.

TECHNIQUES OF ANALYSIS

Actual Return

Actual returns for each company have been computed for the study period as under:

$$r_i = \frac{p_1 - p_0}{p_0}$$

Where, r_i is return on individual security, P_1 = Market price (closing) of security and P_0 = Market price of security on day (t-1). Comparatively, the actual returns for the market are also computed as:

$$r_m = \frac{P_1 - P_0}{P_0}$$

Where r_m is return on market, P_1 is closing market return and P_0 market return in the beginning. In the next step, average actual returns of individual stocks and market return is computed.

CAPM Return

CAPM return is calculated by applying the following formulae:

$$r_i = R_f + \beta_i(R_m - R_f)$$

Where, R_f= Risk free rate, R_m= return on market, β_i = beta of individual security and r_i is return on individual security.

Beta of the security is calculated with the help of the following formula:

$$\beta_i = r\frac{\sigma_i}{\sigma_m}$$

Here, r is correlation between individual security return and market return, σ_i is standard deviation of individual security and σ_m is standard deviation of market return.

Abnormal Returns

Abnormal return is the excess of the actual return over the expected return. It is calculated as under:

Abnormal Return = Actual Return – CAPM Return

Then, companies are ranked according to actual, CAPM and abnormal returns.

Standard Deviation

It measures the amount of variation from the average. A low standard deviation indicates that the data points tend to be very close to the mean (also called expected value); a high standard deviation indicates that the data points are spread out over a large range of values.

$$\text{S.D.} = \sqrt{\frac{\sum x^2}{n}}$$

Where: $\sum x^2$ = The sum of the squares of the differences between the Mean and each score

n = The number of scores

Coefficient of Variation

The coefficient of variation represents the ratio of the standard deviation to the mean, and it is a useful statistic for comparing the degree of variation from one data series to another, even if the means are drastically different from each other.

$$\text{Coefficient of Variation} = \frac{\text{Standard Deviation}}{\text{Expected Return}}$$

Systematic Risk

Systematic Risk is calculated with the help of the following equation:

$$\textbf{Systematic Risk} = \beta_i^2\, \sigma_m^2$$

Unsystematic Risk

Unsystematic Risk is computed as under:

$$\textbf{Unsystematic Risk} = \sigma_i^2 - \beta_i^2\, \sigma_m^2$$

Total Risk

Total risk of individual security is calculated as follows:

$$\textbf{Total Risk} = \sigma_i^2$$

LIMITATIONS OF STUDY

Every research has its own limitations. The following are the limitations of this study:

- The study covers only 30 listed companies of NSE
- This study is limited to the analysis of risk and return of 30 stocks.

RESULTS AND DISCUSSION

As per Table 1, HCL Tech has the highest actual returns and abnormal returns. Lupin Ltd. ranked second and DR Reddy laboratories third and INFOSYS ranked fourth in terms of actual return. Axis Bank has the highest CAPM return. IDFC Bank has the second highest CAPM return. Bank of Baroda and Asian Paint attained fourth position in terms of CAPM return. Lupin Ltd has the second highest abnormal returns. Asian Paint, DLF, Jindal steel, IDFC have the least Actual Returns respectively. The CAPM Returns of HCL Tech, Infosys, CAIRN and Lupin Ltd are very low. The HCL Tech have high expected return on same time it have very less CAPM return because of high risk involved in the stock.

Table-1: Rank of the NSE 30 Companies according to Actual, CAPM and Abnormal Return

S. No.	Company Name	Actual Return	Rank	Capm Return	Rank	Abnormal Return	Rank
1	ACC	-0.77177074	22	0.913640274	11	-1.685411014	21
2	AMBUJA CEM	-0.910725222	23	0.841796613	19	-1.752521835	23
3	ASIAN PAINT	-7.094725502	30	1.049909329	4	-8.144634831	30
4	AXIS BANK	0.476337556	15	1.113694681	1	-0.637357125	17
5	BAJAJ-AUTO	-0.172658716	18	0.838142362	20	-1.010801078	18
6	BANK of BARODA	-1.398478273	25	1.049541255	3	-2.448019528	25
7	BHARTI ARTL	-0.184718305	19	0.903092944	13	-1.087811249	19
8	BHEL	-0.766738079	21	0.934631951	10	-1.701370029	22
9	BCPL	0.315739402	17	0.937163608	9	-0.621424206	16
10	CAIRN	1.011274153	8	0.736622272	27	0.274651881	8
11	CIPLA	0.438512823	16	0.710030317	28	-0.271517494	13
12	COAL INDIA	-1.759205634	26	0.886276699	15	-2.645482333	26
13	DLF	-4.314195598	29	0.982233547	8	-5.296429145	29
14	DR REDDY	4.402523386	3	0.789698547	22	3.612824838	3
15	GAIL	1.146509432	6	0.842868941	18	0.303640491	7
16	GRASIM	-1.017999629	24	0.911081639	12	-1.929081269	24
17	HCL TECH	7.01851448	1	0.641692288	30	6.376822193	1
18	HDFC	0.631501976	11	0.870470348	17	-0.238968372	11
19	HDFC BANK	0.807450103	10	0.896688479	14	-0.089238376	10
20	HERO MOTOCORP	1.649256631	5	0.747012153	25	0.902244478	5
21	HINDALCO	0.816266249	9	0.770024477	23	0.046241772	9
22	ICICI BANK	0.506307839	13	1.045727243	5	-0.539419405	15
23	IDFC	-2.819879848	27	1.057739633	2	-3.877619481	28

24	INDUSIND BANK	0.493733731	14	0.998167221	7	-0.50443349	14
25	INFOSYS	2.758394289	4	0.684721223	29	2.073673065	4
26	ITC	1.130500955	7	0.805273922	21	0.325227034	6
27	JINDAL STEEL	-2.87541528	28	0.75967123	24	-3.63508651	27
28	KOTAK BANK	0.615449912	12	0.876994371	16	-0.261544459	12
29	LARSEN AND TOUBRO	-0.516362405	20	1.03995941	6	-1.556321815	20
30	LUPIN LTD	4.915486142	2	0.745	26	4.170486142	2

Sources: Authors Compilation

Table-2: Rank of the NSE 30 Companies according to Standard deviation and Coefficient of variation

S. No.	Company Name	Standard Deviation	Coefficient Variance	Rank
1	ACC	8.838410301	-11.45211893	5
2	AMBUJA CEM	6.792085151	-7.457886291	8
3	ASIAN PAINT	27.46005231	-3.870488338	11
4	AXIS BANK	15.36720169	32.26115916	29
5	BAJAJ-AUTO	6.054246486	-35.06481812	2
6	BANK of BARODA	12.49736167	-8.93640031	6
7	BHARTI ARTL	10.24649009	-55.47089712	1
8	BHEL	12.25647184	-15.98521344	4
9	BCPL	10.30618006	32.64141244	30
10	CAIRN	6.081801655	6.013998911	20
11	CIPLA	5.165159082	11.77880967	25
12	COAL INDIA	8.413136139	-4.782349475	9
13	DLF	11.5890396	-2.686257342	13
14	DR REDDY	4.255495403	0.966603702	14
15	GAIL	6.960317327	6.07087664	21
16	GRASIM	7.952964083	-7.812344772	7
17	HCL TECH	8.384379598	1.194608862	15
18	HDFC	6.497956918	10.2896858	24
19	HDFC BANK	6.675639888	8.267557173	22
20	HERO MOTOCORP	5.949348796	3.607291118	18
21	HINDALCO	8.046257715	9.857393622	23
22	ICICI BANK	11.77845801	23.26343206	28
23	IDFC	12.69225707	-4.500992154	10
24	INDUSIND BANK	11.22659332	22.73815342	27
25	INFOSYS	9.748294722	3.534046877	17
26	ITC	5.607773766	4.960432576	19
27	JINDAL STEL	9.474572962	-3.295027688	12
28	KOTAK BANK	7.323160284	11.8988729	26
29	LARSEN AND TOUBRO	16.1690094	-31.3132971	3
30	LUPIN LTD	7.147971949	1.45417396	16

Sources: Authors Compilation

Table 2 shows that Bharti Airtel, Bajaj Auto, Larsen and Toubro having less coefficient of variation due to low volatility in the stock returns ranked first, second and third. BCPL ranked least as it has highest rate of volatility. Axis Bank and ICICI Bank are also having less coefficient of variation.

Table-3: Rank of NSE 30 Companies according to Systematic, Unsystematic and Total Risk

S. No.	Company Name	Systematic risk	Rank	Unsystematic Risk	Rank	Total Risk	Rank
1	ACC	40.49927849	20	37.61821816	17	78.1174966	17
2	AMBUJA CEM	13.34273952	11	32.78968117	12	46.1324207	9
3	ASIAN PAINT	132.3933315	28	621.6611415	30	754.054473	30
4	AXIS BANK	193.5790834	30	42.57180449	20	236.150888	28
5	BAJAJ-AUTO	12.35432936	9	24.29957116	8	36.6539005	5
6	BANK of BARODA	132.0738844	27	24.11016434	7	156.184049	26
7	BHARTI ARTL	35.59177611	18	69.39878302	25	104.990559	20
8	BHEL	51.20916689	21	99.01193506	28	150.221102	25

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9	BCPL	52.58561721	22	53.63173021	21	106.217347	21
10	CAIRN	0.099948716	2	36.88836266	16	36.9883114	6
11	CIPLA	1.741438199	5	24.93743015	9	26.6788683	2
12	COAL INDIA	28.42272837	16	42.35813132	19	70.7808597	16
13	DLF	80.14508411	23	54.16075477	22	134.305839	23
14	DR REDDY	2.8451915	6	15.26404962	3	18.1092411	1
15	GAIL	13.64000291	12	34.80601438	14	48.4460173	10
16	GRASIM	39.27967917	19	23.96995852	6	63.2496377	13
17	HCL TECH	15.19813069	13	55.09969054	23	70.2978212	15
18	HDFC	22.41851756	14	19.80492655	4	42.2234441	7
19	HDFC BANK	32.76648661	17	11.7976813	2	44.5641679	8
20	HERO MOTOCORP	0.005765627	1	35.38898547	15	35.3947511	4
21	HINDALCO	0.891773772	4	63.85048945	24	64.7422632	14
22	ICICI BANK	128.7864678	26	9.945605157	1	138.732073	24
23	IDFC	139.2805684	29	21.81282115	5	161.09339	27
24	INDUSIND BANK	91.27243416	24	34.7639634	13	126.036398	22
25	INFOSYS	5.174323124	8	89.85492686	27	95.02925	19
26	ITC	5.173489629	7	26.27363699	10	31.4471266	3
27	JINDAL STEL	0.306519233	3	89.46101357	26	89.7675328	18
28	KOTAK BANK	24.81049943	15	28.81817712	11	53.6286766	12
29	LARSEN AND TOUBRO	123.8936927	25	137.5431722	29	261.436865	29
30	LUPIN LTD	12.62872774	10	38.46477525	18	51.093503	11

Sources: Authors Compilation

Table-3 clearly shows that Hero Motocorp has the least systematic risk, followed by Cairn, Jindal Steel and Hindalco respectively. The systematic risk of Axis Bank is the highest. The systematic risk of Asian Paint, IDFC, Bank of Baroda and ICICI Bank is more when compared to other companies.

Unsystematic risk of ICICI Bank is the least. Companies like HDFC Bank, Dr. Reddy laboratories and HDFC are also having least unsystematic risk. Asian Paint has the highest unsystematic risk. The unsystematic risk of Larsen and Toubro, BHEL and Infosys is also more.

In terms of total risk, the risk of Dr. Reddy laboratories is the least. It is followed by Cipla, ITC Ltd, Cipla, and Hero Motocorp respectively. Asian Paint has the highest total risk. Even Larsen and Toubro, Axis Bank, IDFC and Bank of Baroda are having more total risk.

Table-4: Risk and Return of Portfolio

Particulars	**Return / Risk**
Portfolio return (assuming equal amount of investment)	0.1510
Portfolio risk (assuming equal amount of investment)	21.63568

Sources: Authors Compilation

It is clear from Table 4 that the portfolio has a return of 0.1510% and risk of 21.63568. When we compare the return of portfolio with the returns of individual securities, the following securities have returns less than the portfolio returns: ACC, Ambuja Cement, Asian Paint, Bajaj Auto, Bank of Baroda, Bharti Airtel, BHEL, Coal India, DLF, Grasim Cement, IDFC, Jindal Steel, L&T.

FINDINGS

This part of the study speaks about the major findings of the study:

- It is clear from the study that HCL Tech has the highest actual returns and abnormal returns.
- It is found in the study that Asian Paint has the least actual returns.
- The study reveals the fact that the CAPM return of HCL Tech is the least.
- It is crystal clear from the study that BPCL has the least abnormal returns.
- It is evidence from the study that Hero Motocorp has the least systematic risk.
- It is clear from the study that ICICI Bank has the least unsystematic risk.
- The study shows that Total risk of Dr. Reddy laboratories is the least.
- It is fact from the study that the systematic risk of Axis Bank is the highest

- It is found in the study that Asian Paint has the highest unsystematic risk and total risk.
- The study shows that out of 30 stocks, 13 stocks have returns less than the portfolio returns and the most of the stocks have returns higher than the portfolio return.

SUGGESTIONS AND CONCLUSION

The study risk return analysis helps the investor to pick up the securities based on his choice. The study of this kind provides information about the performance of various stocks in the market in terms of risk and return. A stock with more systematic risk is not favorable for investment due to the reason that it has highest market risk, which cannot be diversified like unsystematic risk. Thus to construct an efficient portfolio, it is better to avoid such stocks. The study does not suggest the universal best or worst stocks for investment, because ratings of the stocks must be based on the type of investment and the type of investor. An investor who is ready to bear high risk but expect high return will go such stocks where risk and returns are high. Whereas an investor with less risk bearing capacity will go for those stocks where the risk and return are low. Among the stocks under study HCL Tech has the highest actual returns and abnormal returns and therefore better for those investors whose objective of investment is to maximize the returns. A risk adverse investor can prefer Dr. Reddy's stocks as it has the lowest risk compared to all other stocks under study.

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