# CAPM MODELING: RISK ESTIMATION AND MITIGATION ANALYSIS

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The capital asset pricing model (CAPM) is a model that portrays the connection between expected return and danger of a security. It demonstrates that the arrival on a security is equivalent to the hazard free return in addition to a hazard premium, which depends on the BETA of that security. The following is a delineation of the CAPM idea.
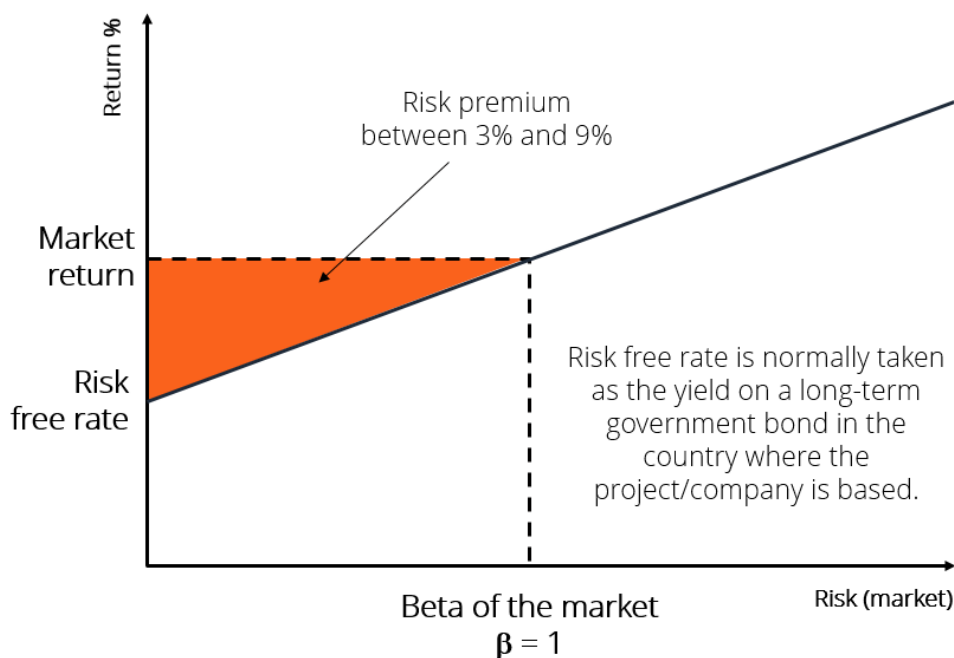


All stocks can be analyzed and there relative study can be done using β (Risk Factor), α (Intercept), σ (Standard Deviation), σ² (Variance), R (Security Return), P/E Ratio (Price earnings Ratio), r (Correlation Coefficient), and r² (Variation).

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P/E Ratio was the primary ratio on which basis analysis of the company is done, Standard Deviation for the short listed companies was compared, after that analysis retunes of the respective company was compared and lastly short listing of company was completed after comparing their respective Risks.

## 1.1 Characteristic Regression Line (CRL) Analysis

**Formula Used**

$$\beta = \frac{n\sum XY-(\sum x)(\sum y)}{n\sum X^2-(\sum X)^2}$$

$$\sigma = \sqrt{(\sum P[ri-E(r)]^2)}$$

$$\alpha = \bar{Y}-\beta\bar{X}$$

$$\text{Variance} = \sigma^2$$

$$R = \frac{Pt-Pt-1}{Pt-1}$$

$$r = \frac{n\sum XY-(\sum X)(\sum Y)}{\sqrt{(n\sum X^2-(\sum X)^2)}\sqrt{(n\sum Y^2-(\sum Y)^2)}}$$

$$\text{P/E Ratio} = \frac{Pi}{EPS}$$

$$\text{Variation} = r^2$$

**Where**

$\beta$ = Risk Factor

$\alpha$ = Intercept

$\sigma$ = Standard Deviation

$\sigma^2$ = Variance

$R$ = Security Return

**P/E Ratio** = Price earnings Ratio

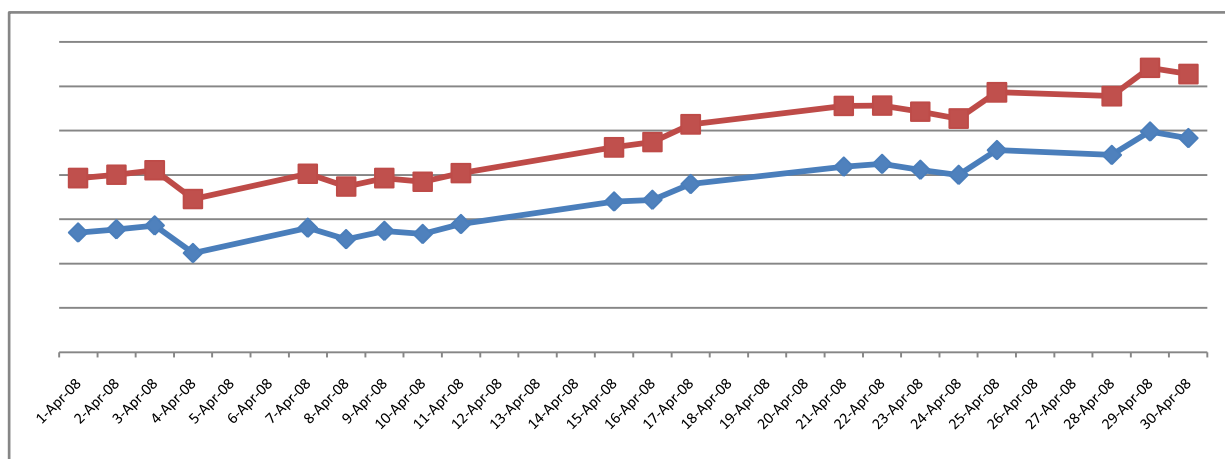$r$ = Correlation Coefficient

$r^2$ = Variation

## 1.2 Beta (β), Security Return (Ri), and Correlation (r) Calculation

### 1.2.1. HCL

### Beta (β), Security Return (Ri), and Correlation (r) Calculation

| S No. | Date | NIFTY | HCL | Index reten(X) | X² | Stock return(Y) | Y² | X*Y |
|---|---|---|---|---|---|---|---|---|
| | 1-Apr-08 | 4739.55 | 246.3 | | | | | |
| 1 | 2-Apr-08 | 4754.2 | 247 | 0.3091 | 0.0955 | 0.2842 | 0.0808 | 0.0878 |
| 2 | 3-Apr-08 | 4771.6 | 249.85 | 0.3660 | 0.1340 | 1.1538 | 1.3314 | 0.4223 |
| 3 | 4-Apr-08 | 4647 | 244.9 | -2.6113 | 6.8188 | -1.9812 | 3.9251 | 5.1734 |
| 4 | 7-Apr-08 | 4761.2 | 244.55 | 2.4575 | 6.0393 | -0.1429 | 0.0204 | -0.3512 |
| 5 | 8-Apr-08 | 4709.65 | 238.65 | -1.0827 | 1.1723 | -2.4126 | 5.8206 | 2.6121 |
| 6 | 9-Apr-08 | 4747.05 | 239 | 0.7941 | 0.6306 | 0.1467 | 0.0215 | 0.1165 |
| 7 | 10-Apr-08 | 4733 | 236.6 | -0.2960 | 0.0876 | -1.0042 | 1.0084 | 0.2972 |
| 8 | 11-Apr-08 | 4777.8 | 230.4 | 0.9465 | 0.8959 | -2.6205 | 6.8668 | -2.4804 |
| 9 | 15-Apr-08 | 4879.65 | 245 | 2.1317 | 4.5443 | 6.3368 | 40.1551 | 13.5084 |
| 10 | 16-Apr-08 | 4887.3 | 260.5 | 0.1568 | 0.0246 | 6.3265 | 40.0250 | 0.9918 |
| 11 | 17-Apr-08 | 4958.4 | 269.6 | 1.4548 | 2.1164 | 3.4933 | 12.2030 | 5.0820 |
| 12 | 21-Apr-08 | 5037 | 274.3 | 1.5852 | 2.5128 | 1.7433 | 3.0392 | 2.7635 |
| 13 | 22-Apr-08 | 5049.3 | 263.65 | 0.2442 | 0.0596 | -3.8826 | 15.0747 | -0.9481 |
| 14 | 23-Apr-08 | 5022.8 | 262.45 | -0.5248 | 0.2754 | -0.4551 | 0.2072 | 0.2389 |
| 15 | 24-Apr-08 | 4999.85 | 254.1 | -0.4569 | 0.2088 | -3.1816 | 10.1223 | 1.4537 |
| 16 | 25-Apr-08 | 5111.7 | 260.7 | 2.2371 | 5.0045 | 2.5974 | 6.7465 | 5.8106 |
| 17 | 28-Apr-08 | 5089.65 | 265.4 | -0.4314 | 0.1861 | 1.8028 | 3.2502 | -0.7777 |
| 18 | 29-Apr-08 | 5195.5 | 286.9 | 2.0797 | 4.3252 | 8.1010 | 65.6259 | 16.8477 |
| 19 | 30-Apr-08 | 5165.9 | 288.45 | -0.5697 | 0.3246 | 0.5403 | 0.2919 | -0.3078 |
| sum= | | | | 8.7899 | 35.4563 | 16.8455 | 215.8159 | 50.5408 |

| Beta(β)= | **1.3618** | | Stock Return= | 9.00% | |
|---|---|---|---|---|---|
| Alfa(α)= | **0.2566** | X̄= | 0.4626 | ȳ= | 0.8866 |
| Standard Error(e)= | 0.0266 6 | | | Beta*X̄ = | 0.6300 |

| Stock Return(R)= | 0.41 | | Correlation(r) = | 0.56 | Percentage Variation(r²) = | 31.57 |
|---|---|---|---|---|---|---|
| Expected Return= | 0.84 | | | | | |



## Calculation For Standard Deviation And Expected Stock Return

| Standard Deviation For Stock | | | | Expected Return | Standard Deviation for Index | | | |
|---|---|---|---|---|---|---|---|---|
| 1.30 | 1.69 | 0.05 | 0.08 | | -140.1 | 19628.01 | 0.05 | 981.40 |
| 2.00 | 4.00 | 0.05 | 0.20 | 0.01 | -125.45 | 15737.70 | 0.05 | 786.89 |
| 4.85 | 23.52 | 0.05 | 1.18 | 0.06 | -108.05 | 11674.80 | 0.05 | 583.74 |
| -0.10 | 0.01 | 0.05 | 0.00 | -0.10 | -232.65 | 54126.02 | 0.05 | 2706.30 |
| -0.45 | 0.20 | 0.05 | 0.01 | -0.01 | -118.45 | 14030.40 | 0.05 | 701.52 |
| -6.35 | 40.32 | 0.05 | 2.02 | -0.12 | -170 | 28900.00 | 0.05 | 1445.00 |
| -6.00 | 36.00 | 0.05 | 1.80 | 0.01 | -132.6 | 17582.76 | 0.05 | 879.14 |
| -8.40 | 70.56 | 0.05 | 3.53 | -0.05 | -146.65 | 21506.22 | 0.05 | 1075.31 |

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| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| -14.60 | 213.16 | 0.05 | 10.66 | -0.13 | | -101.85 | 10373.42 | 0.05 | 518.67 |
| 0.00 | 0.00 | 0.05 | 0.00 | 0.32 | | 0 | 0.00 | 0.05 | 0.00 |
| 15.50 | 240.25 | 0.05 | 12.01 | 0.32 | | 7.65 | 58.52 | 0.05 | 2.93 |
| 24.60 | 605.16 | 0.05 | 30.26 | 0.17 | | 78.75 | 6201.56 | 0.05 | 310.08 |
| 29.30 | 858.49 | 0.05 | 42.92 | 0.09 | | 157.35 | 24759.02 | 0.05 | 1237.95 |
| 18.65 | 347.82 | 0.05 | 17.39 | -0.19 | | 169.65 | 28781.12 | 0.05 | 1439.06 |
| 17.45 | 304.50 | 0.05 | 15.23 | -0.02 | | 143.15 | 20491.92 | 0.05 | 1024.60 |
| 9.10 | 82.81 | 0.05 | 4.14 | -0.16 | | 120.2 | 14448.04 | 0.05 | 722.40 |
| 15.70 | 246.49 | 0.05 | 12.32 | 0.13 | | 232.05 | 53847.20 | 0.05 | 2692.36 |
| 20.40 | 416.16 | 0.05 | 20.81 | 0.09 | | 210 | 44100.00 | 0.05 | 2205.00 |
| 41.90 | 1755.61 | 0.05 | 87.78 | 0.41 | | 315.85 | 99761.22 | 0.05 | 4988.06 |
| 43.45 | 1887.90 | 0.05 | 94.40 | 0.03 | | 286.25 | 81939.06 | 0.05 | 4096.95 |
| | | | 356.73 | 0.84 | | | | | 28397.35 |
| | Variance= | 356.73 | | | | | Variance= | 28397.35 | |
| | SD= | 18.89% | | | | | SD= | 168.52% | |

## 1.2.2. INFOSYS

## Beta (β), Security Return (Ri), and Correlation (r) Calculation

| S No. | Date | NIFTY | Infosys | Index reten(X) | X*X | Stock return(Y) | Y*Y | X*Y |
|---|---|---|---|---|---|---|---|---|
| | 1-Apr-08 | 4739.55 | 1423.05 | | | | | |
| 1 | 2-Apr-08 | 4754.2 | 1482.8 | 0.3091 | 0.0955 | 4.1987 | 17.6293 | 1.2978 |
| 2 | 3-Apr-08 | 4771.6 | 1522.5 | 0.3660 | 0.1340 | 2.6774 | 7.1683 | 0.9799 |
| 3 | 4-Apr-08 | 4647 | 1485.45 | -2.6113 | 6.8188 | -2.4335 | 5.9219 | 6.3546 |
| 4 | 7-Apr-08 | 4761.2 | 1492.05 | 2.4575 | 6.0393 | 0.4443 | 0.1974 | 1.0919 |
| 5 | 8-Apr-08 | 4709.65 | 1466.95 | -1.0827 | 1.1723 | -1.6822 | 2.8300 | 1.8214 |
| 6 | 9-Apr-08 | 4747.05 | 1479.95 | 0.7941 | 0.6306 | 0.8862 | 0.7853 | 0.7037 |
| 7 | 10-Apr-08 | 4733 | 1452.6 | -0.2960 | 0.0876 | -1.8480 | 3.4152 | 0.5470 |
| 8 | 11-Apr-08 | 4777.8 | 1421.9 | 0.9465 | 0.8959 | -2.1135 | 4.4667 | -2.0005 |
| 9 | 15-Apr-08 | 4879.65 | 1510.4 | 2.1317 | 4.5443 | 6.2241 | 38.7390 | 13.2681 |
| 10 | 16-Apr-08 | 4887.3 | 1600.2 | 0.1568 | 0.0246 | 5.9454 | 35.3483 | 0.9321 |
| 11 | 17-Apr-08 | 4958.4 | 1659.1 | 1.4548 | 2.1164 | 3.6808 | 13.5482 | 5.3548 |
| 12 | 21-Apr-08 | 5037 | 1645.8 | 1.5852 | 2.5128 | -0.8016 | 0.6426 | -1.2707 |
| 13 | 22-Apr-08 | 5049.3 | 1598.6 | 0.2442 | 0.0596 | -2.8679 | 8.2249 | -0.7003 |
| 14 | 23-Apr-08 | 5022.8 | 1647.95 | -0.5248 | 0.2754 | 3.0871 | 9.5300 | -1.6202 |
| 15 | 24-Apr-08 | 4999.85 | 1696.05 | -0.4569 | 0.2088 | 2.9188 | 8.5193 | -1.3336 |
| 16 | 25-Apr-08 | 5111.7 | 1684.3 | 2.2371 | 5.0045 | -0.6928 | 0.4800 | -1.5498 |

| 17 | 28-Apr-08 | 5089.65 | 1663.65 | -0.4314 | 0.1861 | -1.2260 | 1.5031 | 0.5289 |
|---|---|---|---|---|---|---|---|---|
| 18 | 29-Apr-08 | 5195.5 | 1749.55 | 2.0797 | 4.3252 | 5.1633 | 26.6601 | 10.7383 |
| 19 | 30-Apr-08 | 5165.9 | 1753.1 | -0.5697 | 0.3246 | 0.2029 | 0.0412 | -0.1156 |
| sum= | | | | 8.7899 | 35.4563 | 21.7634 | 185.6509 | 35.0275 |

| Beta = | **0.7951** | | Stock Return= | 9.00% | |
|---|---|---|---|---|---|
| Alfa = | **0.7776** | $\bar{X}$= | 0.4626 | $\bar{y}$= | 1.1454 |
| Standard Error(e)= | 0.02666 | | | Beta*$\bar{X}$= | 0.3679 |

| Stock Return(R)= | 0.88 | | Correlation(r)= | 0.369909511 | Percentage Variation(r*r)= | 0.136833046 |
|---|---|---|---|---|---|---|
| Expected Return= | 1.09 | | | | | |
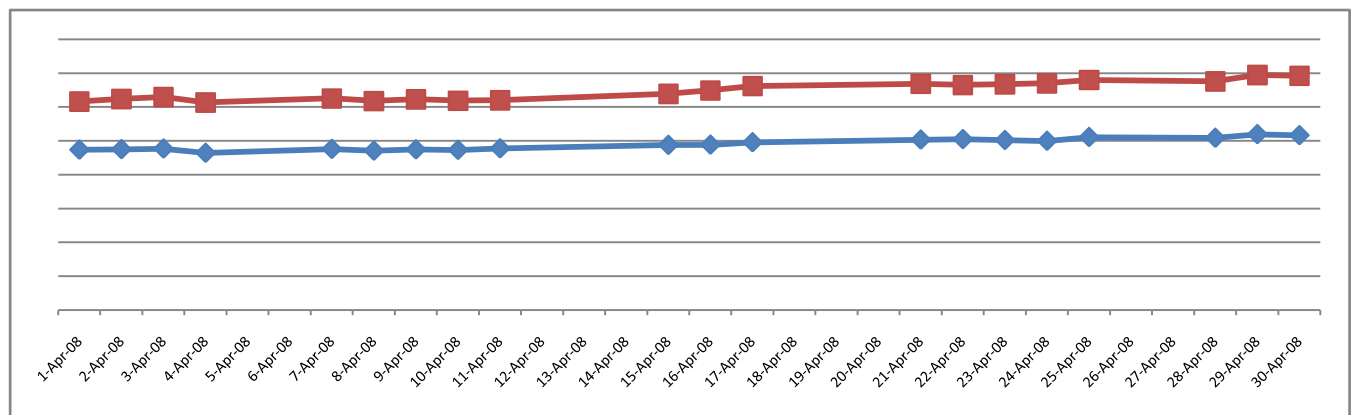


## Calculation For Standard Deviation And Expected Stock Return

| Standard Deviation For Stock | | | | Expected | Standard Deviation for Index | | | |
|---|---|---|---|---|---|---|---|---|
| -87.35 | 7630.02 | 0.05 | 381.50 | Return | -140.1 | 19628.01 | 0.05 | 981.40 |
| -27.60 | 761.76 | 0.05 | 38.09 | 0.21 | -125.45 | 15737.70 | 0.05 | 786.89 |
| 12.10 | 146.41 | 0.05 | 7.32 | 0.13 | -108.05 | 11674.80 | 0.05 | 583.74 |
| -24.95 | 622.50 | 0.05 | 31.13 | -0.12 | -232.65 | 54126.02 | 0.05 | 2706.30 |
| -18.35 | 336.72 | 0.05 | 16.84 | 0.02 | -118.45 | 14030.40 | 0.05 | 701.52 |
| -43.45 | 1887.90 | 0.05 | 94.40 | -0.08 | -170 | 28900.00 | 0.05 | 1445.00 |
| -30.45 | 927.20 | 0.05 | 46.36 | 0.04 | -132.6 | 17582.76 | 0.05 | 879.14 |

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| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| -57.80 | 3340.84 | 0.05 | 167.04 | -0.09 | | -146.65 | 21506.22 | 0.05 | 1075.31 |
| -88.50 | 7832.25 | 0.05 | 391.61 | -0.11 | | -101.85 | 10373.42 | 0.05 | 518.67 |
| 0.00 | 0.00 | 0.05 | 0.00 | 0.31 | | 0 | 0.00 | 0.05 | 0.00 |
| 89.80 | 8064.04 | 0.05 | 403.20 | 0.30 | | 7.65 | 58.52 | 0.05 | 2.93 |
| 148.70 | 22111.69 | 0.05 | 1105.58 | 0.18 | | 78.75 | 6201.56 | 0.05 | 310.08 |
| 135.40 | 18333.16 | 0.05 | 916.66 | -0.04 | | 157.35 | 24759.02 | 0.05 | 1237.95 |
| 88.20 | 7779.24 | 0.05 | 388.96 | -0.14 | | 169.65 | 28781.12 | 0.05 | 1439.06 |
| 137.55 | 18920.00 | 0.05 | 946.00 | 0.15 | | 143.15 | 20491.92 | 0.05 | 1024.60 |
| 185.65 | 34465.92 | 0.05 | 1723.30 | 0.15 | | 120.2 | 14448.04 | 0.05 | 722.40 |
| 173.90 | 30241.21 | 0.05 | 1512.06 | -0.03 | | 232.05 | 53847.20 | 0.05 | 2692.36 |
| 153.25 | 23485.56 | 0.05 | 1174.28 | -0.06 | | 210 | 44100.00 | 0.05 | 2205.00 |
| 239.15 | 57192.72 | 0.05 | 2859.64 | 0.26 | | 315.85 | 99761.22 | 0.05 | 4988.06 |
| 242.70 | 58903.29 | 0.05 | 2945.16 | 0.01 | | 286.25 | 81939.06 | 0.05 | 4096.95 |
| | | | 15149.12 | 1.09 | | | | | 28397.35 |
| | Variance= | 15149.12 | | | | | Variance= | 28397.35 | |
| | SD= | 123.08% | | | | | SD= | 168.52% | |

1.2.4. **TCS**

**Beta (β), Security Return (Ri), and Correlation (r) Calculation**

| S No. | Date | NIFTY | TCS | Index reten(X) | X*X | Stock return(Y) | Y*Y | X*Y |
|---|---|---|---|---|---|---|---|---|
| | 1-Apr-08 | 4739.55 | 832.35 | | | | | |
| 1 | 2-Apr-08 | 4754.2 | 851.25 | 0.3091 | 0.0955 | 2.2707 | 5.1560 | 0.7019 |
| 2 | 3-Apr-08 | 4771.6 | 885.4 | 0.3660 | 0.1340 | 4.0117 | 16.0941 | 1.4683 |
| 3 | 4-Apr-08 | 4647 | 872.9 | -2.6113 | 6.8188 | -1.4118 | 1.9932 | 3.6866 |
| 4 | 7-Apr-08 | 4761.2 | 904.1 | 2.4575 | 6.0393 | 3.5743 | 12.7756 | 8.7838 |
| 5 | 8-Apr-08 | 4709.65 | 887.35 | -1.0827 | 1.1723 | -1.8527 | 3.4324 | 2.0059 |
| 6 | 9-Apr-08 | 4747.05 | 876.25 | 0.7941 | 0.6306 | -1.2509 | 1.5648 | -0.9934 |
| 7 | 10-Apr-08 | 4733 | 899.55 | -0.2960 | 0.0876 | 2.6591 | 7.0706 | -0.7870 |
| 8 | 11-Apr-08 | 4777.8 | 908 | 0.9465 | 0.8959 | 0.9394 | 0.8824 | 0.8891 |
| 9 | 15-Apr-08 | 4879.65 | 974.15 | 2.1317 | 4.5443 | 7.2852 | 53.0748 | 15.5302 |
| 10 | 16-Apr-08 | 4887.3 | 971.9 | 0.1568 | 0.0246 | -0.2310 | 0.0533 | -0.0362 |
| 11 | 17-Apr-08 | 4958.4 | 1000.9 | 1.4548 | 2.1164 | 2.9838 | 8.9033 | 4.3409 |
| 12 | 21-Apr-08 | 5037 | 993.4 | 1.5852 | 2.5128 | -0.7493 | 0.5615 | -1.1878 |
| 13 | 22-Apr-08 | 5049.3 | 887.2 | 0.2442 | 0.0596 | -10.6906 | 114.2880 | -2.6106 |
| 14 | 23-Apr-08 | 5022.8 | 889.15 | -0.5248 | 0.2754 | 0.2198 | 0.0483 | -0.1154 |
| 15 | 24-Apr-08 | 4999.85 | 890.75 | -0.4569 | 0.2088 | 0.1799 | 0.0324 | -0.0822 |
| 16 | 25-Apr-08 | 5111.7 | 889.3 | 2.2371 | 5.0045 | -0.1628 | 0.0265 | -0.3642 |
| 17 | 28-Apr-08 | 5089.65 | 881.7 | -0.4314 | 0.1861 | -0.8546 | 0.7303 | 0.3686 |
| 18 | 29-Apr-08 | 5195.5 | 910.55 | 2.0797 | 4.3252 | 3.2721 | 10.7066 | 6.8050 |

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| 19 | 30-Apr-08 | 5165.9 | 921 | -0.5697 | 0.3246 | 1.1477 | 1.3171 | -0.6538 |
|----|-----------|--------|-----|---------|--------|--------|----------|---------|
| sum= |         |        |     | 8.7899  | 35.4563 | 11.3401 | 238.7112 | 37.7498 |

| Beta = | **1.0355** |    | Stock Return= | 9.00% |    |
|--------|-----------|----|----|----|----|
| Alfa = | **0.1178** | X̄= | 0.4626 | ȳ= | 0.5968 |
| Standard Error(e)= | 0.02666 |  |  | Beta*X̄= | 0.4790 |

| Stock Return(R)= | 0.24 |  | Correlation(r)= | 0.393330066 | Percentage Variation(r*r)= | 0.154708541 |
|------------------|------|--|-----------------|-------------|----------------------------|-------------|
| Expected Return= | 0.57 |  |  |  |  |  |
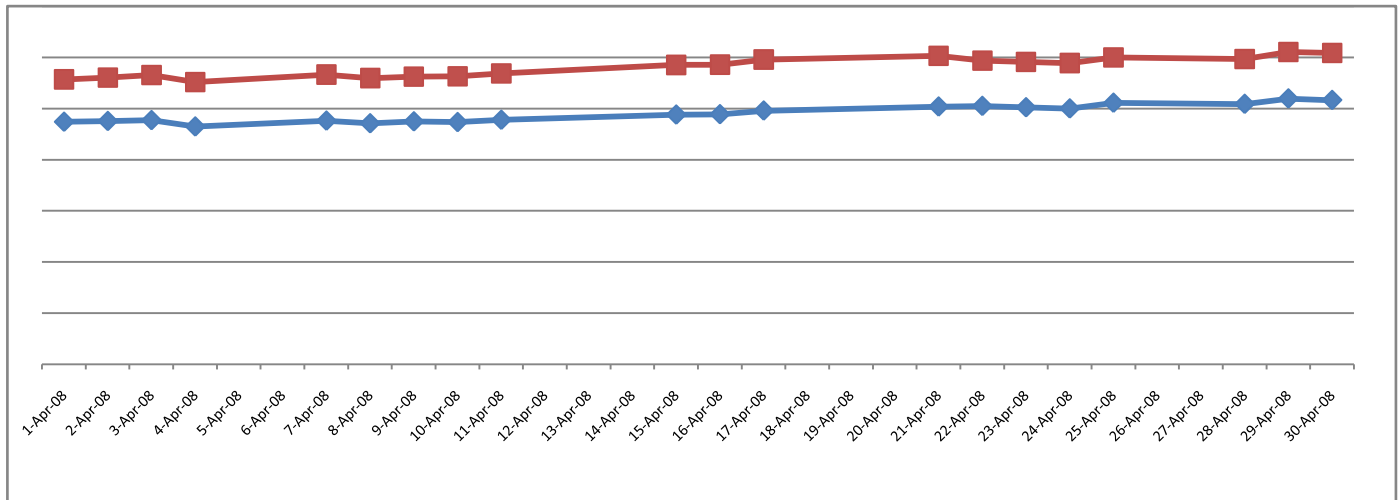
## Calculation For Standard Deviation And Expected Stock Return

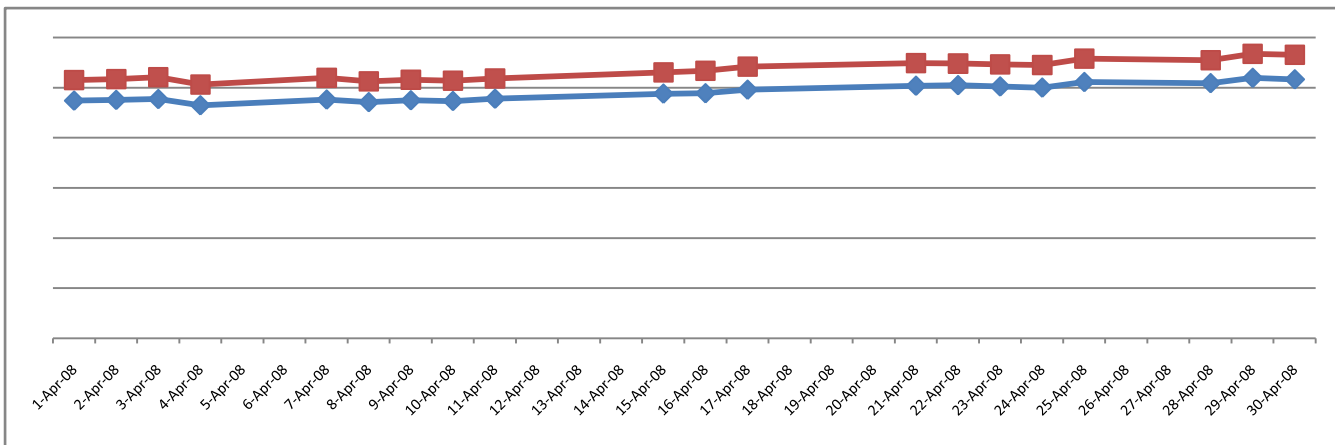| Standard Deviation For Stock | | | | Expected Return | Standard Deviation for Index | | | |
|---|---|---|---|---|---|---|---|---|
| -141.80 | 20107.24 | 0.05 | 1005.36 | | -140.1 | 19628.01 | 0.05 | 981.40 |
| -122.90 | 15104.41 | 0.05 | 755.22 | 0.11 | -125.45 | 15737.70 | 0.05 | 786.89 |
| -88.75 | 7876.56 | 0.05 | 393.83 | 0.20 | -108.05 | 11674.80 | 0.05 | 583.74 |
| -101.25 | 10251.56 | 0.05 | 512.58 | -0.07 | -232.65 | 54126.02 | 0.05 | 2706.30 |
| -70.05 | 4907.00 | 0.05 | 245.35 | 0.18 | -118.45 | 14030.40 | 0.05 | 701.52 |
| -86.80 | 7534.24 | 0.05 | 376.71 | -0.09 | -170 | 28900.00 | 0.05 | 1445.00 |
| -97.90 | 9584.41 | 0.05 | 479.22 | -0.06 | -132.6 | 17582.76 | 0.05 | 879.14 |
| -74.60 | 5565.16 | 0.05 | 278.26 | 0.13 | -146.65 | 21506.22 | 0.05 | 1075.31 |
| -66.15 | 4375.82 | 0.05 | 218.79 | 0.05 | -101.85 | 10373.42 | 0.05 | 518.67 |
| 0.00 | 0.00 | 0.05 | 0.00 | 0.36 | 0 | 0.00 | 0.05 | 0.00 |
| -2.25 | 5.06 | 0.05 | 0.25 | -0.01 | 7.65 | 58.52 | 0.05 | 2.93 |
| 26.75 | 715.56 | 0.05 | 35.78 | 0.15 | 78.75 | 6201.56 | 0.05 | 310.08 |
| 19.25 | 370.56 | 0.05 | 18.53 | -0.04 | 157.35 | 24759.02 | 0.05 | 1237.95 |
| -86.95 | 7560.30 | 0.05 | 378.02 | -0.53 | 169.65 | 28781.12 | 0.05 | 1439.06 |
| -85.00 | 7225.00 | 0.05 | 361.25 | 0.01 | 143.15 | 20491.92 | 0.05 | 1024.60 |
| -83.40 | 6955.56 | 0.05 | 347.78 | 0.01 | 120.2 | 14448.04 | 0.05 | 722.40 |
| -84.85 | 7199.52 | 0.05 | 359.98 | -0.01 | 232.05 | 53847.20 | 0.05 | 2692.36 |
| -92.45 | 8547.00 | 0.05 | 427.35 | -0.04 | 210 | 44100.00 | 0.05 | 2205.00 |
| -63.60 | 4044.96 | 0.05 | 202.25 | 0.16 | 315.85 | 99761.22 | 0.05 | 4988.06 |
| -53.15 | 2824.92 | 0.05 | 141.25 | 0.06 | 286.25 | 81939.06 | 0.05 | 4096.95 |
| | | | 6537.74 | 0.57 | | | | 28397.35 |
| | Variance= | 6537.74 | | | | Variance= | 28397.35 | |
| | SD= | 80.86% | | | | SD= | 168.52% | |

## 1.2.5. **WIPRO**

## Beta (β), Security Return (Ri), and Correlation (r) Calculation

| S No. | Date | NIFTY | Wipro | Index reten(X) | X*X | Stock return(Y) | Y*Y | X*Y |
|---|---|---|---|---|---|---|---|---|
| | 1-Apr-08 | 4739.55 | 409.4 | | | | | |
| 1 | 2-Apr-08 | 4754.2 | 415.25 | 0.3091 | 0.0955 | 1.4289 | 2.0418 | 0.4417 |
| 2 | 3-Apr-08 | 4771.6 | 436.35 | 0.3660 | 0.1340 | 5.0813 | 25.8194 | 1.8597 |
| 3 | 4-Apr-08 | 4647 | 414.9 | -2.6113 | 6.8188 | -4.9158 | 24.1649 | 12.8365 |
| 4 | 7-Apr-08 | 4761.2 | 434.65 | 2.4575 | 6.0393 | 4.7602 | 22.6593 | 11.6981 |
| 5 | 8-Apr-08 | 4709.65 | 413.9 | -1.0827 | 1.1723 | -4.7740 | 22.7907 | 5.1688 |
| 6 | 9-Apr-08 | 4747.05 | 410.95 | 0.7941 | 0.6306 | -0.7127 | 0.5080 | -0.5660 |
| 7 | 10-Apr-08 | 4733 | 407.25 | -0.2960 | 0.0876 | -0.9004 | 0.8106 | 0.2665 |
| 8 | 11-Apr-08 | 4777.8 | 405.5 | 0.9465 | 0.8959 | -0.4297 | 0.1847 | -0.4067 |
| 9 | 15-Apr-08 | 4879.65 | 423.9 | 2.1317 | 4.5443 | 4.5376 | 20.5899 | 9.6730 |
| 10 | 16-Apr-08 | 4887.3 | 447.3 | 0.1568 | 0.0246 | 5.5202 | 30.4723 | 0.8654 |
| 11 | 17-Apr-08 | 4958.4 | 459.25 | 1.4548 | 2.1164 | 2.6716 | 7.1374 | 3.8866 |
| 12 | 21-Apr-08 | 5037 | 454.8 | 1.5852 | 2.5128 | -0.9690 | 0.9389 | -1.5360 |
| 13 | 22-Apr-08 | 5049.3 | 431.2 | 0.2442 | 0.0596 | -5.1891 | 26.9267 | -1.2671 |
| 14 | 23-Apr-08 | 5022.8 | 443.15 | -0.5248 | 0.2754 | 2.7713 | 7.6803 | -1.4545 |
| 15 | 24-Apr-08 | 4999.85 | 449.7 | -0.4569 | 0.2088 | 1.4781 | 2.1846 | -0.6753 |
| 16 | 25-Apr-08 | 5111.7 | 466.35 | 2.2371 | 5.0045 | 3.7025 | 13.7083 | 8.2827 |
| 17 | 28-Apr-08 | 5089.65 | 458.1 | -0.4314 | 0.1861 | -1.7691 | 3.1296 | 0.7631 |
| 18 | 29-Apr-08 | 5195.5 | 478.9 | 2.0797 | 4.3252 | 4.5405 | 20.6161 | 9.4429 |
| 19 | 30-Apr-08 | 5165.9 | 488.75 | -0.5697 | 0.3246 | 2.0568 | 4.2304 | -1.1718 |
| sum= | | | | 8.7899 | 35.4563 | 18.8892 | 236.5937 | 58.1075 |

| Beta = | **1.5728** | | Stock Return= | 9.00% | |
|---|---|---|---|---|---|
| Alfa = | **0.2666** | X̄= | 0.4626 | ȳ= | 0.9942 |
| Standard Error(e)= | 0.02666 | | | Beta*X̄= | 0.7276 |

| | | | | Percentage | |
|---|---|---|---|---|---|
| Stock Return(R)= | 0.43 | | Correlation(r)= | 0.62099584 | Variation(r²)= | 0.38563583 |
| Expected Return= | 0.94 | | | | |

## Calculation For Standard Deviation And Expected Stock Return

| Standard Deviation For Stock | | | | Expected Return | Standard Deviation for Index | | | |
|---|---|---|---|---|---|---|---|---|
| -14.50 | 210.25 | 0.05 | 10.51 | | -140.1 | 19628.01 | 0.05 | 981.40 |
| -8.65 | 74.82 | 0.05 | 3.74 | 0.07 | -125.45 | 15737.70 | 0.05 | 786.89 |
| 12.45 | 155.00 | 0.05 | 7.75 | 0.25 | -108.05 | 11674.80 | 0.05 | 583.74 |
| -9.00 | 81.00 | 0.05 | 4.05 | -0.25 | -232.65 | 54126.02 | 0.05 | 2706.30 |
| 10.75 | 115.56 | 0.05 | 5.78 | 0.24 | -118.45 | 14030.40 | 0.05 | 701.52 |
| -10.00 | 100.00 | 0.05 | 5.00 | -0.24 | -170 | 28900.00 | 0.05 | 1445.00 |
| -12.95 | 167.70 | 0.05 | 8.39 | -0.04 | -132.6 | 17582.76 | 0.05 | 879.14 |
| -16.65 | 277.22 | 0.05 | 13.86 | -0.05 | -146.65 | 21506.22 | 0.05 | 1075.31 |
| -18.40 | 338.56 | 0.05 | 16.93 | -0.02 | -101.85 | 10373.42 | 0.05 | 518.67 |
| 0.00 | 0.00 | 0.05 | 0.00 | 0.23 | 0 | 0.00 | 0.05 | 0.00 |
| 23.40 | 547.56 | 0.05 | 27.38 | 0.28 | 7.65 | 58.52 | 0.05 | 2.93 |
| 35.35 | 1249.62 | 0.05 | 62.48 | 0.13 | 78.75 | 6201.56 | 0.05 | 310.08 |
| 30.90 | 954.81 | 0.05 | 47.74 | -0.05 | 157.35 | 24759.02 | 0.05 | 1237.95 |
| 7.30 | 53.29 | 0.05 | 2.66 | -0.26 | 169.65 | 28781.12 | 0.05 | 1439.06 |
| 19.25 | 370.56 | 0.05 | 18.53 | 0.14 | 143.15 | 20491.92 | 0.05 | 1024.60 |
| 25.80 | 665.64 | 0.05 | 33.28 | 0.07 | 120.2 | 14448.04 | 0.05 | 722.40 |
| 42.45 | 1802.00 | 0.05 | 90.10 | 0.19 | 232.05 | 53847.20 | 0.05 | 2692.36 |

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| 34.20 | 1169.64 | 0.05 | 58.48 | -0.09 | | 210 | 44100.00 | 0.05 | 2205.00 |
| 55.00 | 3025.00 | 0.05 | 151.25 | 0.23 | | 315.85 | 99761.22 | 0.05 | 4988.06 |
| 64.85 | 4205.52 | 0.05 | 210.28 | 0.10 | | 286.25 | 81939.06 | 0.05 | 4096.95 |
| | | | 778.19 | 0.94 | | | | | 28397.35 |
| | Variance= | 778.19 | | | | | Variance= | 28397.35 | |
| | SD= | 27.90% | | | | | SD= | 168.52% | |

# CONCLUSION

These ratios also help in industry analysis and in predicting market future, according to the performance of the company. News about the company and the segment in which company/industry is operating are also helpful in predicting company future and there return. Further detailed study of market can be done using these ratios. Relative study can be done to see, in which stock investor must invest, so there is minimum risk in investment in particular stock/segment.

The aforesaid description throws light on the significant ratios namely Risk factor, Intercept, Standard Deviation, Variance, Security Return, P/E ratio, Correlation coefficient and Variation of the five Indian companies – HCL, INFOSYS, TCS, and WIPRO.