“Upshot of Economic Tumult on Equity Investors: A Study of Market Index”

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ABSTRACT
The world economy is facing the turmoil triggered by sub prime crisis in the U.S.A. Now it is spread over to the world over. It has spread its wings to the Equity Markets as well as Debt Market. Decreasing Assets Prices, Falling Margins and Trading effect the countries in a badly manner. Equity Market has been hit by this turmoil because of lack of Foreign Direct Investment and Foreign Institutional Investors. Severe Credit Crunch is under pressure. Credit growth has gone down. Market Index is also variated to a large extent. The present research is an attempt to study the Economic Turmoil position in Indian Economy and analyze the impact of economic turmoil on equity investors and market Index. Moreover the volatility of the return on equity has also been studied through the Beta calculation of some companies. It also emphasizes the relationship between economic turmoil and Investor Behavior using test of Independence.

Introduction
The financial turmoil is complex and began with the deceitful mortgages. It is further triggered by panic buying and selling, decreasing security prices and falling markets. Equity Market is adversely affected by the Economic Turmoil due to back out foreign investors. Credit Growth has gone down. Financial Crisis has affected the financial market rigorously. Trading of equity on BSE and NSE has also affected. Due to current economic turmoil, investment in equity market reduces to a greater extent. Liquidity in the market, Foreign Direct Investment has affected this market badly. Beta (Systematic Risk) of most of the equity scrips is greater than 1. It shows that the security returns are highly volatile leading to less investment. Meltdown of the financial sector led to the losses to the various companies. Accordingly the most affected area is Equity Market because of higher risk possibilities. Meltdown of Lehman Brothers also led to the bad shape of world economy. It has also affected the consumer spending and the confidence. Securities in the market are under priced or over priced. Pressure on the Banking Sector is also emerged due to banking failures and tight credit conditions. Indian Equity Market is also affected by the sudden pull out of FII’s. Domestic Investment is adversely affected by the financial turmoil in U.S.

Key Words: Volatility, Risk and Return, Liquidity, Economic Turmoil, Systematic Risk, Beta

OBJECTIVES OF THE STUDY
The present study is an attempt to achieve the following objectives:
1. To study the economic turmoil position in Indian economy
2. To analyze the impact of economic turmoil on equity investors
3. To analyze the impact of economic turmoil on market index
4. To study the volatility of return on equity based on beta
5. To analyze the volatility between economic turmoil and investor behavior using test of independence
6. To suggest measures for equity investors based on the findings of the study.

METHODOLOGY
PRIMARY DATA: Primary data has been collected by conducting the survey of equity Investors in U.P
SECONDARY DATA: Secondary data has been collected from various reputed Journals and Magazines.
Nature of Research: Descriptive Research
Sampling Technique: Non-Probability Sampling (Convenience Sampling)
Analysis of the questionnaire would be done with the help of statistical tools like Bar diagrams, Pie charts, Line graphs etc. and also using other complex statistical tools like SPSS and Factor Analysis.

**FACTOR ANALYSIS:**
Factor analysis is a class of procedures primarily used for data reduction and summarization. In factor analysis relationship among sets of many interrelated variables are examined and represented in terms of a new underlying factors. Factor analysis is an exploratory tool and so it should be used to guide the researcher to make various decisions. One important decision is the number of factors to extract.

**INTERPRETATION:**
This SPSS output shows an abridged version of R Matrix. The top half of this table contains the Pearson correlation coefficient between all pairs of factors whereas the bottom half contains the one tailed significance of these coefficients. This correlation matrix is used to check the pattern of relationships. First check the significance values and looks for any variable for which the majority of values are greater than 0.05. Then check the correlation coefficients themselves and look for any greater than 0.9. For these data its value is .624 which is greater than the necessary Value of 0.00001. Therefore multicollinearity is not a problem for these data. TO sum up all the factors correlate fairly well and none of the correlation coefficients are particularly large, therefore there is no need to consider eliminating any factor at this stage.

**KMO and Bartlett's Test:**
Kaiser-Meyer-Olkin Measure of Sampling Adequacy. .519
**Bartlett's Test of Sphericity**

<table>
<thead>
<tr>
<th>Approx. Chi-Square</th>
<th>91.297</th>
</tr>
</thead>
<tbody>
<tr>
<td>Df</td>
<td>78</td>
</tr>
<tr>
<td>Sig.</td>
<td>.144</td>
</tr>
</tbody>
</table>

**INTERPRETATION:** KMO and Bartlett’s Test is an important part of the output produced by the SPSS tool using factor analysis. KMO i.e. Kaiser-Meyer-Olkin measures the sampling adequacy. The KMO statistic varies between 0 and 1. A value of ‘0’ indicates that the sum of partial correlations is large relative to the sum of correlations, indicating diffusion in the pattern of correlations. A value close to ‘1’ indicates the pattern of correlations are relatively compact and so factor analysis should yield distinct and reliable factors. Kaiser (1974) recommends accepting values greater than 0.5 as acceptable. Furthermore, values between 0.5 and 0.7 are mediocre, values between 0.7 and 0.8 are good, values between 0.8 and 0.9 are great and above 0.9 are superb. For these data the value is .519, which falls in to the range of being good. So, therefore the factor analysis is appropriate for these data.

**COMMUNALITIES**

<table>
<thead>
<tr>
<th>Initial</th>
<th>Extraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk</td>
<td>1.000</td>
</tr>
<tr>
<td>Return</td>
<td>.493</td>
</tr>
<tr>
<td>Volatility</td>
<td>1.000</td>
</tr>
<tr>
<td>.749</td>
<td></td>
</tr>
<tr>
<td>.429</td>
<td></td>
</tr>
<tr>
<td>Fundamentals of the Company</td>
<td>1.000</td>
</tr>
<tr>
<td>.731</td>
<td></td>
</tr>
<tr>
<td>Economic Condition</td>
<td>1.000</td>
</tr>
<tr>
<td>.696</td>
<td></td>
</tr>
<tr>
<td>Sectorial Preference</td>
<td>1.000</td>
</tr>
<tr>
<td>.702</td>
<td></td>
</tr>
<tr>
<td>Market Condition</td>
<td>1.000</td>
</tr>
<tr>
<td>.538</td>
<td></td>
</tr>
<tr>
<td>Company Condition</td>
<td>1.000</td>
</tr>
<tr>
<td>.741</td>
<td></td>
</tr>
<tr>
<td>Budget</td>
<td>1.000</td>
</tr>
<tr>
<td>.668</td>
<td></td>
</tr>
<tr>
<td>Price</td>
<td>1.000</td>
</tr>
<tr>
<td>.697</td>
<td></td>
</tr>
<tr>
<td>Liquidity in Market</td>
<td>1.000</td>
</tr>
<tr>
<td>.757</td>
<td></td>
</tr>
<tr>
<td>International Market</td>
<td>1.000</td>
</tr>
<tr>
<td>.646</td>
<td></td>
</tr>
<tr>
<td>GDP of Country</td>
<td>1.000</td>
</tr>
<tr>
<td>.628</td>
<td></td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis.

**INTERPRETATION:**

The above output shows the table of communalities before and after extraction. Principal component analysis works on the initial assumption that all variance is common; therefore, before extraction the communalities are all ‘1’. The communalities in the column labeled. Extraction, reflect the common variance in the structure. So, from the table of communalities, we can have the first variable (i.e. Risk) showing the variance of 49.3%. Another way to look at these communalities is in terms of the proportion of variance explained by the underlying factors. After extraction some of the factors are discarded and so some information is lost. The amount of variance in each variable that can be explained by the retained factors is represented by the communalities after extraction.

**COMPONENT MATRIX(a)**

<table>
<thead>
<tr>
<th>Component</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk</td>
<td>.475</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Return</td>
<td></td>
<td>.476</td>
<td></td>
<td></td>
<td></td>
<td>.482</td>
<td></td>
</tr>
<tr>
<td>Volatility</td>
<td></td>
<td>.469</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fundamentals of the Company</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>.624</td>
<td></td>
</tr>
<tr>
<td>Economic Condition</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sectorial Preference</td>
<td></td>
<td>-.469</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-.467</td>
</tr>
<tr>
<td>Market Condition</td>
<td></td>
<td>.457</td>
<td></td>
<td></td>
<td></td>
<td>-.482</td>
<td></td>
</tr>
<tr>
<td>Company Condition</td>
<td></td>
<td>-.418</td>
<td></td>
<td></td>
<td></td>
<td>.651</td>
<td></td>
</tr>
</tbody>
</table>
Budget | .564 | .448  
Price  | -.447 | .413  
Liquidity in Market | .681  
International Market | -.582  
GDP of Country  | -.501  

Extraction Method: Principal Component Analysis.

a 7 components extracted.

**INTERPRETATION:**

The above output shows the component matrix before rotation. This matrix contains the loadings of each variable into each other. The output displays all loadings. This matrix is not particularly important for interpretation.

At this stage SPSS has extracted for 7 factors. Factor analysis is an exploratory tool so it should be used to guide the researcher to make various decisions. One important decision is the number of factors to extract. By Kaiser’s criterion we should extract 7 factors and that is what SPSS has done. However, this criterion is accurate when there are less than 30 variables and communalities after extraction are greater than 0.7 or when the sample size exceeds 250.

**TOTAL VARIANCE EXPLAINED**

<table>
<thead>
<tr>
<th>Component</th>
<th>Initial Eigenvalues</th>
<th>Extraction Sums of Squared Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>% of Variance</td>
</tr>
<tr>
<td>2</td>
<td>1.307</td>
<td>10.057</td>
</tr>
<tr>
<td>4</td>
<td>1.226</td>
<td>9.434</td>
</tr>
<tr>
<td>5</td>
<td>1.081</td>
<td>8.317</td>
</tr>
<tr>
<td>6</td>
<td>1.017</td>
<td>7.822</td>
</tr>
<tr>
<td>7</td>
<td>1.015</td>
<td>7.805</td>
</tr>
<tr>
<td>8</td>
<td>.868</td>
<td>6.675</td>
</tr>
<tr>
<td>9</td>
<td>.841</td>
<td>6.471</td>
</tr>
<tr>
<td>10</td>
<td>.782</td>
<td>6.012</td>
</tr>
<tr>
<td>11</td>
<td>.732</td>
<td>5.632</td>
</tr>
<tr>
<td>12</td>
<td>.660</td>
<td>5.077</td>
</tr>
<tr>
<td>13</td>
<td>.642</td>
<td>4.937</td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis.

**INTERPRETATION:**

The above SPSS Output lists the eigenvalues associated with each linear component (factor) before extraction, after extraction and after rotation. Before extraction, SPSS as identified 13 linear components within the data set (we know that there should be as many eigenvectors as there are variables and so there will be as many factors as variables). The eigenvalues associated with each factor represent the variance explained by that particular linear component and SPSS also displays the eigenvalue in terms of the percentage of variance explained (so, factor ‘1’ i.e. Risk’ 12.162% of total variance). It should be clear that the first few factors explain relatively large amount of variance (especially factor ‘1’ i.e. Risk) whereas subsequent factors explain only small amounts of variance. SPSS then extracts all factors with eigenvalues greater than 1, which leaves us with 7 factors. The eigenvalues associated with these factors are again displayed (and the percentage of variance explained) in the columns labeled extraction sums of squared loadings. The values in this part of the table are the same as the values before extraction, expect that the values for the discarded factors are ignored (hence, the table is blank after the seventh factor). In the final part of the table (labeled rotation sums of squared loadings), the eigenvalues of the factors after rotation are displayed. Rotation has the effect of optimizing the factor structure and one consequence for these data is that the relative
importance of the seventh factors is equalized. Before rotation factor ‘1’ i.e. Demand for Commodity accounted for considerably more variance then the remaining five (12.162% compared to 10.057%, 9.601%, 9.434%, 8.317%, 7.822 and 7.805%), however after rotation it accounts for only 12.162% of variance (compared to 10.057%, 9.601%, 9.434%, 8.317%, 7.822 and 7.805% respectively).

SCREE PLOT:

![Scree Plot](image)

**INTERPRETATION:**

The scree plot shown above is produced by SPSS. In the scree plot, the curve falls steeply and then becomes nearly straight towards downward direction. The point after which the curve becomes nearly straight is the point of inflection on the curve. This curve is difficult to interpret because the curve begins to tail off after four factors, but there is another drop after three factors before a stable plateau is reached. Therefore, we could probably justify retaining either 4 or 3 factors.

**ROTATED COMPONENT MATRIX (a)**

<table>
<thead>
<tr>
<th>Rotated Component Matrix</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Risk</td>
<td></td>
</tr>
<tr>
<td>Return</td>
<td></td>
</tr>
<tr>
<td>Volatility</td>
<td></td>
</tr>
<tr>
<td>Fundamentals_of_the_</td>
<td></td>
</tr>
<tr>
<td>Company</td>
<td></td>
</tr>
<tr>
<td>Economic_Condition</td>
<td>.735</td>
</tr>
<tr>
<td>Sectorial_Preference</td>
<td></td>
</tr>
<tr>
<td>Market_Condition</td>
<td>.575</td>
</tr>
<tr>
<td>Company_Condition</td>
<td></td>
</tr>
<tr>
<td>Budget</td>
<td>.765</td>
</tr>
<tr>
<td>Price</td>
<td></td>
</tr>
<tr>
<td>Liquidity_in_Market</td>
<td>- .572</td>
</tr>
<tr>
<td>International_Market</td>
<td></td>
</tr>
<tr>
<td>GDP_of_Country</td>
<td></td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 9 iterations.

**INTERPRETATION:**

The above SPSS output shows the rotated component matrix (also called the rotated factor matrix in factor analysis) which is a matrix of the factor loadings for each variable onto each factor. This matrix contains the same information as the component matrix except that it is calculated after rotation.
Compare this matrix with the unrotated solution. Before rotation, most variables loaded highly onto the first factor and the remaining factors didn’t really get a look in. However, the rotation of the factor structure has clarified things considerably; there are

**ANALYSIS OF BETA THROUGH SPSS:**

**BETA (β):**

A measure of the relative volatility of a stock or other security as compared to the volatility of the entire market. A beta above 1 shows greater volatility than the overall market, and a beta below 1 is less volatile.

- It can be measured through BETA=Covariance(Security, Market)/Market Variance. BETA measures the relative risk. The higher the BETA higher the risk and higher the risk premium

1. **ACC**

BETA=$\sum (kj-kj')^2(km-km')/(km-km')^2$

BETA=.74

**INTERPRETATION:**

The BETA for ACC is less than 1 so it means that the security is a defensive one, the risk involves in this security is low and the return is also low.

2. **RNRL**

BETA=$\sum (kj-kj')^2(km-km')/(km-km')^2$

Here:

BETA=1.58
INTERPRETATION:
The BETA for RNRL is more than 1 so it means that the security is a aggressive one, the risk involves in this security is high and the return is also high

3. RELIGARE

BETA=\sum (kj-kj^')*(km-km^')/(km-km^')^2
Here:
Kj= Security Return
Km= Market Return
BETA=.51

INTERPRETATION:
The BETA for Religare is less than 1 so it means that the security is a defensive one, the risk involves in this security is low and the return is also low.

4. Reliance Infrastructure

BETA=\sum (kj-kj^')^2(km-km^')/(km-km^')^2
Here:
Kj= Security Return
Km= Market Return
BETA=1.81
INTERPRETATION:
The BETA for Reliance Industries is more than 1 so it means that the security is a aggressive one, the risk involves in this security is high and the risk is also high.

5. Reliance Industries
BETA=$\sum(k_j-k_{j'})*(k_m-k_{m'})/(k_m-k_{m'})^2$
Here:
Kj= Security Return
Km= Market Return
BETA=1.02

INTERPRETATION:
The BETA for Reliance Industries is more than 1 so it means that the security is a aggressive one the risk involves in this security is high and the return is also high.

6. Reliance Communication
BETA=$\sum(k_j-k_{j'})*(k_m-k_{m'})/(k_m-k_{m'})^2$
Here:
Kj= Security Return
Km= Market Return
BETA=1.20
INTERPRETATION:
The BETA for Reliance Communication is more than 1 so it means that the security is an aggressive one, the risk involves in this security is high and the return is also high.

7. Ranbaxy

\[ \text{BETA} = \sum (k_j - k_j') (k_m - k_m') / (k_m - k_m')^2 \]

Here:
\( k_j = \text{Security Return} \)
\( k_m = \text{Market Return} \)

BETA = 0.67

INTERPRETATION:
The BETA for Ranbaxy is less than 1 so it means that the security is a defensive one, the risk involves in this security is low and the return is also low.

8. Parsvnath

\[ \text{BETA} = \sum (k_j - k_j') (k_m - k_m') / (k_m - k_m')^2 \]

Here:
\( k_j = \text{Security Return} \)
\( k_m = \text{Market Return} \)

BETA = 1.35
INTERPRETATION:
The BETA for Parsvnath is 1.35 so it means that the security is a aggressive one, the risk involves in this security is high and the return is also high.


\[
\text{BETA} = \sum (kj - kj') \times (km - km') / (km - km')^2
\]

Here:
Kj = Security Return
Km = Market Return
BETA = .88

![OBC- Security Market Line](image)

INTERPRETATION:
The BETA for Oriental Bank of Commerce is less than 1 so it means that the security is a defensive one, the risk involves in this security is low and the return is also low.

10. ONGC

\[
\text{BETA} = \sum (kj - kj') \times (km - km') / (km - km')^2
\]

Here:
Kj = Security Return
Km = Market Return
BETA = .94

![ONGC- Security Market Line](image)
INTERPRETATION:
The BETA for ONGC is less than 1 so it means that the security is a defensive one, the risk involves in this security is low and the return is also low.

Conclusion:
Risk and Return are the most important factor an investor consider while investing in any security it will comprise of 80% & other factors only constitute 20%. Due to the current economic turmoil investment in equity market reduces a lot 70% of the investors belong to the medium term, 20% belong to the long term & 10% belong to the short term investment. Basically the people save 70% out of their earnings and they invest 25-30% in equity market. Secondary market is the main source of investment compare to primary market. The sector which will be affected the most by the current economic turmoil is banking sector. Most of the investors think that the level of sensex will be 12000-14000 at the end of this fiscal year (2009-2010)
Most of the factors are affecting the investing behavior while investing in equity market. Thus this is a positive and good result for the growth of investing opportunities in equity market. Performance of the equity market has been better than before which would be definitely beneficial for the investors and equity market in the future. Some factors should be considered on priority like International market, Liquidity in market, GDP of Country and Budget. All Rest all the factors have been quite good in creating the growth opportunity for equity market.

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Project Study:


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