PREDICTION OF BUY AND SELL SIGNALS USING A MOVING AVERAGE-TOOL OF TECHNICAL ANALYSIS

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ABSTRACT

Prevailing business environment is full of complexities and confusion which leads to investors in a great dilemma while making strategic decision pertaining to buying and selling of securities. With this paper an attempt has been made by the authors by using Moving Average Tool to facilitate investors in taking decision. In this empirical and analytical study, five automobile companies were taken by the authors to make tentative prediction about buying and selling of securities.

KEYWORDS: Technical analysis, Tentative prediction, Moving average tool

INTRODUCTION

In the prevailing business environment which is full of complexities and confusion, it becomes very difficult for the investors to take strategic decision for making investment. Various tools and techniques (fundamental and technical) have been available to the investors but no one can fully resolve the problem of making buying and selling signals in the market. As every investor wants to protect himself/herself from the spontaneous and unpredictable market happenings. They usually use fundamental analysis; technical analysis and efficient market hypothesis before taking buy and sell decisions about the securities. The present study explores the effectiveness of Moving Average Tool as a technique of Technical analysis for giving tentative predictions about buying and selling signals.

Technical analysis is a gamut of tools and techniques which are used to predict future prices of share on the basis of their past behavior. When securities are analyzed with the help of these tools and techniques most of tools and techniques show a lot of variation in the price movement and decision-making become a difficult process. But moving average is a method/tool which can remove day-to-day fluctuations and traders/investors are better able to identify the true trend of the prices, because moving average is the average price of a security over a set amount of time.
Review of literature

Roy, et al. (1995) focused on two key issue: (a) what is the average level of volatility and whether it has increased in the current period; (b) whether the present trend of share price movement is likely to impair the development process of our economy through study ‘Stock Market Volatility: Roots and Results’. In this study, they examined that, several volatility measures based on different price indices had been used to evaluate the stock price movement in historical perspective. In such instance, the conclusion was essentially the same, i.e., stock market volatility had increased in the that period if the changes in share prices had been response to fundamental economic factor or information and expectations about them, there was no social cost associated with such volatility.

Sullivan, et al. (1999) wrote an article on the topic ‘Data-Snooping, Technical Trading Rule Performance and the Boot Strap’. A main purpose of this study was to extend and enrich the earlier reasons on technical trading rules by applying novel procedure that permits computation of precisely such a test. He considered the study of Brock, Lakonishok, and Le Baron (BLL). He found that, the result of BLL appears to be robust data-snooping, and indeed there are trading rules that perform even better than the ones considered by BLL. He also found that the superior performance of the best technical trading rule was not repeated in the out of sample experiment covering the 10 years period 1987 to 1996.

Madhusoodanan, (1997) made an attempt to find out the relationship between risk and expected return and test whether it is really positive or not, Indian stock markets. The results of this study were being indicated that the risk and return in the Indian stock market are not necessarily positively related. It was found that higher risk is not priced and investigating in higher risky securities expecting higher returns in the future may not produce a good result. But quarterly test provided high return in one period might indicate high return for the next period also. So, this was not true a beyond a quarter and findings of this study did not support the risk and returns were really positively related.

Vipul, et al. (1997) in the study, ‘Test of Arbitrage Pricing Theory in Indian Capital Market’ investigated the relevance of Arbitrage Pricing Theory (APT) in Indian context through five macroeconomic variables namely – whole sale price index, dollar-rupee conversion rate, call-money rate, price of gold and BSE national index (NI) and dollar-rupee conversion rate in determining the price of scrip in Multiplex Model (MIM). However, after second stage none of the risk premium was found to be significant, indicating that none of the variables was valued by the market as predicted APT.

Ruddy, (1996) analyzed the volatility of securities traded on the National Stock Exchange (NSE) and the Bombay Stock Exchange (BSE). In this study, researcher employed stock market trading data relating about 3,000 securities traded on Bombay Stock Exchange (BSE) and over 1,000 securities traded on NSE. Volatility of individual securities had also analyzed in this study and it was found that the securities traded on BSE had more volatility than the securities traded on NSE. Research had also showed through this study that Indian Capital Markets were highly volatile.
**Objective of the study**

This study aims to check the applicability and effectiveness of Moving Average Statistical Tool as a decision making tool to take buy and sell decisions in the Indian share market.

**Research Methodology**

The present study has been conducted to find out a solution for the problem ‘to take buy and sell decisions about securities in the Indian share market’ through the moving average-an instrument of technical analysis. Thus, empirical and analytical research design has been used in this study.

**Study Area and Units**

The study is concerned with the some units selected from the sector of Indian automobile industry. Five units were selected: two from category of light vehicles manufacturers (Hero-Honda Motors Ltd. and Maruti-Suzuki India Ltd.) and three from category of light & heavy vehicles manufacturers (Tata Motors Ltd., Eicher Motors Ltd. and Ashok Leyland Motors Ltd.). Each unit was matched for their size, technology, product and organizational structure with the other unit in same category. Shares of each unit were listed on the Bombay stock Exchange and the listing procedures of the securities of these units ensure almost similar guidelines issued by SEBI.

**Sample Design**

A total of five securities of five units (Tata Motors Ltd., Ashok Leyland Motors Ltd., Eicher Motors Ltd., Maruti Suzuki India Ltd. and Hero Honda Motors Ltd.) were selected by accidental sampling. Sampling design is given in the Table-1 and category wise classification given in the table-2

<table>
<thead>
<tr>
<th>Table-1</th>
<th>Selected Units in the Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of the Unit</td>
<td>Type of Manufacturers</td>
</tr>
<tr>
<td>Tata Motors Ltd.</td>
<td>Light, Commercial, and defense vehicles</td>
</tr>
<tr>
<td>Ashok Leyland Motors Ltd.</td>
<td>Light, Commercial, and defense vehicles</td>
</tr>
<tr>
<td>Eicher Motors Ltd.</td>
<td>Light and Commercial Vehicles</td>
</tr>
<tr>
<td>Maruti Suzuki India Ltd.</td>
<td>Light Vehicles only, such as – Cars</td>
</tr>
<tr>
<td>Hero Honda Motors Ltd.</td>
<td>Light Vehicles only, such as Bikes</td>
</tr>
</tbody>
</table>
Table-2
Category Wise Classification of the Units

<table>
<thead>
<tr>
<th>Category</th>
<th>Unit Name</th>
<th>No. of Producers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>Light Vehicles</td>
<td>Marti Suzuki India Ltd. and Hero Honda Motors Ltd.</td>
<td>2</td>
</tr>
<tr>
<td>Heavy Vehicles</td>
<td>---------------------------------------------</td>
<td>0</td>
</tr>
<tr>
<td>Light and Heavy Vehicles</td>
<td>Tata Motors, Ashok Leyland and Eicher motors</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>5</td>
</tr>
</tbody>
</table>

Sample for the study includes the 100% of risky securities (because all selected securities are risky in nature such as equity shares) as indicated in Table-1 and it includes 40% securities from the area of light vehicles manufacturers and 60% securities form the area of light and heavy vehicles manufacturers (as indicated by table-2).

Procedure of Data Collections:
Analysis of every research work is based on relevant data and it can be collected by two ways: by way of primary data collection and by way of secondary data collection.

Primary Data – primary data are that data which are collected afresh and for the first time, and thus happen to be original in character. It may be collected by observation, interview, mail questionnaires, through schedules etc.

Secondary Data – secondary data are that data which have been already collected by someone else and which have already been passed through the statistical process. It may be collected from published or unpublished sources.

In our study, secondary data about five units have been collected from different sources, these were:

(A) News papers:-

(i) Economic Times Of India, and

(ii) The Times of India

(B) Website:-

(i) Website of Bombay Stock Exchange of India – http://www.bseindia.com
Data collected from all the sources were matched in the manner of consistency and finally the data collected from the website of Bombay Stock Exchange of India (BSE) for the period of six months (Oct-1\textsuperscript{st}, 2010 to Mar-31\textsuperscript{st}, 2011) have been taken for the analysis purpose.

**Data Analytical Tools**

To meet the objective of the study, raw data were treated with different kinds of analysis. For carrying out the analysis the different types of tools and techniques were used like, Simple Moving Average and Charting techniques. The following are the procedures for the different tests:

**Simple Moving Average (SMA):**

In finance, a SMA is the unweighted mean of previous n datum points. In this study, to know the direction of price behaviour of the selected securities and to make long and short decision about them, the prices of these securities were analyzed with the help of a 7-day simple moving averages.

**Procedure of 7- days SMA:**

\[
\begin{array}{c}
N1 \\
N2 \\
N3 \\
N4 \text{ Mean} \\
N5 \\
N6 \\
N7 \\
N8 \\
N9 \\
\vdots \\
Nn
\end{array}
\]

\[
\begin{array}{c}
\text{Mean of items No. N1 to N7} \\
\text{Mean of items No. N2 to N8} \\
\text{Mean…… and so on}
\end{array}
\]

Here,

N1 = Datum point for first day, N2 = Datum point for second day, and so on up to Nn days.
Charting techniques:
A chart represents the historical information (prices, volume, quantity and etc.) about the security and it gives the base to predict stock prices. In this study, a mixture of line and bar chart was used for analysis purpose.

Analysis and Results
Chart-1: Buy and sell decisions based on price behavior and 7-days moving averages for Tata Motors Ltd.

Buy and sell points for the security of Tata motors Ltd. were being indicated from the Chart-1. Points A, B, C, D, E, and F were observed as buy signals and points G, H and I were as sell signals because up-trends in moving averages (M.A. in Chart-1) had crossed actual price (closing price) from below at points A, B, C, D, E, and F and vice-versa at points G, H and I. It was also observed from down-trend in moving averages that, period of January to February of the year 2010-11 was not safe for stay in the market.
Movements in closing prices and 7-days moving averages of Eicher Motors Ltd. were observed by chart-2. It was found that, the actual prices (close prices) were crossed by moving average (M.A. in Chart-2) from above and below. It was a signal for sell or to take short position or in other words it was time to convert financial assets into cash when the down-trend in moving averages started to cross actual prices (as indicated by points A, B, C and D). When the up-trend in moving averages were started to cross the actual share prices from below, it was time to take long position in the market or it was time to convert cash into financial assets (as indicated by points G, H, and E).
Chart-3: Buy and sell decisions based on price behavior and 7-days moving averages for Ashok Leyland Motors Ltd.

Source: Based on data collected from website of BSE-www.bseindia.com

Buy and sell points for the security of Ashok Leyland motors Ltd. were being indicated from the Chart-3. Points A, B, C and D were observed as buy signals and points E, F and G were as sell signals because up-trends in moving averages (M.A. in Chart-3) had crossed actual price (closing price) from below at points A, B, C and D and vice-versa at points E, F and G. It was also observed from down-trend in moving averages that, period of December to February of the year 2010-11 was not safe for stay in the market.
Chart-4: Buy and sell decisions based on price behavior and 7-days moving averages for Maruti-Suzuki India Ltd.

Source: Based on data collected from website of BSE-www.bseindia.com

Movements in closing prices and 7-days moving averages of Maruti-Suzuki India Ltd. were observed by chart-4. It was found that, the actual prices (close prices) were crossed by moving average (M.A. in Chart-4) from above and below. It was a signal for sell or to take short position or in other words it was time to convert financial assets into cash when the down-trend in moving averages started to cross actual prices from above (as indicated by points A, B, and H). When the up-trend in moving averages were started to cross the actual share prices from below, it was time to take long position in the market or it was time to convert cash into financial assets (as indicated by points C, D, and E). If invested before point A (Chart-4), he should start to sell and Investors may also get some amount of profit in the month of December, 2010 and first week of the month January, 2011(as indicated by points Z to B) by analyzing the situations of this period.
Chart-5: Buy and sell decisions based on price behavior and 7-days moving averages for Hero-Honda Motors Ltd.

Source: Based on data collected from website of BSE-www.bseindia.com

Buy and sell points for the security of Hero-Honda motors Ltd. were being indicated from the Chart-5. Points A, B, C and D were observed as buy signals and points E, F and G were as sell signals because up-trends in moving averages (M.A. in Chart-5) had crossed actual price (closing price) from below at points O, P, C and D and vice-versa at points A and B. it was also observed from down-trend in moving averages that, period of January to February of the year 2011 was not safe for stay in the market.
Conclusion
With the above study it can now be concluded that Moving average tool is an effective tool for predicting buying and selling signals. This study also infers that it is more faithful tool to predict signals (buy & sell) about the securities, because it is calculated by adding the closing price of a security for a number of time periods and then dividing this total by the number of time periods or in other words it is based on more than one average. But it should not forget that actual share price line is influenced by many factors as such- internal information, speeches of the ministers, and etc. So, decisions relating to buy and sell of securities should not take only on the basis of one tool of analysis.

REFERENCES