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Technical Analysis of Indian Financial Market with the Help of Technical Indicators

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Abstract: ***This study includes the description of indicators which can be used for technical analysis of Indian market Nifty stocks. The indicators which have been used in this study are Moving Averages, Moving Averages cross rules and Moving Averages Convergence/Divergence. Later this study also includes the usage and application of Moving Average on Nifty stocks. Additionally, the analysis demonstrates that these indicators are the tools for successful trading and profit generation.***

Keywords: Technical Analysis, Trading, Derivatives, Financial Market.

1. Introduction

1.1 S&P CNX Nifty50

National Stock Exchange's Fifty commonly known as Nifty is an Index factor calculated on the performances of top listed companies from distinct sectors (Setty, Rangaswamy & Suresh, 2010; Ahmed, 2008). NIFTY was introduced in 1996, comprising of the 100 most liquid stocks available in India. These companies are listed and regulated by National stock exchange. 50 companies from 24 different sectors are included in Nifty (Setty, Rangaswamy & Suresh, 2010).

It is owned and Managed by India index services and products (IISL). Investors and general public use nifty index as the tool to view the performance of market (Ramadoss & Muthuvel, 2013; Ahmed, 2008). If nifty is performing well, then it means all the companies listed on nifty are performing well. The selection of the stocks for inclusion in nifty is based on factors such as the cost of impact and market capitalization, domicile and shares outstanding respectively.

It is important to understand that Indian market is sensitive to changes taking place in neighboring markets. These include countries including Pakistan, Sri Lanka, Malaysia, Japan, Singapore and Taiwan among a few (Patel, 2014). This means the all financial markets, including nifty are influenced by changes taking place in other markets and should be factored in when carrying out any type of analysis.

1.2 Technical Analysis

It is the method of evaluating the future performance of securities by the identification of pattern and trend from past. There are various techniques available to identify the price pattern and trend of securities in a particular market independent of financial position or profitability of the company (Wang, 2013). The statistical nature of analysis differs from functional analysis in the same regard. Fundamental analysis is future oriented, with focus on future earnings and risks while technical analysis is an analysis of the past behavior of the market which then is used to predict the future (Ramadoss & Muthuvel, 2013). Many models such as the Bayesian Model have been used to improve on the methods of predicting accurately (Wang, 2013). Moving averages and MACD are the major indicators which have been used in this study and the evidence of it being as a successful trading guide (Ahmed, 2008).

Financial markets are a platform where buy and sell of financial assets such as financial securities, commodities and fungible items can be carried out at lower transaction costs based on type of market (Setty, Rangaswamy and Suresh, 2010). With the introduction of financial market, investors started to find out the way for better investment opportunity and started ways to analyze the market (Patel, 2014). Stock Market talks about two types of analysis, Fundamental and Technical. Fundamental is all about financial performance of the company, growth in share price and market (Setty, Rangaswamy & Suresh, 2010). Technical analysis is basically used to identify the trend of future stock price with the usage of past stock price (Ramadoss & Muthuvel, 2013). So technical analysis is not considering the company's consideration and only looks at the past performance of stocks (Ahmed, 2008).

The purpose of this study firstly is to describe the concept of Moving Averages and other technical analysis indicators. This study is also evaluating how Moving Averages and other indicators can be helpful to predict the price of Nifty stocks. This study will help the investors to make profits from investments and predict price using the Moving Averages and other indicators.

2. Data Reliability & Source

To perform analysis of trading rules, historical data was needed. For this purpose, the Indian Market "NIFTY" index for a period of January 2014 to December 2014 was selected. The reliable data for all the historical prices is available on NSE – National Stock Exchange website, which was used for the purpose of data collection.

3. Simple Moving Average

Moving average is the average of security price or exchange rate over a specific period of time. It is basically the mean of all values. It is called moving average because it keeps

moving with time. For example if the closing price of last 50 days is taken, summed together and then divided by 50, the simple moving average is obtained. But this average keeps changing each day and the new price will be updated in the calculation of moving average every new day (Wang, 2013).

Han, Yang and Zhou (2013), state that moving average strategy is superior to other types of technical analysis as it performs superior timing portfolios that outperform buy-and-hold strategies (Han, Yang & Zhou, 2013). They provide advantages over other forms of analysis due to market timing ability, investor sentiment, default and liquidity risk analysis and insights, thereby giving superior advantage to competitors (Han, Yang & Zhou, 2013).

A simple moving average is calculated by taking the average of prices over a specified period of time. Normally the closing price of stock is used in the average calculation (Murphy, 1999). The five day moving average means taking five days stock prices, summing it and then dividing the total by five. As mentioned above, the moving average keep changing every new day (Patel, 2014). Below is an example of five day moving average and then compared with three day moving average to identify the pattern.

Daily Closing Prices: 21,22,23,24,25,26,27

First day of 5-day SMA:
(21 + 22 + 23 + 24 + 25) / 5 = 23

Second day of 5-day SMA:
(22 + 23 + 24 + 25 + 26) / 5 = 24

Third day of 5-day SMA:
(23 + 24 + 25 + 26 + 27) / 5 = 25

The moving average of the first day is of the last five days. The moving average of second day replaces the first price (21) with the new price (26). The moving average of the third day continues by replacing the first price of it (22) with the new one (27). It is evident from this example that prices have been gradually increasing from 211 to 27 in a time period of seven days. Also note that it has also been increased from 23 to 25 in three day calculation period and the outcome of each moving average value is just below the last price. For the first day moving average one equals 23 and the last price is 25. So the lag exists in simple moving average.

Table 1 : 3-Day Simple Moving Average on Nifty Companies:

Date	Price	3 SMA
1-December-2014	*8555.90*	
2-December-2014	*8524.70*	
3-December-2014	*8537.65*	*8539.41*
4-December-2014	*8564.40*	*8542.25*
5-December-2014	*8538.30*	*8546.73*
8-December-2014	*8438.25*	*8515.85*
9-December-2014	*8355.65*	*8444.06*

This analysis has been performed on overall nifty index and companies listed on it. The same analysis can also be performed on individual company stocks to make investment decisions and price predictions (Patel, 2014). If the stock prices of a company exceed the SMA, it indicates a buy signal and when prices fall down below the SMA, it indicates the selling signal. Moving averages doe s not predict the direction of price; it defines the current/present condition but with some lags (Philippon & Reshef, 2013; Wang, 2013). The cause of lag is because as it is based on past stock prices; however, it is still provides a smooth pricing indication.

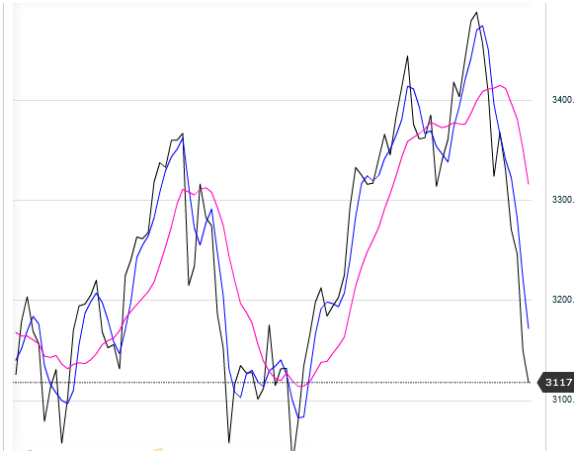

Figure 1 : Comparison of 3 days SMA and 10 days SMA on NIFTY from January 2014 to December 2014**.**

Moving Averages (3 days)
Moving Average (10 days)

The above results indicate that shorter SMAs are more consistent in comparison with the longer SMA period (10 days). The fluctuations and pattern can be better predicted by using the shorter Moving Averages.

4. Exponential Moving Average

The lag can be reduced by exponential moving averages to recent prices (Setty, Rangaswamy & Suresh, 2010). It can be calculated in three steps. Firstly calculate the simple moving average as seen above. Secondly, perform the calculation of the weighting multiplier. Finally, calculate the exponential moving average. The formula and calculation of 10-day EMA are given below.

First Step:

SMA: 20 period sum / 20

Second Step:

Multiplier:(2 / (Time periods + 1)) = (2 / (20 + 1)) = 0.095 (9.5%)

Third Step:

EMA :{ Close - EMA (last day)} x multiplier + EMA (last day).

To find out the exact percentage for an EMA, use the below formula to know the time periods.

Time Period = (2 / % Percentage) - 1
4% Example: Time Period = (2 / 0.04) - 1 = 49 time periods

The direction of the moving average conveys important information about prices. A rising moving average shows that prices are generally increasing. A falling moving average indicates that prices, on average, are falling. A rising long-term moving average reflects a long-term uptrend. A falling long-term moving average reflects a long-term downtrend.

5. Moving Average Price Crossovers

Simple Average Price Crossovers are also used with Simple Moving Averages. A bullish indication is obtained when prices rise up and above the moving average. A bearish signal is obtained when prices down and gets below the moving average (Philippon, & Reshef, 2013). If the moving average is for the long period it represents and indicate the bigger trend and to generate the signals a shorter moving average is used. (Augustine et al, 2014). Moving averages have both its advantages and disadvantages. It is based on trends, therefore lag is always present and this may make predictions less accurate. However, this does not apply every case; trends and patterns also have much contribution towards moving average (Philippon & Reshef, 2013). Once in a trend, moving averages will keep you in, but also give late signals. Remember a tip, while using moving average don't sell at the top and buy at the bottom. Moving average should not be used in isolation; it should be used with other indicators to benefit in trading (Philippon & Reshef, 2013).

6. MACD - Moving Average Convergence Divergence

The MACD is a better tool too to identify the direction of the market. The whole technique is based on momentum. If price changes suddenly and violently in one direction a swing low or high momentum is created (Boris Schlossberg). A sudden price movement may be by bull and bearish movement of the market. They may be early sellers and buyers who don't think about the movement of price in one direction substantially.

The Moving Average Convergence/Divergence is analyzed by the momentum indicator which means to plot the difference between two moving averages, it takes the 26^{th} day &12^{th}day exponential moving averages (EMA). Then a trigger line is formed at nine-day moving average that is representing buying and selling hints when crossing above or below the MACD short-term prediction

6.1 Indication of reversal Line

If the MACD line is crossing below of the trigger line, it means that the price will be down and there is an indication of possible reversal from current uptrend to a downtrend. When it crosses above the trigger line, it means that it is the prediction of increase in trend from downward to upward. If crossover indicator crosses the zero line it means MACD are equal.

6.2 Predict M.A Convergence Divergence

It is the situation where stocks are either overbought or oversold in a market. Predicted MACD also state the efficiency of the market either strength or weakness when the movement diverges and converges by the movement of prices.

7. Conclusion

Technical analysis is a very subjective way of analysis with various variations available for the parameters used in Indicators of Technical Analysis. It is a rule based technique with little scope for personal judgement

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Author Profile

Mohd Naved received the B.Sc Honors from Prestigious University of Delhi, later completed M.Com, M.B.A (Finance) and M.Phil (Finance)