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Study of Indian Stock Market and various factors affecting it and various Indicators

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***Abstract*—**Study of the Indian Stock Market (NIFTY 50 how the stock market works , its dependency on other factors like Global Markets (like Singapore Nifty, Dow Jones, SNP 500,etc) , Commodities(Gold, silver, crude oil) , other currencies(US Dollar),Various news(local news , global news), Crypto currencies etc. We will study if the various factors affect the stock market and various studies and statements made regarding them. The stock markets move in cycles and we can study the past data and how the above factors have affected market in the past and using this we can determine whether these factors affect the stock market and in which direction

***Keywords*—NSE,NIFTY,INDICATORS,COMMODITIES,CURRENCIES,GLOBAL MARKETS,STOCK MARKET, etc.**

I. Introduction

The stock markets move in repeated cycles and we will study the past data how in the past the various factors have affected the Indian stock market and its direction and also how repeated events have results on the market and are these results same every time or may change. Also, we would try to predict the direction these factors would drive the Indian Stock market in.

In this paper we will discuss the various studies that have been carried out and areas which can be further explored. The stock market is not an individual entity practically but a part of a very complex interconnected system. It is driven by investor sentiment, by news, by global markets, different currencies and various factors. The US market is the head of the global market so if it crashes then most of the markets crash ,however vice versa is not true. The US dollar also has and effect on other currencies of the world and also the global markets. Gold prices are also affected by the way the stock markets move. Also, various news also affect the stock markets. Also, there are various strategies and various indicators that are used in the stock market for trading and making profits. These are discussed briefly below.

II. Literature Review

The stock market is always in one out of 3 stages:

. Uptrend : TLKM (PT. Telekomunikasi Indonesia, Tbk) and BBNI (PT. Bank Negara Indonesia, Tbk)

Downtrend: ASII (PT. Astra Internasional, Tbk) and ELSA (PT. Elnusa, Tbk), and

Sideway: AKRA (PT. AKR Corporindo, Tbk) and ANTM (PT. Aneka Tambang Persero, Tbk)

The Up trending stage and Down trending are also called the trending stages. In Up trending Stage we Buy on Dips i.e. on corrections and in Down trending Stage we sell/short on rise i.e. short stocks on price increase. While in the consolidating markets we buy on the low of the range and sell on the high side of the range and short on the high side of range and cover shorts on low side of the range. In case this range is broken in upper direction chances are uptrend has started and in case this range breaks downwards chances are downtrend has started. Downtrends are usually very fast as they arise due to panic and uptrend momentum is very high initially and then reduces as at higher levels people suspect that this is the high and market is in overbought zone and due to this the momentum decreases at the higher levels.

Global Markets: The US market is the head of all the markets so if the US markets are crashing then a very high probability that other markets will also crash. However, if the US markets are rising then the local markets are also dependent on local news and sentiment. Like in April 2021 US markets were making new highs everyday but Indian markets were falling. However, the Indian markets did not crash as the global market were doing good and so the Indian markets showed signs of recovery after huge falls.'

Commodities :Gold: Gold is a very precious metal and it also has a very important role in finance. It is related to the stock market and there is a lot of scope for research on how other Commodities and markets are related.

Usually many studies found that theoretically Gold and Stock markets are inversely proportional. But there are times when Gold and Stock markets both have risen or fallen. There is also a lot of scope in finding this correlation. Also, there is one more factor Involved that is market volatility which could decide this factor. Under high Volatility gold is inversely proportional to the stock market but under low volatility it is directly proportional .the same. There is research needed in this area to find out the correct relation between Gold and Nifty.

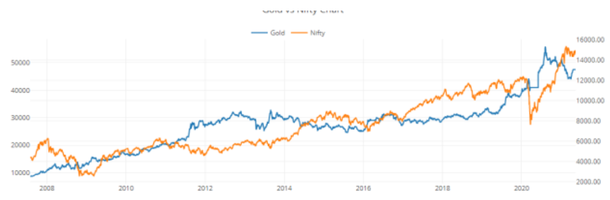
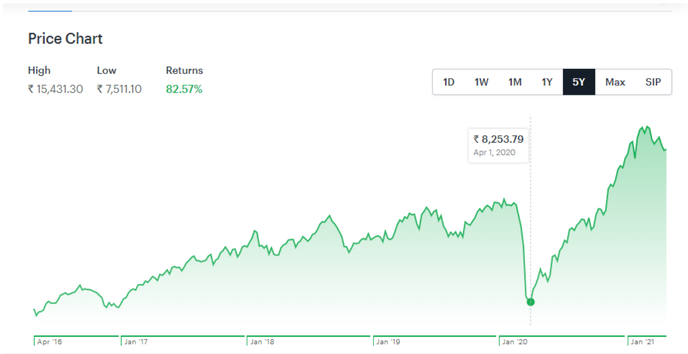


Figure comparing Gold and Nifty Article[1]

Currencies:USD: The Indian stocks react inversely to the USD. As the price of the USD rises the price of the stocks fall. This happens due to the depreciation of the INR and hence the value of Indian companies. Also, the prices for imports of various things are determined in USD and some companies need to import raw material for production and so the profitability for such companies decreases and the overall earning ratio of the companies also decreses.

Bond yields/Interest rates: The stock markets are indirectly proportional to the bond yields. When the bond yields are high the investors invest in bonds or deposits as they will get a fixed return and there is minimal risks involved. If the interest rates are low then the investors will invest some value in the stock market to get better returns. During the Covid 19 pandemic in 2020 the RBI had dropped interest rates to support the market recovery. Observer below the effect of it. The article was published on https://bfsi.economictimes.indiatimes.com/news/banking/indian-banks-cut-interest-rates-following-rbi-covid-19-measures/74896358 30th March 2019 that the Repo rates were cut by 75 bps. You can observe that the markets were crashing due to the lockdown imposed and after this news market stated recovering and low was on 1st April 2019.

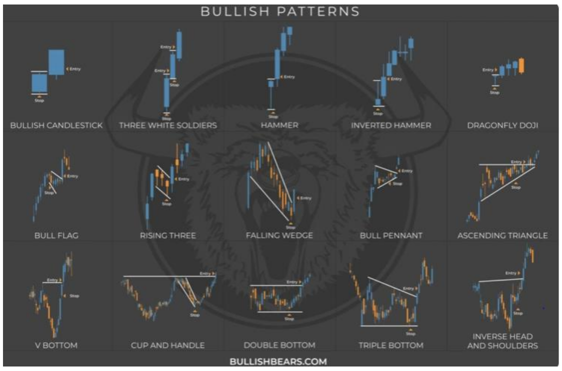


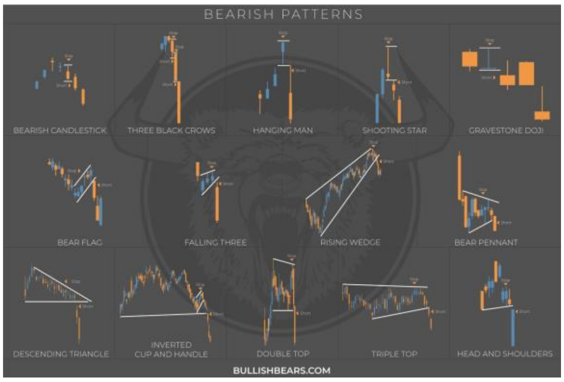
News: There are various news or events happening in the real world which may or may not have impact on the stock market. There are various studies that have studied the imapact of news on stock market and used news to predict the stock market. Not all news affect the stock market .eg. In 2019 the markets crashed due to Covid pandemic as global markets were crashing and there was a strict lockdown and production at most compaines was stopped. While in 2021 during the second wave of Covid the stock markets were not falling much like in 2019. This is because there still was a pandemic but it was not a new situation and also production at companies was resumed with safe practices and most of the businesses were running with precautionary measures. Also, most of the times we see that markets fall despite good results of the company. There have been studies for predicting stock market via social media or news analysis. But there needs to be a research to find out that is news/social media a good way to predict stock market as its results do not seem promising everytime and what is the accuracy. Example: The Budget days for Indian stock market always ended flat but only for 2021 Budget the Indian stock market rallied a lot on Budget day.

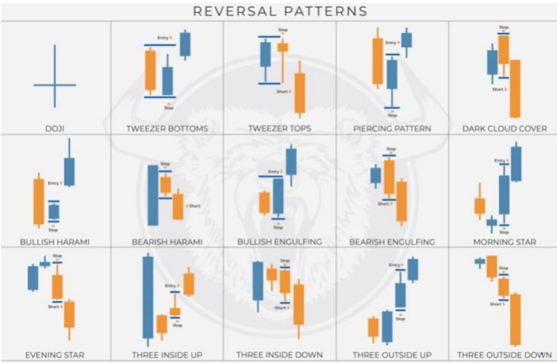
Indicators/Strategies: Technical indicators are used by traders to gain an understanding of the supply and demand of securities and market psychology. Their Combinations form the basis of technical analysis. Metrics, like as trading volume, provide indicators of whether the price movement will continue. Hence, indicators are used to take trades. Below are few most used or most efficient indicators.

Stock price movements may have the use of technical indicators (e.g., RSI, MACD, BB, PSAR, and CMF). Technical analysis is a market price study to predict future stock trends, which is why one can decide to trade or invest profitably. [1] In other words, patterns from historical data can be used to predict future prices using extrapolation. Such indicators provide a predictable stock price in the short, medium, and / or long term that helps traders / investors in trading. The choice of Bollinger Bands and Parabolic SAR is because both indicators suggest collection or distribution times. However, the times raised by the Bollinger Bands may differ from the Parabolic SAR where Parabolic SAR is often significantly lower than the Bollinger Bands.

The Bollinger Bands index created by technology trader, John Bollinger, is an index consisting of three lines or bands: bottom lines, middle lines, and more. The middle line raises a simple moving average and both the lower and upper lines define price fluctuations based on the average deviation from the middle line [2]. The gap between the two lines widens as the volatility increases, and conversely, decreases as it decreases. Parabolic Stop and Reverse (SAR) developed by renowned expert Welles Wilder sees a high-band-based pricing trend. This increases the guarantee traders who do not miss the time to enter / exit the stock. While trading only Parabolic SAR, no transaction is performed: a buy signal is a SAR value change, from being below the stock price to the maximum stock price. If not, the trading signal is where the SAR value changes from a stock quota to a lower stock price. Also, there are various other indications that can be read.







Buying and selling the best methods: In the stock market profit also depends on the time of entry and exit of trading activity and very little research in this area. Entries should consider data integration such as support resistance, various indicators, etc. Also, profit booking should be done in part for multiple targets or book full profits for a single target to be used for the uptrend, downtrend and inclusive market. Scheduled stop losses and consecutive stop losses that should be considered when markets also appear to be a small topic but play a major role in increasing profits.

More Indicators :

1. On-Balance Volume

First, use the OBV volume indicator to measure the positive and negative flow of volume over protection over time.

Indicator is an effective volume increase volume remove volume drop. The maximum volume is the volume per day when the price goes up. Low volume is the volume of the day when the price drops. Each day's volume is added or subtracted from the display based on whether the value goes up or down.

When the OBV goes up, it shows that consumers are willing to step in and raise the price. When OBV goes down, the sales volume exceeds the purchase volume, which indicates lower prices. In this way, it serves as a tool to validate the trend. If the price and OBV go up, that helps to show the continuity of the trend.

Traders using OBV are also looking at diversification. This happens when the index and the price go to different places. If the price goes up but the OBV goes down, that may indicate that the trend is not supported by strong buyers and may recede soon.

2. Accumulation/Distribution Line

One of the most widely used indicators for determining the flow of cash is a collection / distribution line (A / D line).

It is similar to the volume volume indicator (OBV), but instead of considering only the closing price of the collateral for that period, it also considers the trading distance of the period and when the closure is related to that extent. . When the stock ends near its height, the index gives the volume more weight than when it closes near the center of its width. Different statistics mean that OBV will work better in some cases and A/D will work better in others.

If the index line is trending upwards, it indicates interest rate, as the stock closes above the mid-range point. This helps ensure an uptrend. On the other hand, if A / D falls, that means the price ends up in the lower part of its daily range, and thus the volume is considered negative. This helps ensure downtrend.

Traders using A / D line are also looking at diversification. If A / D starts to decline while the price goes up, this indicates that the trend is in crisis and may be slowing down. Similarly, if the price of the trend is low and A / D starts to rise, that could indicate higher upcoming prices.

3. Average Directional Index

Central direction index (ADX) is a trend index used to measure the strength and dynamics of a trend. If the ADX is above 40, the trend is considered to be the most direct direction, either up or down, depending on where the price is moving.

If the ADX index is below 20, the trend is considered weak or inconsistent.

ADX is the main line in the index(white line). There are two additional lines that can be displayed voluntarily. These are DI + and DI-. These lines are usually red and green, respectively. All three lines work together to show the direction of the trend and the intensity of the trend.

- ADX is over 20 and DI + over DI-: That is an uptrend.
- ADX over 20 and DI- above DI +: That is the downtrend.
- The ADX under 20 is a weak trend or chasing time, often associated with DI- and DI + cross-strings.

4. Aroon Indicator

Aroon oscillator is a technical indicator used to measure whether a collateral is trending, and especially if the price is hitting or going down during the calculation (usually 25).

The indicator can also be used to indicate when a new trend is set when it starts. The Aroon interface includes two lines: the Aroon-up line and the Aroon-down line.

If the Aroon-up crosses over the Aroon-down, that signals a possible change. If the Aroon-up reaches 100 and stays close to that level while the Aroon-down stays close to zero, that is a good guarantee of a climb.

The opposite is true. If the Aroon-down crosses above the Aroon-up and stays close to 100, this indicates that the downtrend is active.

5. MACD

Moving average divergence index (MACD) indicator helps traders to see the direction, as well as the intensity of that trend. It also provides a number of trademarks.

If the MACD is above zero, the price is in the upward range. If the MACD is below zero, it has entered the bearish period.

The indicator is made up of two lines: the MACD line and the signal line, which is slower. When the MACD falls below the signal line, it indicates that the price is down. When the MACD line falls above the signal line, the price goes up.

Looking at the side of zero the indicator is a tool for deciding which signals to follow. For example, if the indicator is above zero, note that the MACD has crossed over the signal line to buy. If the MACD is below zero, falling the MACD below the signal line may provide a short-term trading signal.

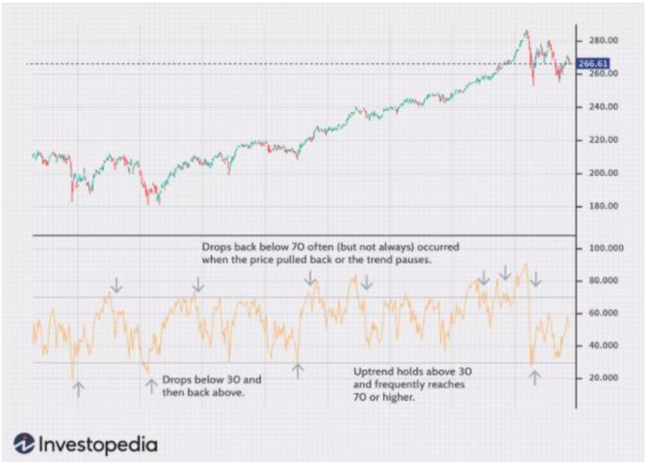
6. Relative Strength Index

Relative strength index (RSI) has at least three major uses. The index goes between zero and 100, plotting the recent price gains compared to the recent price losses. RSI levels therefore help to balance the tensile strength and strength.

The most basic use of RSI as an over-the-counter and best-selling indicator. If the RSI goes above 70, the asset is considered overweight and may decline. If the RSI is below 30, the asset is traded excessively and may collapse. However, pursuing such a course is dangerous; therefore, some traders wait for the index to rise above 70 and then lower below before selling, or lower below 30 and then go back upwards before buying.

Divergence is another use of RSI. If the index moves in a different direction than the price, it indicates that the current price trend is weak and may be declining soon.

Third use of RSI support and resistance levels. During the ascent, the stock will usually hold above the 30 level and usually reach 70 or more. When the stock is low, the RSI will usually hold below 70 and usually reach 30 or less.



7. Stochastic Oscillator

A stochastic oscillator is an indicator that measures the current value relative to the price range over a number of times. Set at zero and 100, the idea is that, when the trend is high, the price should be making a new high. According to the downtrend, the price tends to make a new decline. The stochastic traces that this happens.

Stochastic goes up and down faster compared to how it is rare for a number to make a continuous height, keeping the stochastic closer, 100 or continuous lows, which keeps the stochastic closer to zero. Therefore, stochastic is often used as a best-selling and best-selling indicator. Prices over 80 are considered overblown, while less than 20 levels are considered overfed.

Consider the total price trend when using the most expensive and over-the-counter levels. For example, during the uptrend, when the index drops below 20 and rises back above it, that could be a buy signal. But more than 80 circles are less important because we expect to see an index from 80 and above each time we ascend. During the downtrend, check the indicator to go above 80 and go back below to show a short possible trade. Level 20 is not so important in downtrend.

Using various indicators N strategies are build using two main concepts:

Overlays: Technical indicators that use the same scale as prices are plotted over the top of the prices on a stock chart. Examples include moving averages and Bollinger Bands or Fibonacci lines.

Oscillators: Rather than being overlayed on a price chart, technical indicators that oscillate between a local minimum and maximum are plotted above or below a price chart. Examples include the stochastic oscillator, MACD or RSI.

Crypto currencies: These are the latest instruments in the world of finance and are based on block chain technology. There has been various research on predicting the prices of a particular crypto currency but the field of inter market analysis i.e. co-relation between different crypto currencies is still not fully researched and also newer crypto currencies re being launched almost every other day. Also, If there is any relation between the Stock markets and crypto currencies is not researched much. Since this instrument has emerged and is rising and giving extraordinary returns this may be a major attraction for financial industries in the future and also these are also currently being used by companies for transactions and more companies are planning to adapt them in future for transactions.

III. Abrevations and Acronyms

- NSE- National Stock Exchange
- BSE – Bombay Stock exchange
- NIFTY 50- The NIFTY 50 is a benchmark Indian stock market index that represents the weighted average of 50 of the largest Indian companies listed on the National Stock Exchange.
- BANKNIFTY-Nifty Bank, or Bank Nifty, is an index comprised of the most liquid and large capitalized Indian banking stocks. It provides investors with a benchmark that captures the capital market performance of Indian bank stocks.
- DOW 30/ DOW Jones-The Dow Jones Industrial Average, Dow Jones, or simply the Dow, is a stock market index that measures the stock performance of 30 large companies listed on stock exchanges in the United States. USD-Currency US dollar
- S&P 500-The Standard and Poor's 500, or simply the S&P 500, is a free-float weighted measurement stock market index of 500 of the largest companies listed on stock exchanges in the United States.
- FII- Foreign Institutional Investor
- DII-Domestic Institutional Investor
- IPO- Initial public offering
- OFS-Offer for Sale
- FPO: Follow on Public offers. When already listed company on an exchange issues new shares to the investors of existing shareholders.
- Futures-Contracts for stocks
- Options-Optional contracts for stocks
- Stocks- Unit entities of company ownership

IV. Future Scope

There are various factors which can affect the stock market and there are various indicators and taking them into consideration we can build strategies and find the statistics on historic data. We can find out if there is some relation between various factors with the Indian stock market and also the degree at which that factors are connected or influence the stock market and use these relations in predicting the stock markets. Also, using various factors and indicators a trading strategy can be build which can more accurately predict stock markets as a dependent system (using other factors) and as independent system(using indicators) and/or a combination of both.

References

[1] A. Albadvi, S. K. Chaharsooghi, and A. Esfahanipour, “Decision making in stock trading: An application of PROMETHEE,” Eur. J. Oper. Res., vol. 177, no. 2, pp. 673–683, 2006.

[2] A. B. Prasetijo, T. A. Saputro, I. P. Windasari and Y. E. Windarto, "Buy/sell signal detection in stock trading with bollinger bands and parabolic SAR: With web application for proofing trading strategy," 2017 4th International Conference on Information Technology, Computer, and Electrical Engineering (ICITACEE), 2017, pp. 41-44, doi: 10.1109/ICITACEE.2017.8257672.

[3] A. Sharma, D. Bhuriya and U. Singh, "Survey of stock market prediction using machine learning approach," 2017 International conference of Electronics, Communication and Aerospace Technology (ICECA), 2017, pp. 506-509, doi: 10.1109/ICECA.2017.8212715.

[4] Hargreaves, C., & Hao, Y. (2012). Does the use of technical & fundamental analysis improve stock choice? : A data mining approach applied to the Australian stock market.

[5] H. Bessemblinder, and K. Chan, "The profitability of technical trading rules in the Asian stock markets", Pacific-BAsin Finance Journal, Elsevier Volume 3, issues 2-3, July 1995, pp. 257-284.

[6] J. Bollinger, “Bollinger Bands.” [Online]. Available: https://www.bollingerbands.com/. [Accessed: 31-Aug-2017].

[7] J. KoC. Zhang, "Developing Actionable Trading Strategies for Trading Agents," 2009 IEEE/WIC/ACM International Joint Conference on Web Intelligence and Intelligent Agent Technology, 2009, pp. 9-9, doi: 10.1109/WI-IAT.2009.381.

[8] MALKIEL B G. The efficient market hypothesis and its critics [J]. Journal of economic perspectives, 2003, 59-82.

[9] Nakamoto, Satoshi. (2009). Bitcoin: A Peer-to-Peer Electronic Cash System.

[10] N. Sevani and M. Ariesta, “Web-Based Decision Support Systems Application of Stock Recommendation Using Bayesian Methods Aplikasi Sistem Pendukung Keputusan Rekomedasi Stok Berbasis Web dengan Metode Bayesian,” vol. 8, no. 1, pp. 1–10, 2014.

[11] S.H.M. Yazdi and Z.H. lashkary, “Technical analysis of Forex by Parabolic SAR Indicator”, International Islamic Accounting and Finance Conference, November 2012.

[12] S. O. Ojo, P. A. Owolawi, M. Mphahlele and J. A. Adisa, "Stock Market Behaviour Prediction using Stacked LSTM Networks*," 2019 International Multidisciplinary Information Technology and Engineering Conference (IMITEC), 2019, pp. 1-5, doi: 10.1109/IMITEC45504.2019.9015840.

[13] TIMMERMANN A, GRANGER C W. Efficient market hypothesis and forecasting [J]. International Journal of Forecasting, 2004, 20(1): 15-27.

[14] TSAY R S. Analysis of financial time series [M]. John Wiley & Sons, 2005.

[15] Yong Ye, "The information content of technical trading rules: Evidence from US stock markets," 2011 International Conference on Business Management and Electronic Information, 2011, pp. 317-320, doi: 10.1109/ICBMEI.2011.5914485.

[16] Y. Wang and Y. Wang, "Using social media mining technology to assist in price prediction of stock market," *2016 IEEE International Conference on Big Data Analysis (ICBDA)*, 2016, pp. 1-4, doi: 10.1109/ICBDA.2016.7509794.

[17] “Parabolic SAR.” [Online]. Available: http://stockcharts.com/school/doku.php?id=chart_school:technical_indicators:parabolic_sar. [Accessed: 31-Aug-2017].

Articles referred in May 2021

[1] www.Bullishbears.com

[2] https://getmoneyrich.com/price-of-gold-and-stock-market-correlation/

[3] https://www.equityfriend.com/investment-charts/gold-and-nifty-chart.html

[4] https://www.investopedia.com/

[5] https://www.investopedia.com/top-7-technical-analysis-tools-4773275

[6] https://www.tradingheroes.com/