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Heuristic Model Development For Nifty Trading

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Abstract: ***The Heuristic model is developed for S&P Nifty on the basis of Simple Moving Averages of 25 and 50 periods on the Meta Stock Software. The basic assumption of the model is that when 25 period moving average is above 50 period moving average it is a buy signal and vice versa. This paper sets out to test the hypothesis is Returns on Heuristic Model is more than that of Nifty Index. It looks at some different way of trading in Nifty and so helping the traders in making money by trading in Nifty.***

I. INTRODUCTION

The most fascinating word amongst the investors around the world is to invest in Indian Sensex and Nifty because of its exuberant growth. India, which is now the fourth largest economy in terms of purchasing power parity, will overtake Japan and become third major economic power within 10 years. By 2025 the India's economy is projected to be about 60 per cent the size of the US economy. Despite of this glittering feature we should not ignore the hidden side of the Indian economy. that is India has the world's second largest labour force, with 509.3 million people, 60% of whom are employed in agriculture and related industries; 28% in services and related industries; and 12% in industry. The agricultural sector accounts for 28% of GDP; the service and industrial sectors make up 54% and 18% respectively. Among the service sectors stock market make more contribution. We have 24 stock market among this two vital market that is BSE (Bombay stock market) and NSE (National stock exchange). The equity market capitalization of the companies listed on the BSE & NSE making it the second largest stock exchange in [South Asia].Which stand as a hub for the world investors, that is the reason why we face lots of volatility in the market.

The interest in studying the movement of S&PCNX NIFTY Index considerable momentum following the early study of Ms.Shalini Batia (2007) Indicated that trader can profit from the discrepancy in the prices of NIFTY. Mr.Saumitra N Bhaduri (2007) indicated hedging return gives better performance in long time horizons only. Dr.Srinivas, S.S.Kumar (2005) observed that the stock prices, on average increase and decrease significantly on the effective day for the NIFTY Index. In this connection the researcher would like to make on attempt to study on Technical Analysis on S&P CNX NIFTY Index in India.

II. S&P CNX NIFTY INDEX & TECHNICAL ANALYSIS

S&P CNX NIFTY

Nifty is the flagship index of NSE, the 3rd largest stock exchange in the world in terms of number of transactions (Stock Futures).

S&P CNX Nifty is a well diversified 50 stock index accounting for 21 sectors of the economy. It is used for a variety of purposes such as benchmarking fund portfolios, index based derivatives and index funds.

S&P CNX Nifty is owned and managed by India Index Services and Products Ltd. (IISL), which is a joint venture between NSE and CRISIL. IISL is India's first specialised company focused upon the index as a core product. IISL has a Marketing and licensing agreement with Standard & Poor's (S&P), who are world leaders in index services.

- ✓ The total traded value for the last six months of all Nifty stocks is approximately 65.68% of the traded value of all stocks on the NSE
- ✓ Nifty stocks represent about 65.34% of the total market capitalization as on Mar 31, 2009.
- ✓ Impact cost of the S&P CNX Nifty for a portfolio size of Rs.2 crore is 0.16%

- ✓ S&P CNX Nifty is professionally maintained and is ideal for derivatives trading.

OWNERSHIP AND MANAGEMENT

Nifty was developed by the economists Ajay Shah and Susan Thomas, then at IGIDR. Later on, it came to be owned and managed by India Index Services and Products Ltd. (IISL), which is a joint venture between NSE and CRISIL. IISL is India's first specialized company focused upon the index as a core product. IISL have a consulting and licensing agreement with Standard & Poor's (who are world leaders in index services).

CNX stands for CRISIL NSE Indices. CNX ensures common branding of indices, to reflect the identities of both the promoters, i.e. NSE and CRISIL. Thus, 'C' stands for CRISIL, 'N' stands for NSE and X stands for Exchange or Index. The S&P prefix belongs to the US-based Standard & Poor's Financial Information Services.

It is calculated as a weighted average, so changes in the share price of larger companies have more effect. The base is defined as 1000 at the price level of November 3, 1995.

CRITERIA FOR INCLUSION OF STOCK IN NIFTY50

- ✓ Average market capitalization of Rs.5,000 million or more during the last six months.
- ✓ Liquidity: Cost of transaction (impact cost) of less than 0.75% for more than 90% of trades, over six months.
- ✓ At least 12% floating stock (not held by promoters of the company or their associates).

THE ORGANISATION

The National Stock Exchange of India Limited has genesis in the report of the High Powered Study Group on Establishment of New Stock Exchanges, which recommended promotion of a National Stock Exchange by financial institutions (FIs) to provide access to investors from all across the country on an equal footing. Based on the recommendations, NSE was promoted by leading Financial Institutions at the behest of the Government of India and was incorporated in November 1992 as a tax-paying company unlike other stock exchanges in the country. On its recognition as a stock exchange under the Securities Contracts (Regulation) Act, 1956 in April 1993, NSE commenced operations in the Wholesale Debt Market (WDM) segment in June 1994. The Capital Market (Equities) segment commenced operations in November 1994 and operations in Derivatives segment commenced in June 2000.

III. TECHNICAL ANALYSIS

Technical analysis is a security analysis technique that claims the ability to forecast the future direction of prices through the study of past market data, primarily price and volume. In its purest form, technical analysis considers only the actual price and volume behavior of the market or instrument. Technical analysts, sometimes called "chartists", may employ models and trading rules based on price and volume transformations, such as the relative strength index, moving averages, regressions, inter-market and intra-market price correlations, cycles or, classically, through recognition of chart patterns.

Technical analysis stands in distinction to fundamental analysis. Technical analysis "ignores" the actual nature of the company, market, currency or commodity and is based solely on "the charts," that is to say price and volume information, whereas fundamental analysis does look at the actual facts of the company, market, currency or commodity.

For example, any large brokerage, trading group, or financial institution will typically have both a technical analysis and fundamental analysis team.

Just as there are many investment styles on the fundamental side, there are also many different types of technical traders. Some rely on chart patterns; others use technical indicators and oscillators, and most use some combination of the two. In any case, technical analysts' exclusive use of historical price and volume data is what separates them from their fundamental counterparts. Unlike fundamental analysts, technical analysts don't care whether a stock is undervalued - the only thing that matters is a security's past trading data and what information this data can provide about where the security might move in the future

The field of technical analysis is based on three assumptions:

- ✓ The market discounts everything.
- ✓ Price moves in trends.
- ✓ History tends to repeat itself.

A. THE MARKET DISCOUNTS EVERYTHING

A major criticism of technical analysis is that it only considers price movement, ignoring the fundamental factors of the company. However, technical analysis assumes that, at any given time, a stock's price reflects everything that has or could affect the company - including fundamental factors. Technical analysts believe that the company's fundamentals, along with broader economic factors and market psychology, are all priced into the stock, removing the need to actually consider these factors separately. This only leaves the analysis of price movement, which technical theory views as a product of the supply and demand for a particular stock in the market.

B. PRICE MOVES IN TRENDS

In technical analysis, price movements are believed to follow trends. This means that after a trend has been established, the future price movement is more likely to be in the same direction as the trend than to be against it. Most technical trading strategies are based on this assumption.

C. HISTORY TENDS TO REPEAT ITSELF

Another important idea in technical analysis is that history tends to repeat itself, mainly in terms of price movement. The repetitive nature of price movements is attributed to market psychology; in other words, market participants tend to provide a consistent reaction to similar market stimuli over

time. Technical analysis uses chart patterns to analyze market movements and understand trends. Although many of these charts have been used for more than 100 years, they are still believed to be relevant because they illustrate patterns in price movements that often repeat themselves.

IV. ALTERNATIVE VIEWS

"A study by "Dr. S. Janakiramanan- Under-Pricing and long run performance of Initial Public Offerings in Indian Stock Market, Dec 2007" reveals that there are various features in India which contribute to the under-pricing and are unique by World standards. For one, the delay from issue date to listing date is enormous in India when compared with other countries. Among the other features are the ways the offer price is fixed and the availability of information to lay investors. The offer price is chosen by the firm months before the issue opens and a lack of feedback mechanism means that there is no channel through which the market demand can alter the price. Coupled with the fact that IPO's"

"According to study undertaken by "Ms.SHALINI BHATIA- Do the S&P CNX Nifty Index and Nifty Futures Really Lead/Lag? Error Correction Model: A Cointegration Approach, Nov 2007" has reveals that the futures market leads the spot market has important implications for arbitrageurs, who take offsetting positions in the two markets to earn assured risk free returns. Futures index leading the spot index by 10 to 25 minutes suggests that for a short period of time the prices in the two markets could be out of line, resulting in profitable arbitrage opportunities. Traders can profit from the discrepancy in the prices of Nifty futures and Nifty spot, provided they can react quickly. An arbitrageur is required to complete both legs of an index arbitrage transaction within a short time span. The prior knowledge of index futures leading the spot index could likely influence his decision as to which market should he react in first, which leads to the initial trade in the futures market."

"A study undertaken by "Ms. Sadhalaxmi Rao and Mr Sumit Kumar BoseEvaluating Corporate Governance Risk: A Fuzzy logic approach, May 2007" depicted that use the fuzzy logic approach to model the subjective characteristics of human nature in the decision making process involved in assessing the corporate governance risk. Mamadani inference along with the Center of Area method of defuzzification allowed taking into consideration even the slightest influence of a rule. Further research would be needed to conclude the effect of various other fuzzy operators, input aggregation operators, result aggregation operators and defuzzification methods on the final rating"

"An amazing finding of "Mr. Saumitra N Bhaduri / Mr. S. Raja Sethu Durai Optimal Hedge Ratio and Hedging Effectiveness of Stock Index Futures: Evidence from India, May 2007" tries to give an overview of the competing models in calculating optimal hedge ratio. The effectiveness of these strategies is compared with mean returns and average variance reduction with respect to the un hedged position. Daily data on NSE Stock Index Futures and S&P CNX Nifty Index for the time period from 4th September 2000 to 4th August 2005 has been considered for developing the optimal hedge ratio and the data from 5th August 2005 to 19th September 2005 has been considered for out of sample validation. The results clearly establishes that the time varying hedge ratio derived from DVEC-GARCH model gives a higher mean returns compared to other counterparts. On the average variance reduction front the DVEC-GARCH model gives better performance only in the long time horizons compared to the simple OLS method that scores well in the short time horizons".

V. CURRENT SCENARIO

The stature and significance of India is growing in the world capital markets. India is not only attracting greater interest from world markets, but is also assuming increasing importance in global finance.

- ✓ India is a major recipient of foreign institutional flows amongst the emerging markets. Since the opening up of domestic stock markets to foreign investors, India is major destination of private equity flows into the emerging markets
- ✓ India was host to the annual meetings/conference of the World Federation of Exchanges (2005) and International Organization of Securities Commission (IOSCO) (2007)
- ✓ India emerged a trillion dollar market capitalisation market in 2007, and was among the top 10 stock exchanges in the world in terms of market capitalisation
- ✓ India is amongst the top fifteen stock exchanges in the world in respect of equity turnover
- ✓ India emerged as a leading player in commodities futures market
- ✓ India is amongst the top five in the number of transactions
- ✓ India is among the top five in respect of volume traded in Stock Index Futures and Stock Futures
- ✓ India is one of the few markets with extensive dematerialisation of shares
- ✓ India's T+2 securities settlement cycle is at par with the global standards
- ✓ Indian stock markets have the largest number of listings, with trading taking place in about 2,500-3,000 stocks
- ✓ India's most popular stock index (Sensex) is constructed on the basis of full float methodology, one of the firsts in the Asian region and a global standard
- ✓ Indian market indices such as Sensex and CNX Nifty are listed in foreign exchanges for trading as ETFs.

Financial market has opened its wings & particularly in this Budget there is opening up of more private players to enter mainly through Foreign Direct Investment. In the current market scenario there is only 5% of the market that has its exposure in the financial market, so there is tremendous scope for the players to capture the untapped market.

As there are more and more players entered in the market there is reduction in brokerage fees which is the main revenue for the firms. Now, every organization is making its services having an extra advantage so that more participants get personalized services and they are willing to participate in the financial market.

TECHNICAL ANALYSIS

In today's market one has to consider both Technical analysis and fundamental analysis, Fundamental analysis takes care of the fundamental aspect of the company like company Earning price ratio, its sales and volume analysis, P/E ratio, Dividend Yield, Net profit Ratio etc.

Besides Technical analysis takes into consideration that when to buy and sell the stock, with the help of certain indicator one is able to generate certain signals which will enable them to generate the calls for trading and to give positional calls. Technical analysis is used by every firm as it helps the trader to find the exact price where to buy with the target profit and a stop loss. There are various software that are available in the market that are, Meta Stock, Aptistock and private brokers technical software. National Stock exchange has also launched its technical software in which one is able to put in formula and the computer will trade on behalf of them. Technical analysis is mostly used by fund managers, investment bankers &portfolio manager, as they make their portfolios on the basis of technical analysis.

VI. HEURISTIC MODEL

The model has been developed on the basis of Simple moving averages of (25 periods and 50 periods) in an intraday chart of 5 minutes in Meta Stock Software.

The main assumption of the model is that when 25 periods simple moving average is above 50 period simple moving average it is a buy indication and when 25 period simple moving average is below 50 period simple moving average it is sell signal.

Following is the figure of Nifty Futures on Meta Stock Software depicting Simple Moving Averages of 25 periods and 50 periods on an Intraday Chart of 5 Minutes:

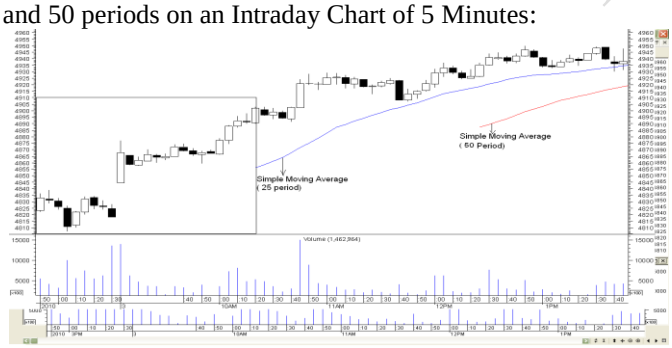

Figure 1

Formula that has been applied is:

For Buy the formula is - Cross(Mov(Close , 25, Simple), Mov (Close ,50 ,Simple))

For Sell the formula is - Cross(Mov(C,50,S),Mov(Close ,25 ,Simple))

The meaning of above terms;

- ✓ Cross - Crossover
- ✓ Mov (Close, 50, Simple) – Simple moving averages of 50 period on a closing rate.

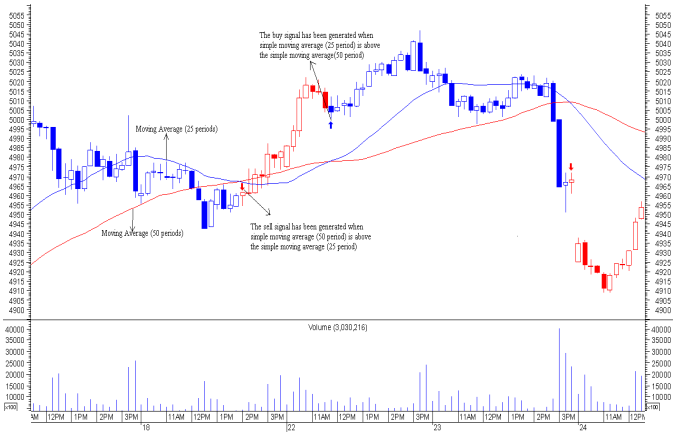

Figure 2

Now the assumptions under which the model is worked on are as follows;

- ✓ The trades will be strictly for Single day.
- ✓ There can be only maximum 4 trades in a day.
- ✓ The maximum profit is taken in one trade may be buy or sell Nifty is 15 points.
- ✓ The stop loss for a single trade is maximum 20.5 points.
- ✓ Total loss for the day is 60 points.
- ✓ There will be no further trade if loss reaches 57 points.
- ✓ If any of condition either profit or loss during the day then no further trades will be done.
- ✓ If there is any position in which neither profit or loss rate has come then that position will be closed by either selling or buying the stock which ever the condition may be at the closing rate at 3.05 pm.

WORKING ANALYSIS

Intraday Chart of Nifty Futures of 1 July 2009 depicting heuristic model.

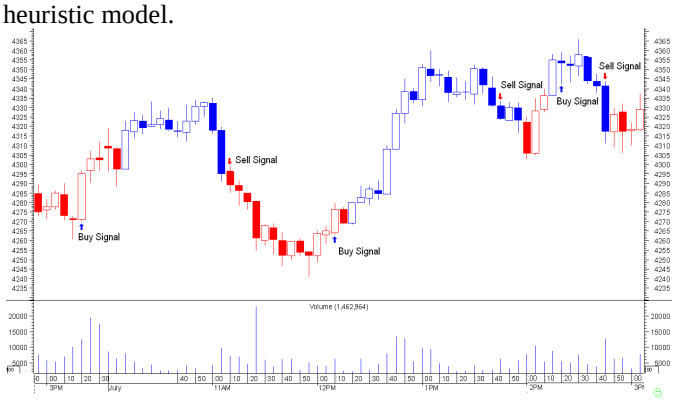

Figure 3

The above diagram highlights the trade details of 1 July 2009, If a person has Rs 1 Lakh and wants to invest in this model let see how much he can earn on 1 July 2009

As we know the lot size of nifty future is 50 units and margin requirement is Rs 25000 per lot. So with Rs 1 Lakh margin he can buy 4 lots i.e. 200 units.

Date	Action	Buy Rate	Sell Rate	Gross Profit and Loss	Cost	Net Profit and Loss	Net Asset value
1.07.09	Buy	4320	4335	15.00	3.12	11.88	11.88

Table 1: Analysis of Nifty Futures of 1 July 2009 depicting heuristic model

In the above trade details as we have seen that in the first trade executed we have entered a profit of Rs 15. So no more trades will be executed on that day.

In the above trade the amount he will receive after trading on 1 July is;

=Net Asset Value X 400 units

= 11.88 X 400

= Rs 4752.

He makes a profit for that day.

VII. DATA ANALYSIS

Following are the monthly returns of Heuristic Model and Nifty Index;

Month	Heuristic Model	Nifty BEES
June	119.69	16.41
July	71.05	-8.05
August	-105.70	-45.65
September	-139.87	-27.68
October	-58.68	-83.49
November	-102.41	-50.86

Table 2

MODEL

The regression equation can be represented as: $Y= \alpha + \beta x +u$

Here the dependent variable is represented by Y indicating Heuristic Model & the independent variable x indicates Nifty index.

The model has been analysed by using Regression analysis.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.702	0.493	0.366	84.49173
a. Predictors: (Constant), NiftyBees				

Table 3

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27,715.408	1	27,715.408	3.882	0.120
	Residual	28,555.407	4	7,138.852		
	Total	56,270.815	5			

a. Predictors: (Constant), NiftyBees

b. Dependent Variable: Heuristic

Table 4

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	34.707	49.770		0.697	0.524
	NiftyBees	2.128	1.080	0.702	1.970	0.120

Table 5

INTERPRETATION

β_1: It represents the change in Heuristic Model (Dependent variable) when Nifty Index (Independent variable) changes. Thus in this case if Nifty Index increases by one unit then Heuristic Model decreases by 2.128

Significance: Here since the p-value is large, it indicates that this variable, is statistically insignificant (level of significance is taken to be less than 10%)

A(constant)-it represents the value of Heuristic Model (Dependent variable) when independent variable is 0.

Significance: Here since the p-value is large, it indicates that this variable is statistically insignificant.

The value of R square comes out to be 0.493 which means that 49% of the variation in heuristic model is explained by nifty

STANDARDIZED CO-EFFICIENTS

It means if independent variable increase by one standard deviation, then dependent variable changes by 0.702 standard deviation.

Coming to the significance of model as a whole, we see the p-value of F-test, It is 0.120 which shows that the model is not significant at 10%or less, however, it is significant at 15%.

THE ANOVA TABLE FOR REGRESSION

Just like the ANOVA table can be used to test the null hypothesis that $\beta 1= \beta 2= ... = \beta p$ when looking at the means of several groups, it can also be used in regression. In the case of means, the null hypothesis means that knowing the group membership provides no extra information about *y*. In the case of regression, the corresponding null hypothesis would be that knowing *x* provides no extra information about *y*. If we were to guess the same *y* value for every *x*, that would mean that the regression line was flat, that it had no slope. Therefore, the null hypothesis for the ANOVA table in regression is H0: $\beta 1=0$ and the alternate hypothesis is HA: $\beta 1 \neq 0$.

Note that the p-value from the ANOVA table is the same as the p-value for the t-test for the slope variable (0.120). Thus the model is insignificant at10% level of significance.

Thus we can say that the model is insignificant.

VIII. RECOMMENDATIONS

- ✓ The Heuristic model can be further improved by changing the periods to 10 & 60.
- ✓ The Heuristic model can be further improved by adding indicators like Relative Strength Index, Average Directional Index in the existing model.
- ✓ For trading in this model trader can alter the assumptions laid down for the model according to their risk taking capacity.
- ✓ The trader should also consider the sentiments which are prevailing in the market.
- ✓ For getting much more relevance from the research, the time period for the research should be however extended to 2-3 years

IX. CONCLUSION

The research paper has concluded the study performance of Heuristic Model with that of Nifty Bees. The research highlights that S&P CNX NIFTY Index movement is clearly downwards from the June, 2009 to November, 2009. The returns in both the models are negative, but The Indian stock market has a great potential as more and more companies are increasing their earnings and there is huge scope for investment in the country. Further this study is on initial only; the researcher recommended that there would be need for further research in the same area which wills insight the many facts NSE Index by further changing the period of Simple moving average to (10 & 60 periods) or by adding more indicators like Relative Strength Index & Average Directional Index and also increasing the time period to 2-3 years. Further researcher concludes the when Simple moving average for 25 periods is above Simple moving average for 50 periods then it is a buy signal and if Simple moving average for 25 periods is below Simple moving average for 50 periods then it is a sell signal.

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