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Price Predictability of Head and Shoulders Bottom (HSB) Patterns in Indian Stock Charts

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ABSTRACT

Head and Shoulders Bottom (HSB) is one of the traditional patterns in technical prediction tool-kit claimed to be potent to foretell security prices. Price objective is the expected post-pattern price movement that the pattern is expected to achieve immediately after price has crossed the neckline. This paper examines whether the pattern achieves the expected price objective so as to consider it as a predictive tool for superior return. The study finds the non-reliability of the predictive capacity of HSB patterns.

Keywords: Technical analysis, stock market. Stock chart, Pattern, Head and Shoulders Bottom, Price Objective Achievement, Predictive Tool.

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The practice of technical pattern for security price prediction prevails as is evident from diverse media reports. On the other side, the research findings hold its validity as **time specific, tool specific and market specific**.[1] Head and Shoulders Bottom (HSB) is a configuration in stock chart that is considered to be potent tool in probing prices. According to the traditional view, once such a pattern configures in a stock chart, it forecasts certain price objective- the immediate post-pattern price behaviour-extent and direction. After completion, when prices cross neckline of the pattern and moves up, it triggers a 'signal to buy.' This paper examines the reliability of

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this pattern as a predictive tool. It is important in the sense that the entire resources on and process of analysis become futile, if invalid or validity does not continue.

Problem

Though HSB as a pattern in stock chart is still continues to consume pages of media and widely used, it is not a tool tested for its validity in Indian stock market. The problem is the practice of reporting this pattern as predictive without ensuring success rate.

Objectives of the study

The study aims at establishing the traditional predictive capacity of HSB patterns in the stock chart of Indian companies. For this, the following objectives are set:

1. To identify the frequency of occurrence of HSB.
2. To ascertain the performance of HSBs
3. To ascertain the waiting period for the achievement of price objective by HSB

Hypothesis

"Head and Shoulders Bottom patterns achieve their traditional price objective."

Methodology

The study analyses the historical data of selected shares listed on the BSE for a period of fourteen years beginning with 1st January 1990.

1. Sample Design

A total 3440 companies screened for (1) regularity of trading, (2) activity in trading and (3) reasonable fluctuations to reduce the number to 50 stocks. Out of this ten companies selected at random which were:(1) Associated Cement Companies Limited, (2) Bajaj Automobiles Limited, (3) Century Textiles and Industries Limited, (4) Escorts India Limited, (5) Great Eastern Shipping Company Limited, (6) Glaxo India Limited, (7) Grasim Industries limited, (8) Hindustan Liver Limited, (9) Indian Tobacco Company Limited and (10) VIP industries Limited.

2. Signals from Head and Shoulders Bottom Pattern

The breakout of prices of 'neckline of HSB' forecasts a further rise in price and thus gives a buy signal.

3. Successful patterns

A pattern is taken to be successful if it achieves its traditional price objective in full (100%). In this study, the price objective is measured from the 'neckline of HSB'.

4. Performance of HSB

It is measured by the average percentage of price objective achieved on three consecutive reversal days.

Definitions used in the study

a. **Price Objective (P O) of a Head and Shoulders Bottom-** The traditional holding about a Head and Shoulders Bottom pattern is that if the price crosses the 'neckline of HSB' then the prices are expected to further rise to the extent equal to the difference (vertical distance) between 'prices at 'bottom point of head' and 'neckline'. This difference in prices is taken as the traditional price objective of this pattern (Figure 1). The validity of traditional view of predictability of a HSB pattern is revealed by the extent of average achievement of its price objective (PO). It is measured from the neckline of HSB to next reversal point.

b. Reversal day- It means the day on which price moves in the direction opposite to what is signaled by breakout. The achievement of P O for three consecutive reversal days were examined, though first is the most desired.

Result of analysis and findings

The study could find out the following:

1. Occurrence and reoccurrence of the HSB Pattern

The study identified 63 HSB patterns as have occurred in the stock charts of 10 companies analyzed during the period of 14 years and that confirms the repeating history of this pattern. But it is the rarest (only 63 out of 765 patterns) of the five patterns that the study could identify. The average annual frequency of the patters does not reach even five (63/14).

2. Probability of successful Symmetrical Triangles

The table 1 shows that only 9.52% of the HSB could achieve their PO in full (100%) on the first reversal day. This was 22.22% and 34.92% for the second and the third reversal days respectively. Successively higher proportion of HSB achieving their P O on the first, second and third reversal days means that longer holding period (waiting) results in more number of successful HSB as measured by the achievement of their P O in full.[2]

A good number of the HSBs could not achieve even a quarter of their price objective. Of the 63 HSBs, 28.57%, 23.81% and 26.98% could achieve only less than twenty five percent of their price objective on the first, second and third reversal days respectively. In this respect, therefore, it cannot be said that HSBs have predictive capacity.

[2]Signals resulting in smaller achievement of price objective will further make the deal unprofitable due to commission and other transaction co HSTB and achievement with longer holding period would make the deal less profitable owing to interest factor

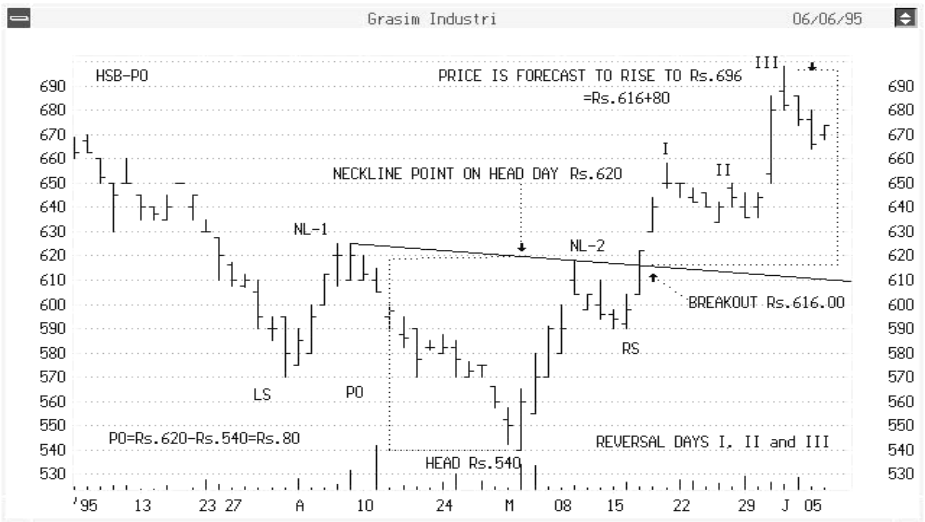

Figure 1 Price objective of Head and Shoulders Bot tom (HSB)
Source: BSE, Official List of Quotations, BSE, actual data plotted using Meta stock

Percentage of PO Achieved	**Reversal Day**					
	First		**Second**		**Third**	
	No.	%	No.	%	No.	%
100 or more	6	9.52	14	22.22	22	34.92
75-100	3	4.76	12	19.05	5	7.94
50-75	16	25.40	8	12.70	11	17.46
25-50	20	31.75	14	22.22	8	12.70
less than 25	18	28.57	15	23.81	17	26.98
Total	63	100.00	63	100.00	63	100.00

The observed values being less thn the target, the statistical test of significance for proportion of success [S.E.= Sqrt(pq/n] has been done to ascertain the theoretical limits within which the HSBs achieve various levels of price objective. Table 2 shows the theoretical limits based sample result (the probable range of proportions of HSBs in the universe (generalised for all HSBs) within 95% fiduciary limits).

Table 2- The Standard Error and 95% Fiducial Limits of HB achieving PO

P.O. Achievement	First Reversal Day			Second Reversal Day			Third Reversal Day		
	S.E	Range of proportions		S.E	Range of proportions		S.E	Range of proportions	
		P-1.96 S.E.	P+1.96 S.E.		P-1.96 S.E.	P+1.96 S.E.		P-1.96 S.E.	P+1.96 S.E.
>=100%	3.698	2.275	16.772	5.238	11.956	32.488	6.006	23.149	46.693
75-100%	2.683	**-0.497**	10.021	4.947	9.351	28.744	3.406	1.262	14.611
50-75%	5.484	14.648	36.145	4.195	4.477	20.920	4.783	8.086	26.835
25-50%	5.865	20.251	43.241	5.238	11.956	32.488	4.195	4.477	20.920
<25%	5.692	17.416	39.727	5.366	13.292	34.327	5.592	16.023	37.945

According to the Table 2, the best expectation possible is, even if waited till the third reversal day, only 46.693% (less than half) of the HSBs are found successful in the traditional view. It means that more than half the number of HSB fail in their traditional predictability, even if waited till third reversal day. Hence the hypothesis that "HSBs achieve their traditional price objective" is rejected.

3. Waiting period till Reversal Days for achievement of PO in

Of the 63 HSBs analysed, 8 had the first reversal day (i.e., reaching the immediate highest top price) on the breakout day itself. It means price took the reverse course immediately after breakout in 8 out of 63 cases.

The average time lag till the first, second and third reversal days were three (3.41), eleven (10.68) and twenty one (21.46) days respectively (Table 3). It shows on the average, one needs to wait only so many days for a reversal of the price after breaking the neckline. In other words, one should expect a reversal within these periods after breakout. The minimum lags (most optimistic) were 1, 3, and 7 days for the first, second and third reversal days respectively[3]. The maximum lags (most pessimistic) were 13, 24 and 59 days respectively for first, second and third reversal days.

[3] Excluding the 8 HSBs that experienced a price reversal on the same of breakout itself

Table 3. Reversal day-wise Time lag till achievement of PO			
Statistic	**No. Of Days from Breakout till the Reversal Day**		
	First	Second	Third
Mean	3.41	10.68	21.46
Median	3	11	17.00
Minimum	1	3	7
Maximum	13	24	59

II. CONCLUSION

Head and Shoulders Bottom patterns are no longer a tool to predict prices and act upon even if waited till third reversal day. So any one depending on its prediction is cautioned of its limited success (less than 50%).

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