

Vol 25 No. 3, December 2020

ISSN : 0975-1386

Wesleyan Journal of Research

An International Research Journal
HUMANITIES & SOCIAL SCIENCE SECTION

Multidisciplinary | Peer Reviewed | Referred
UGC Care Listed



Bankura Christian College
Bankura-722 101
WEST BENGAL, INDIA

Author(s) By :- ¹M. Subramaniyan & ²Dr.S.Anuradha

Emergence of Insurgency in Assam

604-613

Author(s) By :- ¹Prabin Doley

Technical Price Prediction and Achievement of Price Objective-

A Case study of symmetrical triangle pattern

614-624

Author(s) By :- ¹Dr. V..P.Sajeeve



Technical Price Prediction and Achievement of Price Objective-A case Study of Symmetrical Triangle Pattern

Dr. Sajeeve V.P

Associate Professor in Commerce, Bishop Moore College, Mavelikara

Abstract: Symmetrical triangle 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 breakout of prices from either boundary. This papers examines whether the pattern achieves price objective expected of it so as to consider it as a predictive tool for superior return. The study finds that all the patterns are not equally reliable to act upon as all of them do not achieve the whole price objective even on the third reversal day post signal and hence lack predictive value.

Key Words: Technical analysis, stock market. Stock chart, Pattern, Symmetrical Triangle, Price Objective Achievement, Predictive Tool, Superior Return.

Article History

Received: 15/12/2020; Accepted: 24/12/2020

Corresponding author: Dr. Sajeeve V.P

Introduction

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. Symmetrical Triangle (ST) 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. On completion, breakout of price triggers a 'signal to buy' if upper boundary or 'signal to sell if lower boundary. This paper examines the reliability of 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 symmetrical triangle as a pattern in stock chart is still continue 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 symmetrical triangle patterns in the stock chart of Indian companies. For this, the following objectives are set:

1. To assess the success rate of identified STs.
2. To ascertain the trend wise difference in performance of STs
3. To Ascertain the Signal-wise difference in performance of STs
4. To ascertain the superiority of signal wise STs in different trends
5. To ascertain the waiting period for the achievement of price objective by STs

Hypothesis

“Symmetrical triangles 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 Symmetrical Triangle Pattern

The breakout of upper boundary forecasts a further rise in price and thus gives a buy signal. Break out of lower boundary forecasts a further fall in price and thus gives a sell 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 opposite boundary.

4. Performance of STs

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

5. Trend wise and Signal wise success and performance of ST

To ascertain superiority of performance of STs with any particular signal in either trend, a signal-trend analysis was made. All the STs occurred during the period of the same trend are again classified signal-wise and then the results were cross-examined with the results across trends and across signals.

6. Definitions used in the study

a. Price Objective (P O) of a Symmetrical Triangle - The traditional holding about a symmetrical triangle pattern is that if the price breaks either boundary, then the price should move in the direction of breakout at least to the extent of its Jaw (base) length. So the amount equal to the Jaw length (the vertical distance from the first top (T1) or First Bottom (B1) to the opposite boundary of an ST) is the traditional price objective of this pattern. The validity of traditional view of predictability of a Symmetrical Triangle pattern is revealed by the extent of achievement of its price objective (P.O.). It is measured from the boundary opposite to the boundary of breakout.

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 expected.

Result of analysis and findings

The study could find out the following:

1. Occurrence and reoccurrence of the Symmetrical Triangle Pattern

The study identified 166 symmetrical triangle patterns as have been occurred in the stock charts of 10 companies analyzed during the period of 14 years since 1990 and confirms the repeating history of this pattern.

2. Probability of successful Symmetrical Triangles

The table 1 shows that only 23.49% of the STs could achieve their P O in full (100%) on the first reversal day. This was 38.55% and 40.96% for the second and the third reversal days respectively. Successively higher proportion of STs achieving their P O on the first, second and third reversal days means that longer holding period (waiting) results in more number of successful STs as measured by the achievement of their P O in full.

Table 1 Achievement-wise distribution of ST according to predictability

Percentage of PO Achieved	Reversal Day					
	First		Second		Third	
	No.	%	No.	%	No.	%
100 or more	39	23.49	64	38.55	68	40.96
75-100	34	20.48	21	12.65	22	13.25
50-75	58	34.94	38	22.89	33	19.88
25-50	28	16.87	24	14.46	15	9.04
less than 25	7	4.22	19	11.45	28	16.87
Total	166	100	166	100	166	100

This, being the observed sample values which is less than the target, the next option is to test the result for ascertaining whether the theoretical proportion of 'successful STs' can ever be

hundred percent. In other words, whether there is any probability for all the STs to achieve their traditional P O. If this probability is greater than fifty percent, that means STs are more probable to succeed than to fail in signalling a buy or sell action. The statistical test of significance for proportion of success [S.E.= Sqrt(pq/n)] has been done to ascertain the theoretical limits (based on the observed sample values) with which the STs achieve various levels of price objective. Table 2 shows the various levels of achievement of P O as revealed by the sample analysis and the probable range of proportions of symmetrical triangles in the universe (generalised for all STs) within 95% fiduciary limits.

Table 2 The Standard Error and 95% Fiducial Limits of STs 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%	1.784	19.997	26.991	2.953	32.766	44.343	3.140	34.809	47.119
75-100%	1.550	17.443	23.521	0.942	10.804	14.497	0.989	11.314	15.192
50-75%	2.673	29.701	40.178	1.737	19.486	26.297	1.504	16.932	22.827
25-50%	1.270	14.379	19.356	1.083	12.336	16.580	0.661	7.740	10.332
<25%	0.286	3.657	4.777	0.849	9.782	13.109	1.270	14.379	19.356

According to the Table 2, the best expectation possible is, even if waited till the third reversal day, only 47.119% (less than half) of the STs are found successful in the traditional view. It means that more than half the number of STs fail in their traditional predictability, even if waited till third reversal day. Hence the hypothesis that "Symmetrical triangles achieve their traditional price objective" is rejected.

3. Trend wise difference (superiority) in the success of symmetrical Triangles

Tables 3, 4 and 5 show that there are no significant differences between the probabilities of successful STs in up trend and down trend. This is true in all the different classes of achievement and on all the reversal days.

Table 3 Trend-wise and Achievement-wise Distribution of STs on the First Reversal Day

% of P.O. achieved	Down Trend		Up Trend		S.E	Difference/S.E.
	Number of STs	% of total	Number of STs	% of total		
100% or more	13	22.41	26	24.04	0.069017	0.240562
75-100	13	22.41	21	19.44	0.065697	0.451975
50-75	17	29.31	41	37.96	0.077615	1.114812
25-50	12	20.69	16	14.81	0.060959	0.963735
less than 25	3	5.17	4	3.70	0.032717	0.448919
Total	58	100.00	108	100.00		

Table 4 Trend-wise and Achievement-wise Distribution of STs on the Second Reversal Day

% of P.O. achieved	Down Trend		Up Trend		S.E	Difference /S.E.
	Number of STs	% of total	Number of STs	% of total		
100% or more	23	39.66	41	37.96	0.079234	0.213572
75-100	8	13.79	13	12.04	0.054115	0.324509
50-75	13	22.41	25	23.15	0.068394	0.107372
25-50	8	13.79	16	14.81	0.057249	0.178467
less than 25	6	10.34	13	12.04	0.051827	0.326512
Total	58	100.00	108	100.00		

Table 5 Trend-wise and Achievement-wise Distribution of STs on the Third Reversal Day

% of P.O. achieved	Down Trend		Up Trend		S.E	Difference /S.E.
	Number of STs	% of total	Number of STs	% of total		
100% or more	28	48.28	40	37.04	0.080055	1.403891
75-100	5	8.62	17	15.74	0.055197	1.289943
50-75	10	17.24	23	21.30	0.064969	0.624136
25-50	5	8.62	10	9.26	0.046672	0.136821
less than 25	10	17.24	18	16.67	0.060959	0.094278
Total	58	100.00	108	100.00		

4. Trend wise difference in performance of Symmetrical Triangles

In respect of 'the probability of success' and 'achievement level of price objective', symmetrical triangles are indifferent to trends. This is true on all the three reversal days.

Table 6 Trend wise achievement of P.O. by ST

Statistic	Reversal Day					
	First		Second		Third	
	Down	Up	Down	Up	Down	Up
Mean	82.19	79.28	99.58	78.54	106.94	103.99
Maximum	248.50	218.32	460.58	820.92	419.71	1398.71
Minimum	10.73	18.39	-48.57	-1009.37	-61.52	-170.03
Std. Deviation	49.22	42.34	78.16	166.40	96.05	154.88
Median	69.91	68.09	85.70	75.18	92.93	79.11
	Up and Down		Up and Down		Up and Down	
S.E. of Means		7.64032		19.01808		19.52374
Difference/ S.E.		0.380917		1.106208		0.151203

5. Signal wise superiority of Symmetrical Triangles

Of the 166 symmetrical triangles, 84 gave buy signals while the rest 82 gave sell signals. So it cannot be concluded that once this pattern configures in stock chart, either of the signals

cannot be more expected than the other as 'buy signal STs' and 'Sell Signal STs' occur almost with same frequency- frequency difference not significant.

6. **Signal wise Probability of successful symmetrical Triangles**

On the first reversal day, the probability of STs with 'buy signals' achieving their full (100%) price objective is significantly higher than that of STs giving sell signals. When 30.95% of the 'buy signal STs' achieved their price objective in full (100 or more), only 15.85% of the 'sell signal STs' could achieve their price objective to that extent. Similar difference is seen in the category of achievement level between 25% and 50% (see Table 7). Similar significant difference in probability of success is not visible in any category on the second reversal day (Table 8). Again on the third reversal day, as revealed by Table 9, significant difference is not visible except in the category of achievement level less than twenty five percent. So in general, 'STs with buy signals' are more dependable to act up on.

Table 7 Signal-wise achievement-wise of PO by STs on the First Reversal Day

% of P.O. achieved	Buy Signal		Sell Signal		S.E	Difference /S.E.
	Number of STs	% of total	Number of STs	% of total		
100% or more	26	30.95	13	15.85	0.065816	2.29407
75-100	18	21.43	16	19.51	0.062651	0.305883
50-75	28	33.33	30	36.59	0.074016	0.439369
25-50	9	10.71	19	23.17	0.058132	2.142773
Less than 25	3	3.57	4	4.88	0.031199	0.418796
Total	84	100.00	82	100.00		

Table 8 Signal-wise achievement-wise of PO by STs on the Second Reversal Day

% of P.O. achieved	Buy Signal		Sell Signal		S.E	Difference /S.E.
	Number of STs	% of total	Number of STs	% of total		
100% or more	38	45.24	26	31.71	0.07556	1.790743
75-100	10	11.90	11	13.41	0.051605	0.292582
50-75	16	19.05	22	26.83	0.065222	1.193096
25-50	12	14.29	12	14.63	0.054595	0.063822
less than 25	8	9.52	11	13.41	0.049424	0.787239
Total	84	100.00	82	100.00		

Table 9 Signal-wise achievement-wise of PO by STs on the Third Reversal Day

% of P.O. achieved	Buy Signal		Sell Signal		S.E	Difference /S.E.
	Number of STs	% of total	Number of STs	% of total		
100% or more	39	46	29	35	0.076343	1.449089
75-100	14	17	8	10	0.052637	1.31287
50-75	14	17	19	23	0.061956	1.049791
25-50	9	11	6	7	0.044508	0.763289
less than 25	8	10	20	24	0.058132	2.557342
Total	84	100	82	100		

7. Signal-Trend Difference among STs

Observed values and test in Table 10 show significant difference in the frequencies of symmetrical triangles in different trends in giving different signals favouring respective trend.

Table 10 Test of significance for difference between signal wise STs in different trends

Trend	Signal	Std Error	Diff. between Proportions	Diff / S.E.
Down Trend (58)	Buy (38)	0.062411527	0.31	4.9725
	Sell (20)			
Up Trend (108)	Buy (64)	0.047280351	0.19	3.9167
	Sell (44)			

8. Signal wise Probability of successful symmetrical Triangles in different trends

Tables 11-14 show that symmetrical triangles occurred during down trends do not statistically differ in the number of successful patterns and in performance- average achievement, there is significant difference in both for STs in uptrends.

In respect of predictability during up trend periods, symmetrical triangles giving buy signals are better than symmetrical triangles giving sell signals.

Table 11 Achievement wise, Reversal day wise and Signal-wise Proportion (in %) of 58 STs occurred during Down Trends

% of P.O. achieved	First Reversal Day		Second Reversal Day		Third Reversal Day	
	Buy	Sell	Buy	Sell	Buy	Sell
100% or more	20.00	23.68	25.00	47.37	35.00	55.26
75-100	25.00	21.05	10.00	15.79	15.00	5.26
50-75	30.00	28.95	30.00	18.42	15.00	18.42
25-50	20.00	21.05	20.00	10.53	10.00	7.89
less than 25	5.00	5.26	15.00	7.89	25.00	13.16
Total of Proportions	100.00	100.00	100.00	100.00	100.00	100.00
Total Number of STs	20	38	20	38	20	38

Table 12 Achievement wise, Reversal day wise and Signal-wise Proportion (in %) of 108 STs occurred during Up Trends

% of P.O. achieved	First Reversal Day		Second Reversal Day		Third Reversal Day	
	Buy	Sell	Buy	Sell	Buy	Sell
100% or more	34.38	9.09	51.56	18.18	50.00	18.18
75-100	20.31	18.18	12.50	11.36	17.19	13.64
50-75	34.38	43.18	15.63	34.09	17.19	27.27
25-50	7.81	25.00	12.50	18.18	10.94	6.82
Less than 25	3.13	4.55	7.81	18.18	4.69	34.09
Total of Proportions	100.00	100.00	100.00	100.00	100.00	100.00
Total Number of STs	64	44	64	44	64	44

9. Signal-wise difference in performance of STs in different trends

It may be said that 'Buy signal STs' and 'Sell signal STs' perform alike in down trends but 'Buy signal STs' outperform "Sell signal STs" in up trends. The superiority of 'Buy signal STs during up trends' periods is more reliable in the technical prediction. Reading Tables 14-17 together, probability of success is higher for actions in the line of the trend while using signals from Symmetrical Triangles.

Table 13 Signal wise Achievement of P.O. by STs during Down trends

Statistic	Reversal Day					
	First		Second		Third	
	Buy	Sell	Buy	Sell	Buy	Sell
Mean	73.65	86.69	75.98	112.00	82.82	119.63
Maximum	124.00	248.50	201.92	460.58	254.32	419.71
Minimum	12.44	10.73	-12.50	-48.57	-46.68	-61.52
Std. Deviation	32.03	56.09	55.28	85.91	75.95	103.78
Median	66.31	69.91	66.49	92.92	74.72	106.87
	Buy and Sell		Buy and Sell		Buy and Sell	
S.E. of Means	11.57945		18.62858		23.91252	
Difference/ S.E.	1.126002		1.933816		1.539673	

Table 14 Signal wise Achievement of P.O. by ST occurred during Up Trends

Statistic	Reversal Day					
	First		Second		Third	
	Buy	Sell	Buy	Sell	Buy	Sell
Mean	90.85	62.46	97.02	51.66	142.83	47.48
Maximum	218.32	130.77	820.92	240.01	1398.71	232.01
Minimum	21.50	18.39	-1009.37	-201.02	-40.17	-170.03
Std. Deviation	47.47	25.90	205.53	75.89	182.66	72.78
Median	77.55	59.18	104.30	58.37	100.23	64.04
	Buy and Sell		Buy and Sell		Buy and Sell	
S.E. of Means		7.103247		28.12396		25.33219
Difference/ S.E.		3.996447		1.612988		3.763883

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

Of the 166 symmetrical triangles, 27 symmetrical triangles were having their reversal day on the breakout day itself. For the rest 139 STs, the period from 'breakout day' to the third reversal days' ranged from a single day to seventy-nine days (Table 15).

Table 15 Reversal Day-wise time lag for the achievement of P O by ST

Statistic	No of Days 'in the Market' on the Reversal Day			% of P.O. Achieved on the Reversal Day		
	First	Second	Third	First	Second	Third
Mean	4.33	14.78	26.11	80.30	85.89	105.02
Median	3.00	13.00	22.00	69.30	76.73	82.22
Minimum	1.00	2.00	9.00	10.73	-1009.37	-170.03
Maximum	21.00	50.00	79.00	248.50	820.92	1398.71

Conclusion

Symmetrical triangle 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 limited success.

References:

Books

1. Bauer Jr. Richard J. and Dahlquist Julie R., *Technical Market Indicators: Analysis & Performance*, John Wiley & Sons, Inc. New York the USA., (p. vii), (1999)
2. Gupta. O.P., 'Behaviour of share Prices in India – A Test of Market Efficiency'. National Publishing House, New Delhi, 1985.
3. Lorie, James H. and Mary T. Hamilton. 'The stock Market Theories and Evidence'. Richard D. Irwin. Homewood Illinois, 1973.
4. Magee, John and Edwards, Robert D. 'Technical Analysis of Stock Trends', John Magee, Boston, Massachusetts, the USA.
5. Pring J., Martin, 'Technical analysis explained', McGraw-Hill, (1991).
6. Plummer, Tony, 'Forecasting Financial Market-the Truth behind Technical Analysis', Kogen Page Limited.

Journals

7. Aggarwal. K.P., 'Equity Price Behaviour in India since 1951 – 52', *Indian Journal of Economics* Vo. 46, July 1965, pp. 63-92.
8. Barua and Raghunathan., 'Inefficiency and Speculation in Indian Capital Markets' – *Vikalpa*, Vol. 12, July – Sept.' pp. 53-58.
9. Cootner, Paul H., 'Stock Prices: Random Vs Systematic Changes' *The Industrial Management Review*, Vol. 13. No.2. Spring 1962. pp. 24-45.
10. Fama, Eugene F., 'Random Walks in Stock Market prices', *Financial Analyst Journal*, Vo. XXI.
11. Gehm, Fred., 'Who is R.N. Elliot and why is he making waves?', *Financial Analyst Journal*, February, 1983, pp. 51-58.
12. Levy, Robert A. 'Relative Strength as a criterion for Investment Selection'. *The Journal of Finance*, Vo. XXII No. 4. December 1967, pp. 595-610.
13. Levy Robert.A., 'Conceptual Foundations of Technical Analysis' *Financial Analyst Journal*, July – August, 1966, pp. 83-89, Reprinted in *Sree Profit*. Vol. IV. August, 1989.
14. Levy Robert A. *Random Walks Reality or Myths*, *Financial Analyst Journal*, Vol. 23. No. 6 Nov.Dec. 1967.

Websites

15. <https://www.metastock.com>
16. <https://www.investing.com>
17. <https://www.nseindia.com>
18. <https://www.bseindia.com>
19. <https://in.finance.yahoo.com>
20. <https://www.ssm.com>
21. <https://www.ino.com>
22. <https://trendspider.com>