



BOLLINGER BANDS AS A TECHNICAL ANALYTICAL TOOL IN ANALYSING GOLD AS A COMMODITY

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“Technical analysis is a skill that improves with experience and study. Always be a student and keep learning.”- John Murphy

Stocks dealt with in the stock exchange are subjected to either fundamental and/or technical analyses. Fundamental analysis evaluates securities by attempting to measure their intrinsic value, while traders look to statistical trends in stock prices and volumes dealt with in technical analysis. This analysis is extensive and includes every factor that will influence a security to arrive at a sensible investment decision. Such factors are both macro and micro economic factors that tend to impact prices of stock.

On the other hand, technical analysis solely depends on historical data directly related to the particular stock and broadly involves historical prices of shares and its corresponding trading volume. Future price movements are projected around it and are normally based on patterned price movements. Technical analysis is a trading discipline employed to gauge investments and identify trading opportunities by analysing statistical tools around trading activities, like price of the investment and its volume traded. It is normally used on any security that has historical trading data. The predominant two types normally used in technical analysis include chart patterns and technical/ statistical indicators. Chart patterns enable an investor to identify support and resistance areas on a chart that displays specific patterns. The concept of technical analysis is more economic pattern based rather than financial valuation. Investment decisions are based more on the price of stock with the backing of charts. The charts patterns help identify support and resistance areas on the chart on the basis of specific patterns.

Three Principles of Technical Analysis (TA)

1. The market discounts everything including news, facts, emotions, data and expectations
2. The market is characterised by inertia. If the market is in an increasing phase, it is likely to continue doing so
3. The movement of the market is in waves

Bollinger Bands as a tool used in Technical Analysis

Bollinger Band(BB) is a technical analysis too defined by a set of trend lines plotted two standard deviations either positively or negatively, away from a Simple Moving Average (SMA) of a security's price, adjusted to user preferences. It was developed by **John Bollinger**, a popular technical trader for generating oversold and overbought signals. BB identifies asset prices that have deviated from the mean. In some cases, reversion strategies cause upheavals and crashes in prices and have an accuracy that maybe questionable in certain instances. They are potted at a standard deviation below and above a SMA of the price, and normally used in pairs (upper and lower bands to determine if relative prices increase or decrease are recorded) to indicate price volatility. When the prices touch the **Upper Band**,



it implies that shares are overbought, and when they touch the **lower band** they are considered over sold sending investment signals to investors. Both the bands are treated as price targets and when far apart and wide are inferred that volatility is high and while contracted bands indicate lesser volatility.

BB are characterised by the “**squeeze**” and “**break-outs**”. Constricted moving averages cause bands to come closer to each other, and represent a squeeze, indicating low volatility and opening up potential trading opportunities for the investor as increased volatility is anticipated. Breakouts have wider bands with investors exiting out of trading. When the tops and bottoms of prices are connected with a straight line, it defines the course along which the price moves. When the prices move within this course it means that price movement is as anticipated.

Bullish Trend	A squeeze followed by a break above the upper band
Bearish Trend	A squeeze followed by a break below the lower band

Violent price fluctuations attempt to hinder the crossing points of moving averages during price movements (*Shilagadze, 2011*).TA was much sought after in comparison to fundamental analysis with weightage given to TA in several studies (*Taylor and Allen, 1992*). Stocks that record huge losses in one month have a tendency to record reversal in the subsequent month and vice versa (*Jagdeesh, 1990*), as incremental information add practical value to varied indicators in TA (*Lo, Mamaysky, Wang, 2000*).A comprehensive trading rule cannot be used when a single moving average is used, based on the Dow Theory (*Oliver Douglas William, 2006*). BB are found to yield higher and better returns than the Relative Strength Index (RSI) in terms of favourable returns and profit in comparison (*Nisarg Shah, Patel TaraiManubhai, 2015*), besides determining the highs and lows of stock that impact the decision making by investors. BB help capture price level fluctuations that may be used to manipulate its inputs to derive a trading rule (*Oliver Douglas William, 2006*). BB are found not to earn excessive profits in the “buy and hold” trading strategy, after adjusting transaction costs on using a contrarian’s approach to the traditional rules’ trading signals. The empirical findings of a research revealed that BBs have consistently underperformed (*C.Lento, N.Gradojevic and C.S.Wright, 2007*). BB trading strategy was used to study stock index futures to test processed data on which wavelet noise reduction was applied. The study revealed higher returns, lesser risks and better applicability (*Shaozhen Chen, Bangqian Zhang and GengJianZhiou, Qiaoxu Qin, 2018*).Predictability anomalies have disappeared with the influence of BB since its inception in 1983, making trading strategy profitable in international stock markets (*Jiai Fang, Ben Jacobsen, Yafeng Qin, 2014*). BB was the most favoured technical indicator dominating even RSI, moving convergence and divergence and moving average crossovers (*Abbey, Doukas, 2012*).

Objectives of the Study

- ✓ To study the trend of gold as the selected commodity based on market data
- ✓ To use BB to study price fluctuations of gold between
- ✓ To identify the various shapes and formations on application of BB
- ✓ To evaluate profitability of BB empirically and make meaningful interpretations



Sampling Technique

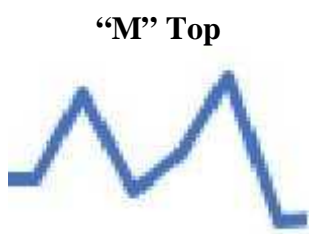

The study is explorative in nature, as the investor decision to purchase or sell securities is based on price fluctuations and risk involved. The researcher has used only secondary data for analysis and used the surf engines to source related data. The market data on commodity gold was sourced from moneycontrol.com between March 2018 and June 2019, spanning five quarters. The researcher has applied Bollinger Bands on each of the quarters to identify the formation on a micro basis. The formula used for the calculation of the upper and lower bands are as follows:-

Middle Band	20day SMA
Upper Band	20 day SMA + (20 day standard deviation of price x 2)
Lower Band	20 day SMA - (20 day standard deviation of price x 2)
Band Width	(Upper BB – Lower BB) / Middle BB

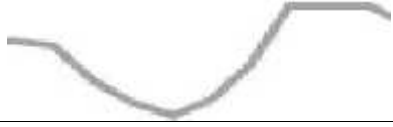


When security prices move above the moving average, it is an indication that the price of the security is increasing and vice versa. Sale of securities normally takes place just after the security price tops and purchases happen when the trading system indicates a security price bottom.

Result and Discussion

Table – 1, Table showing the formations during the selected trading period

 <p>“M” Top</p>	Q1	May 10 – June 01	22
	Q2 & Q5	-	-
	Q3	October 10 – October 16	7
		November 23 – November 29	7
		December 06 – December 18	13
Q4	March 07 – March 14	8	
 <p>“W” Bottom</p>	Q1	April 25 – May 15	20
	Q2	-	-
	Q3	November 08 – December 10	36
		December 17 – December 24	8
	Q4	February 05 – February 13	9
		February 20 – February 26	7
		March 13 – March 19	7
	Q5	April 10 – April 22	23
		May 07 – May 13	7
		May 23 – May 29	7



Formation	Quarter	Gold	
		Period/Duration	No. Of Days
Cup and Handle 	Q1	April 25- May 21	27
		May 31 – June 21	21
	Q2	July 18 – August 08	22
	Q3, Q4 & Q5	-	-
“V” 	Q1	April 10 – April 19	17
		April 27 – May 08	14
		May 21 – May 25	5
		May 22 – May 28	9
		June 21 – June 25	5
	Q2	July 12 – July 20	9
		August 13 – August 16	4
		August 21 – August 27	7
		September 13 – September 25	13
	Q3	October 10 – October 11	2
		October 30 – November 01	3
		December 14 – December 18	5
		December 26 – December 27	2
	Q4	January 09 – January 10	2
		January 23 – January 25	3
		March 20 – March 25	6
	Q5	April 10 – April 15	6
May 01 – May 07		7	
Inverted “V” 	Q1	April 10 – April 12	3
		May 22 – May 28	7
		May 31 – June 04	5
		June 11 – June 20	10
		June 26 – June 28	3
	Q2	August 02 – August 06	5
		August 09 – August 17	9
		August 31 – September 07	8
	Q3	October 12 – October 19	8
		October 22 – October 24	3
		November 15 – November 19	5
	Q4	December 14 – December 19	6
		March 05 – March 13	9
		March 18 – March 19	2
	Q5	March 26 – March 28	3
		April 26 – May 02	7
		May 10 – May 24	15
Q5	June 18 – June 20	3	
	Q1, Q2, Q3, Q4 & Q5	No formation	-
Head and Shoulder & Integrated Head and Shoulder	Q1, Q2, Q3, Q4 & Q5	No formation	-



Analysis and Interpretation

Formation	Characteristics	Bullish trend	Bearish Trend
Cup and handle	<ul style="list-style-type: none"> ▪ This marks the beginning of a bullish trend ▪ The upward trend pauses for a while and continues after the pattern confirmation happens ▪ This price pattern resembles a cup and is followed by an upward trend and breaks the resistance ▪ The price movement pierces the resistance lines in the handle to continue the upward trend ▪ The downward or sideways movement of stock prices resemble a handle ▪ It normally exists for a long period of time 	✓	-
V Shape	<ul style="list-style-type: none"> ▪ As the name indicates, in “V” formation, there is a sharp decline and fast reversal ▪ This pattern normally occurs among popular stocks where the market interest changes from hope to fear and vice versa ▪ The investor should buy after the uptrend has started and exit before it reaches the top portion ▪ The reversals from tops and bottoms indicate buy and sell signals 	-	✓
Inverted V	<ul style="list-style-type: none"> ▪ Here the rise occurs first, followed by the decline 	✓	
Double Top	<ul style="list-style-type: none"> ▪ It indicates the signal at the end of the trend And the beginning of another ▪ The double top indicates a bear market ▪ The pattern formation resembles the letter “M” 		✓
Double Bottom	<ul style="list-style-type: none"> ▪ It indicates that the stock falls when the prices lower and there is an increase in the higher level with a falling movement ▪ The pattern formation resembles the letter “W” 	✓	
Head and Shoulders	<ul style="list-style-type: none"> ▪ It indicates the pattern in 3 conventions (left, right shoulder and head) ▪ The neckline is connected from bottom to top ▪ During the upward trend, the left shoulder is beginning to sell resulting in a price inclination 		✓
Inverted Head and Shoulder	<ul style="list-style-type: none"> ▪ The stock price falls and rises, making an inverted right shoulder and the price continues to fall and rise, making the head and inverted left shoulder ▪ Connecting the top of inverted head and shoulder gives way to a neckline shape 	✓	

Collated from SAPM, 2nd edition by Punithavathy Pandian, 2013



Based on the above, it is evident that the study is from historical data and the commodity chosen is gold which is subjected to daily price fluctuations, being the primary basis against which the country prints its currency, along the lines of the Mint Par Theory. The following are some of the recommendations made:-

Reasons for Gold as the most sought after commodity by investors

- Simplified trading with lowered brokerages combined with minimum turnaround time has enhanced by leaps and bounds the interest of investors towards the gold commodity market(www.motilaloswal.com)
- Investors are facing relatively lesser entry barriers on an informed basis in this type of trading
- Investors tend to invest in commodities in general and gold in particular, as a hedge against existing market dynamics
- India prides the world's largest pool of youth aged up to 40 years, whose access to education has knocked down geographical barriers too. These investors seek newer horizons in investment, of which gold as a commodity is highly appealing and inviting (www.economicstimes.indiatimes.com)
- Brokerage firms provide hi-tech investment engines backed by rule based methodology, paving way for a touch-of-a-button experience

Recommendations

- Gold always reigns supreme in the minds of the Indian investors on an ever green basis in their investment portfolio owing to its huge investment potential
- The government should join hands with the banking industry and periodically conduct investor awareness programs
- The SEBI guidelines and relevant market information should be made available to the potential investors so that they comprehend their rights, duties and responsibilities
- Investors to do a periodical SWOT and PESTEL analysis of the chosen securities for a wider potential investor perspective
- Companies to follow the legal requirements and make available stochastic information in the light of the investors
- Prospective investors should realise that before they invest in something, they need to invest time to understand its nuances

Conclusion

Trading bands are encompassing in terms of the price structure of an asset. Price actions are suggestive to the investor in terms of buying/selling of the investments. Gold is the most sought after commodity in terms of investment by the investors who follow its price hikes and falls closely. The above study has added more meaning with the help of BBs and prospective investors would be able to understand the implications of the various formations in a typical trading day. If the above suggestions are implemented, the stock market is bound to have an increased investor base, paving way for plethora transactions to take place on one hand and permit a healthy circulation of funds on the other. Despite the



fact that SEBI does organize periodic awareness programs, its effectiveness is to be gauged and remedial measures be implemented for a wider investor reach. It may be good to recall the words of **John Bollinger** on a concluding note “ **Technical Analysis works precisely because people look at it. If people care, I care**”....

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