Volatility as a Trending Tool: An Assessment of CNX Nifty

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Abstract
Investors in financial markets are primarily concerned about the uncertainty in receiving the expected returns as well as the variance in returns. In this paper the volatility in the CNX NIFTY is evaluated for a period of one year. The method used for evaluation is the Average True Range. Average true range was one of several indicators developed and introduced by J. Welles Wilder. ATR reflects the trading range, and knowing this can allow the investor to more accurately buy and sell into trends as well as set stops. They are used less frequently than standard indicators but understanding the entry and exit points could help in increasing the profitability. In an overall sense, the aim of this paper is to understand the trend in the CNX NIFTY for the period December 2013 to December 2014 which can be used to assess the volatility in the mentioned index.

Key words: Volatility, Average True Range, stops, High, Low, True Range

INTRODUCTION:
Analysis of stock market has gained utmost importance post liberalization the reason being the aim to mobilize resources efficiently. Volatility in the price of stock market can arise because of several reasons. It creates atmosphere of uncertainty and thus it hampers productive investment. Hence it is important to study the pattern and behaviour of market applies new parameters and methods. Stock index indicates the performance of the market and CNX NIFTY represents the performance of 50 stocks.

This paper aims at examining the volatility pattern in the index using the Average True Range (ATR) indicator which is important for an investor to know the point of entry and exit in a way which would help in increasing the profitability.

Average true range was one of several indicators developed and introduced by J. Welles Wilder in his book “New Concepts in Technical Trading Systems”, which was published in 1978. ATR has withstood the test of time, and is still a popular indicator today. ATR differs from many indicators in that it measures volatility only. It does not measure momentum or forecast direction as do many indicators. Wilder developed the indicator with the goal of accounting for the volatility of gaps or limit moves in addition to the typical high-low daily trading range. This indicator was developed with futures in mind, as this market is more prone to the volatility-related gaps and limit moves this indicator is designed to take into account.

ATR AS AN INDICATOR
Average true range (ATR) is often used as an indicator, but is not one itself. It doesn’t necessarily predict anything, but extremes in activity can indicate a change in a stock’s movement; higher ATRs can mean a stock is trending, and lower ATRs could indicate a Consolidation in price.

A range is the difference between the high and low price on any given day. It reveals information about how volatile a stock is. Large ranges indicate high volatility and small ranges indicate low volatility.
Average true range is especially helpful when developing an automated strategy based trading system. Instead of having to choose a specific price value for each aspect of a trading strategy for each stock, a percentage of average true value can be used for each aspect of the strategy that requires a specific value for all stocks to which the strategy will be applied.

**CALCULATION OF ATR**

Wilder believed that the range was directly proportional to volatility, and that range — the high and low of a stock for a given period, be it intraday, daily, weekly, or monthly — was indicative of a trend. If the volatility of a stock increased, it was entering a trend, and if it slowed down, it suggested a reversal. He further refined the trading range, calling it a *true range* when he included changes in price that occurred from the previous day’s close rather than starting from the opening price. Such things as after-hours announcements that would predispose the market to open higher or lower next day would not be accounted for. The price Range for the day would increase, and that difference, or higher volatility, would be included in the true range.

The true range is calculated in three scenarios.

The “true range” component of average true range is determined by taking the greatest of the following three calculations:

1. Current high – current low = TR1
2. Current high – previous close = TR2
3. Current low – previous close = TR3

This indicator is not concerned with direction and each of these differences is considered as an absolute value when determining which of the three is the greatest. The first ATR remains the first TR and from the second ATR formula mentioned below is used

\[
(\text{Previous ATR} \times 13 + \text{current true range}) / 14
\]

True range is the greatest of the three calculations previously listed. Previous ATR refers to the average true range for the given look back period before the new data is added to the mix.

**When ATR is used as an indicator the following rules are to be followed:**

1. When used as an indicator, ATR’s actual amount is not significant. Higher-priced stocks should have higher true ranges than similar ranges in lower-priced stocks
2. When a stock is in its lower ATR range, it is a sign that the stock is consolidating, or trading within a narrow price range. This can be followed by a continuation of the stock
   In the direction it had previously been going, or it could signal a reversal. By the time the ATR begins to rise, meaning the day’s trading range is increasing, it should be clear which way the stock is going, and you can buy, sell, or short accordingly.
3. When a stock is in its upper ATR range, it’s a sign of high volatility and suggests a stock is trending. Since trends tend to be sporadic and short-lived, the higher end of the range may signal an end to the trend. If you own an upwardly trending stock, you might consider selling. If the stock is trending down, you might consider buying once the stock consolidates.
4. Sometimes when the ATR and stock price aren’t going up or down at the same time. Instead, their movements are mirroring each other, one going up while the other goes down. This divergence occurs because true range is an absolute value (and thus always a positive number).
5. When the ATR is going up and the stock price down, the stock is in a downtrend. When the ATR is going down and the stock price is high, it is going into a consolidation period. This makes it slightly different from most oscillator-type indicators where upper limits signal overbought territory and lower limits, oversold.

**ATR AND STOPS**

ATR as an indicator has its limitations, and there are certainly other, more sophisticated ones to choose from. ATR tells if stock is consolidating or trending and that’s a lot right there, but it doesn’t provide
buy/sell signals. ATR is good for stop placement. ATR reflects the trading range, and knowing this can allow you to more accurately buy and sell into trends as well as set stops.

The stops are calculated as multiples of ATR and mostly used one is \(2 \times \text{ATR}\)

**LIMITATIONS OF ATR**

1. ATR is a measure of volatility only. It should not be used as a directional indicator. This narrow focus can be seen as a boon (simplicity of the signal) or hindrance (limited forecasting abilities).
2. ATR is not well suited for comparisons between assets. This is because absolute values of prices are used and the indicator is not bound by a scale. Differing price scales equate to differing and non-comparable ATR values. Also, even if this was considered as a percentage of the asset’s price, comparing ATR readings would still not be an efficient means of analysis because differing stocks have differing amounts of “normal” volatility.

**DATA - ANALYSIS AND FINDINGS**

A graph is plotted for the ATR which is calculated using the above formula. Another graph plotted for closing price help to understand the overall trend in the market index when compared to the ATR trend.

The findings from the above study are

1. The low point is at 57(approx) in February 2014 and high point is at 112(approx) in May 2014.
2. The stop is given by multiple of ATR which is added to the closing price if we take \((2 \times \text{ATR})\). The first stop is placed at 100 in July and 85 in August, October and then again after December a stop is forecasted at 85 as a trend reversal is expected at this stage.

3. The overall trend which is clear from the trend line of ATR that it is upward.

4. From Jan to May it is the low ATR which indicates that consolidation happened and the fluctuation happened in a narrow range.

5. In May 2014 there is a steep rise in the ATR which implies the upward trend and indicates high volatility and ATR reached highest 112 points.

6. In the month of June and November we see a downward trend which indicates that trend reversal happened.

7. After December it is expected to rise further and then a trend reversal pattern is expected.

8. The overall trend when checked with the closing price of the index is also in the upward which can be clearly shown with the trend line.

CONCLUSION

In this study Average True Range is used to assess the trend of the CNX NIFTY for a period of one year and the stop points are identified. The CNX NIFTY showed an overall upward trend for the year great volatility is observed. Analysis is extended to forecast a reversal of the trend ATR after December 2014. ATR hence is a versatile tool that helps trader’s measure volatility and can provide entry and exit locations. The average true range (ATR) indicator from J. Welles Wilder is a unique measure of volatility. The major limitation of this indicator is that it is not designed to predict the direction of the market or of a security. It helps traders judge the “true” volatility in prices that the traditional high-low range cannot show. Furthermore, traders can use the average true range to confirm the strength of a price reversal or breakout. There is future scope of research for this indicator and its application to other areas pertaining to finance and investment.

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