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AVERAGE DIRECTIONAL INDEX

An Average Directional Index is a three-line technical indicator that is used to understand the direction of the movement of the asset price and the strength of the trend. The three lines that are included in the average directional index are – ADX line, Positive Directional Index Line (+DI) and the Negative Directional Index Line (-DI). The ADX line denotes how strong the trend is and the +DI and -DI lines indicate the direction of the trend. These together form one of the most effective technical indicators.

The directional index is calculated using relatively complicated mathematical operations. We can determine the period of time for which we need the ADX to be calculated. We can play around with the time period and understand what it does to the signals and the shape of the three lines.

AVERAGE DIRECTIONAL INDEX

ADX LINE

ADX always has a positive value and a value greater than 25 represents strength in the existing trend. A value of less than 25 indicates low strength in the existing price trend.

POSITIVE DIRECTIONAL LINE

The +DI and -DI are used to understand the direction of the trend. If +DI is greater than -DI, we can say that the bullish trend exists in the market and if the -DI is greater than +DI, we say the bearish trend is prevailing in the market. Together, the three lines inform us of the prevailing market trend and its intensity.

NEGATIVE DIRECTIONAL LINE

ELEMENTS

We see there are four elements in an ADX indicator. The first and most important element is the ADX line itself which reflects the strength of the trend. Next, +DI line and -DI line which shows the direction of the trend. Lastly, the time frame i.e. the number of periods reflected in the ADX. We can change the periods used to calculate the time frame.

SUITABILITY

Again, ADX can be used across for assets and stocks of all sizes. However, true effectiveness will only be understood when a person backtests their strategy and understands if they are working on a particular kind of asset or not.

TRADING SIGNALS

ADX is one of the powerful indicators that are capable of generating buy and sell signals. So, firstly, we will understand the strength of the trend. We will only accept a trade based on ADX if the trend has strength in it i.e. when ADX is greater than 25. The higher the ADX is, the stronger is the trend and the better will it be to accept a trade as the trend will more likely continue. Once the ADX levels are greater than 25, we will use crossovers of +DI and -DI to generate buy and sell signals. Whenever the +DI intersects the -DI from the bottom with $ADX > 25$, we will go long the asset. On the other side, when +DI intersects -DI from the top with $ADX > 25$, we will go short the asset. However, using ADX comes with two shortcomings. First, ADX is not always great with a sideways market. When a sideways market exists, and the trend is weak, we will be protected from entering into a trade because the ADX line will fall below 25. During this time, we will see a lot of crossovers, but ignore them. Second, ADX signals create a lot of false signals. So, we will have to work out solutions to deal with the same in our system.



This is how ADX typically looks. We see in the chart that the Green line is the +DI line, -DI line is the red one and the Blue line is the ADX line. We saw that, whenever ADX line is less than 25 at the time of crossover, we will not take that trade. The pink line represents the level of 25. So, whenever Blue Line is below the pink line, we will not take the trade. In this case, we would not have taken any trade before October 8, as that is when the ADX line crossed the pink line and was above the required level of 25. This way, we avoid low volatility sideways market. Also, we see that the +DI and -DI have not crossed over since October 8. As a result, there are no trading signals on this particular chart.



We see that this is an example of a trending market. However, when the trend started, there were multiple crossovers in a short period in the month of September. Also, the ADX was less than 25. As a result, we would have missed out on the trend. However, now we see that there is a crossover between +DI and -DI in January and the ADX is greater than 25. This is a sign that the trend might be reversing. This was a good indicator to short the asset few sessions ago. We see that the Bearish crossover created an opportunity and we could have shorted the asset. This is typically how ADX produces Trade signals.



This is an example of sideways market post the decline. We see that there are lots of crossovers between the +DI and -DI in this period. We see that there are many positive and negative false movements between the RSI. Whenever such a pattern arises when there are multiple crossovers in a very short period of time, we will avoid trading based on them even if the ADX is greater than 25. In this case, we see that the ADX is also lower than 25. This is how ADX protects us from sideways market in many ways. It protects us from taking the trade when the directional movement does not have momentum.



There is a crossover in early November. The ADX is greater than 25 and therefore we can treat these as a signal. There was a bullish crossover and in hindsight, this would have made us good profits. The second phase takes place in late December when we come across a lot of continuous crossovers. We might have entered the trade and incurred a loss. But, ADX levels would have made sure that we do not repeatedly take trades for each crossover as ADX dipped significantly. Lastly, we see there is a bearish crossover. This would have been a perfect short signal. However, we see that the ADX levels are less than 25. As a result, we will not enter this trade as this might again be a false move as the directional movement has no strength in it. A beginner is strictly advised to look for such patterns in multiple other charts to understand these better. Let us now move to the next indicator.

5 BOLLINGER BANDS

Bollinger Band is a technical indicator that creates a border around the closing price of the asset based on its volatility and then inferences are drawn based on the width and behaviour of these lines along with the closing price. Bollinger Bands are one of the most effective ways to understand the volatility of an asset's price. The width of the bands determines the volatility of the prices at the moment and its proximity to the closing price helps us make buy and sell decisions.

To construct Bollinger bands, we begin with the closing price and the simple moving average of the closing price for the last N number of periods. Then we create the bands on the upper side as well as the lower side for which distance is calculated based on standard deviations. The Bollinger bands generally are 1, 1.5 or 2 standard deviations away from the simple moving average. For beginners, the standard deviation is a statistical measure of variability/volatility. More volatility in the observations (closing price in this case), higher will be the standard deviation.



HOW IT WORKS?

In periods of less volatility, the standard deviation decreases and as a result, the width of the Bollinger band decreases. In periods of higher volatility, standard deviation and thus the width of Bollinger bands increases. This way, Bollinger bands help us understand the volatility of the recent asset price. The closing price of an asset is expected to stay within Bollinger bands and whenever they move out, it is expected to reverse and come back within the bands. The proximity of the asset price from these bands helps us make inferences.

ELEMENTS

The Bollinger bands begin with a Simple Moving Average of the closing price. The Bands are calculated around a simple moving average. The second element is the time horizon for which we will calculate the SMA and the Bollinger bands. We can change the length of the time period by altering the parameters. The next two elements are the upper band and the lower band. We will use these to make decisions. Lastly, we have to pick the deviation of the bands – 1 standard deviation, 1.5 standard deviations or 2 standard deviations. The width will depend on our use of the Bollinger bands and our strategy's requirements.

TRADING SYSTEM

Bollinger bands do not produce very reliable trading signals independently. However, they can be used with other indicators in a variety of different ways. First, the closing price is expected to stay within the bands. As a result, the Bollinger bands can be used to determine profit targets when accepting a deal using other indicators.

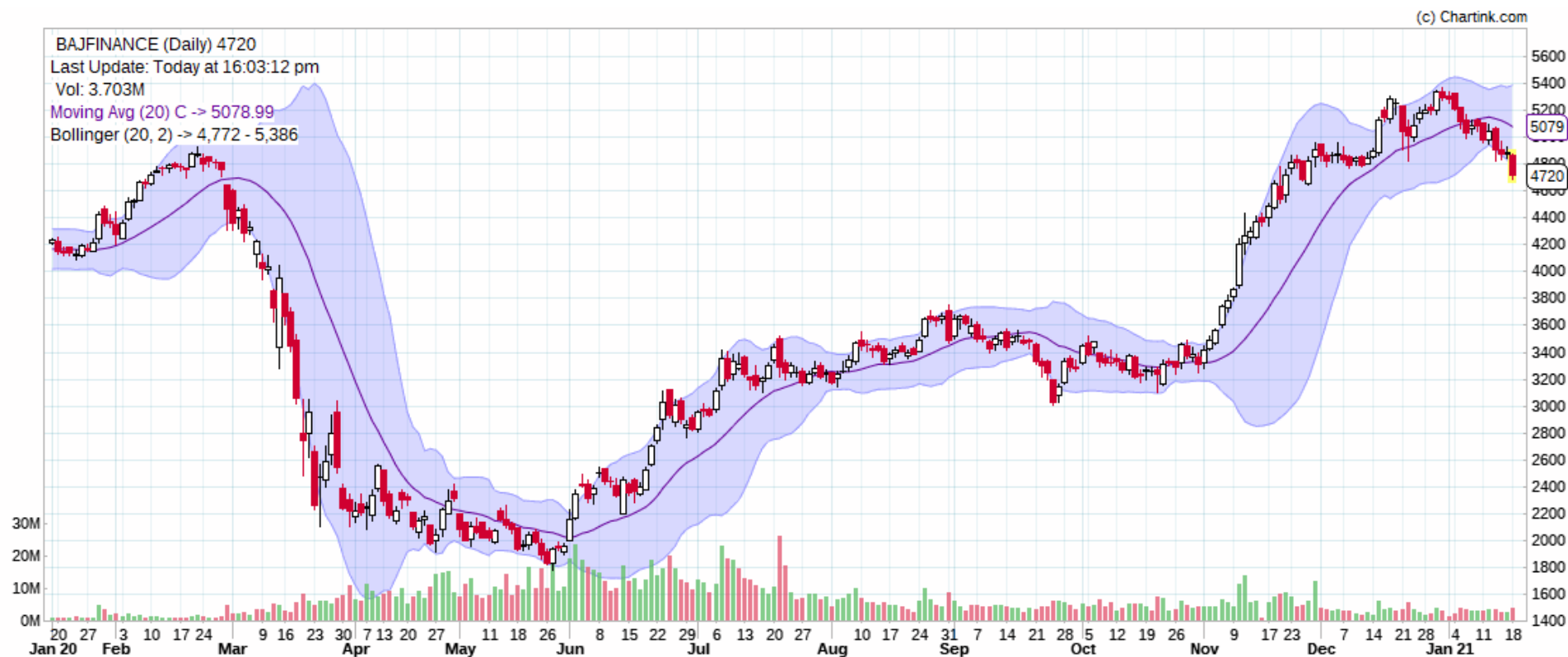
Next, whenever the width of bands goes down significantly, it means that the asset is also somewhere near the convergence of moving averages. We can combine the two, look for the divergence in moving averages and after confirmation with Bollinger bands, enter a trade. Lastly, whenever prices move out of Bollinger bands, we can expect a reversal. We can expect to benefit from this reversal. So, we can look for reversal confirmation using other indicators and then enter a trade.



This is how Bollinger bands look in practice. This is a 2 standard deviation Bollinger band. We see that there is a line running through the centre of the shaded area. That is the simple moving average. The two boundaries on the sides are called Bollinger bands. These are belts and the closing price is expected to stay within these bands. The width of these bands is changing. They change based on the volatility that exists in the closing prices in the recent past. During March and April, when the asset was in a strong trend, the width of Bands shot up instantly. However, following that as the sideways market emerged, the width of the bands went down significantly showing low volatility. Whenever the prices go outside the bands, there is a reversion happening and the price returns to the bands. As we discussed, the closing price hitting these bands is used for profit-booking by many analysts.



There is an upcoming reversal around the corner whenever the asset price has touched either side of the Bollinger bands. As a result, Bollinger bands act as a good leading indicator for upcoming reversals. Bollinger bands give no clear signals or entry and exit points. Thus, we say that Bollinger Bands do not give clear trading signals on their own. We will have to combine them with other indicators. Another problem with Bollinger bands is that when closing price touches one of the bands, it can stay there for a while if the price momentum continues. This is because the bands also adjust as per the direction of the trend. So, as the asset price increases, the band also goes up and as a result, the closing price remains toward either side of the band for a while. We see this playing out in the chart between May to August. The asset price constantly grows along with the Bollinger bands.



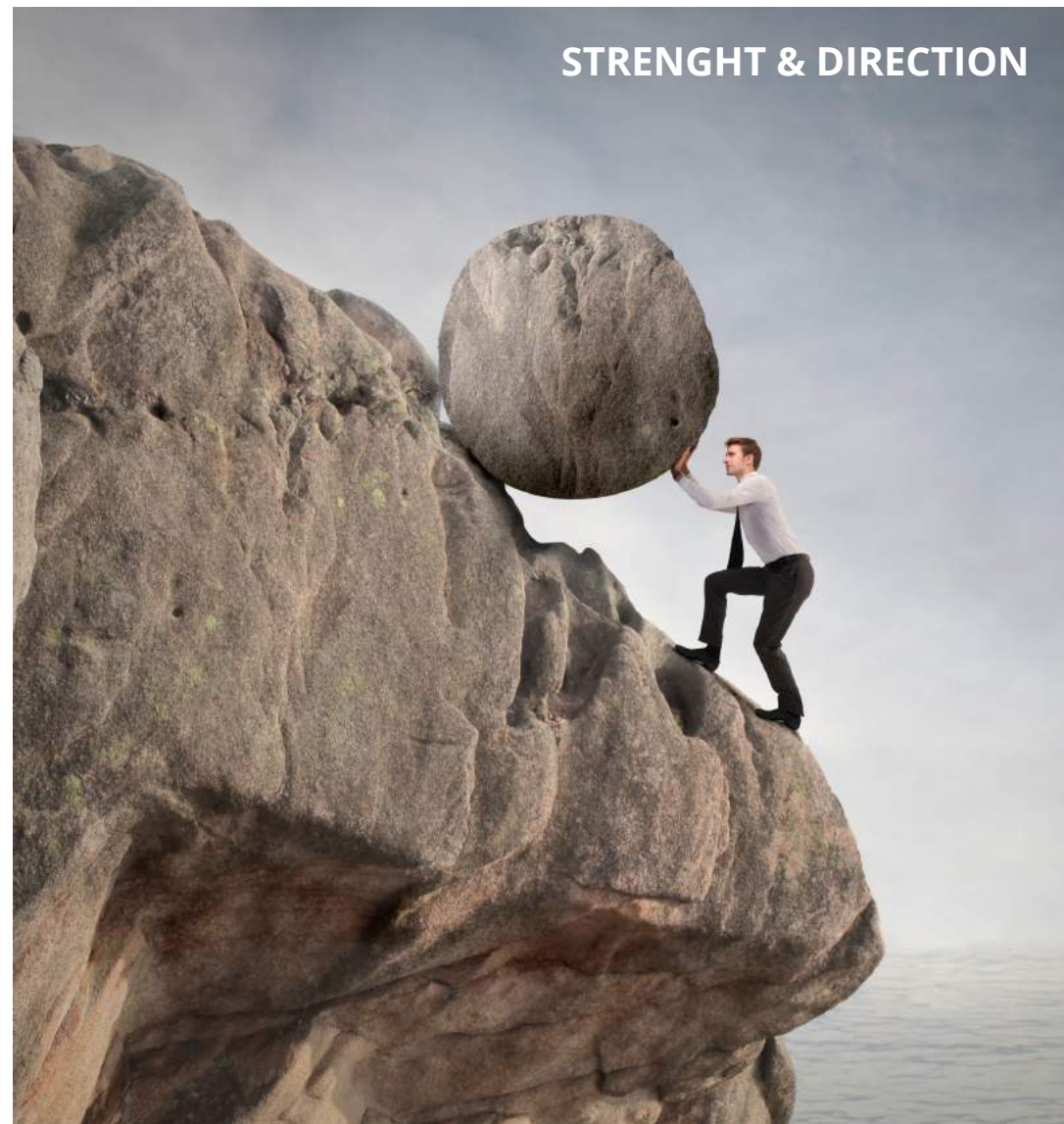
We see that whenever the width of Bollinger bands goes down significantly, there might be a convergence of moving averages that are occurring. We can identify opportunities based on Bollinger bands and then use them along with other indicators to act on them. In the highlighted zone we see that the convergence can be identified using Bollinger bands and then we could have generated enter and exit strategy based on moving averages. With this, we end our discussion on Bollinger bands. A beginner should stop here and explore and practice Bollinger on multiple different charts.

6 COMMODITY CHANNEL INDEX

Commodity Channel Index is an oscillator that revolves around zero and indicates the direction and strength of the trend. It shows the change in trend and if the asset is in an oversold or overbought condition. CCI moves in an unbounded range, so it can take any positive or negative value. If the value is negative, we can say that the negative trend has been the more dominant one till now and it either still exists or has just reversed. A positive CCI value means that a positive trend exists in the market.

CCI is calculated mainly as a difference of the current closing price of an asset from its historical average price. A positive value means that the current price is higher than the historical average whereas a negative value means that the current value is lower than the historical average levels. We can take buy and sell decisions based on this.

However, unlike RSI, CCI does not have a fixed range in which it oscillates. As a result, we will have to figure out the levels at which the assets are overbought or oversold based on past price performances i.e at the levels where they have reverted from in the past. We will have to do this for every individual asset that we want to trade.



ELEMENTS

CCI mainly has three elements. The first element is the CCI line itself i.e. the oscillator that revolves around zero. The next element is the timeframe that we will use for our analysis. We can change the timeframe for CCI based on our analysis and strategy. Long-term CCI works great to generate timely buy and sell signals. At times, they work better than short-term CCI. The last element is the oversold and overbought threshold level. We will determine the thresholds based on past reversals.

TRADING SIGNALS

Whenever CCI intersects the zero level and turns positive from negative, it can be said that this is the start of an uptrend and this acts as a buy signal. Similarly, when the CCI becomes negative from positive, this can be taken as a symbol to sell or short. This is one way to get buy and sell signals using CCI. The next method is to understand the overbought and oversold assets and use a different indicator to determine the entry and exit level. We will use the pre-determined levels from looking at past price behavior and CCI reversal levels.

SUITABILITY

CCI were mainly introduced for commodities and currencies. However, they can also be used for indices and large-cap stocks. These shall be avoided for mid-cap and small-cap stocks.



This is how CCI looks. We see that the same is moving around 0 and takes positive and negative values. We can also define the time horizon for which we intend to generate the CCI. Here, we have used 20 periods which is the default setting for CCI. Whenever CCI turns positive from negative, it is the start of a bullish trend and that can act as a buy signal. Whenever we see that CCI turns negative, it is the start of a downtrend and that is a sell signal. This is how CCI can be used to generate signals. However, a drawback over is that in a sideways market, CCI produces a lot of false signals that can lead to losses. We need to create a trading strategy keeping this in mind.



In a trending market, it produces a lot of buys and sells clean signals. However, in a sideways market, they do not work well and give a lot of false moves.



The second way to use CCI is to understand when the asset is overbought and when it is oversold. This will work like that of RSI. However, here instead of moving between 0 and 100, the CCI moves limitless. So, we will zoom out of the graph, and look at the past and identify the levels from which CCI reverts. We need to set threshold levels on both sides. Let us say, 250 on the positive side and -200 on the negative side. Whenever the CCI goes outside of this range, we can expect a reversal. There will be no clear exit and entry signal. We will have to combine this with other indicators to enter and exit a trade.



We saw that CCI produces a lot of false signals in the shorter term. A way to smoothen out and reduce such false moves is through the use of longer-term CCI. We see that here we have changed the CCI period to 60 and as a result, false moves have been minimized. A downside to this is that this gives slightly lagging signals. As a result, it is up to an analyst to establish a balance between short term and long term CCI. Long-term versions of CCI give powerful signals when combined with other variables. So, an analyst must experiment around CCI for different time frames.



This is a long term CCI. We saw how they minimize noise and give cleaner indications about whether or not to enter a trade. With this, we end our discussion of CCI. The reader should explore this and spend time practicing the same. Let us now move ahead to the next indicator.