

Doing The Cross-Street Shuffle

Trading With An Adaptive Price Zone



When the markets are moving sideways, it is difficult to identify the turning points. Here's one indicator that can help you do that.

by Lee Leibfarth

Traders are always looking for innovative ways to look at the markets, ones that will give them a unique edge. The adaptive price zone provides a means of analyzing price action and spotting possible turning points in the market. In addition, this type of indicator may help traders decide when to stay in the market and when to jump ship. While there is no magical indicator that can predict the direction of the markets with any great certainty, the adaptive price zone can project powerful thresholds that often lead to significant price moves.

The adaptive price zone (APZ) forms a set of bands based on the calculations of a short-term double-smoothed exponential moving average. This forms a steady channel that surrounds the average price and tracks price fluctuations quickly, especially in volatile markets. This technical indicator can help traders find short-term trading opportunities in choppy markets since prices often bounce back and forth within this zone. As price crosses above or below the zone, it can signal an opportunity to buy or sell in anticipation of a reversal. This concept is shown in Figure 1, where the blue dots represent areas where price has violated the APZ.

HOW IT WORKS

To understand the concept of the APZ, you must first examine the importance of a moving average that tracks price action quickly and has little lag. For this I will use a double-smoothed exponential moving average (an exponential moving average of another exponential moving average) to form the basis for the APZ calculation. While simple moving averages (SMAs) calculate a value by equally weighing every datapoint in the lookback period, they often fall significantly behind the current price (known as *lag*). To avoid this slow reaction, an

exponential moving average (EMA) provides a faster method of averaging by giving more value (or weight) to the most recent prices in the lookback period. Using closing prices and taking a five-period EMA of another five-period EMA will provide a starting point for building the APZ.

The adaptive calculation that creates the zone is based on an average true range of sorts. Average true range (ATR), which was introduced by J. Welles Wilder, is a measure of market volatility. It is calculated by averaging the true range of price for a specific length (typically, 14 periods). For the purpose of the APZ, I will use an adaptive range instead of ATR to measure volatility. This can be created by taking the five-period double-smoothed EMA of the current high, minus the current low (see sidebar, "Adaptive price zone EasyLanguage code"). This provides a fast calculation of range that I will use to build the zone bands. Multiplying this value by a deviation factor (two, for in-

stance) and adding and subtracting it from the double-smoothed EMA will complete the calculations for the APZ.



FIGURE 1: THE ADAPTIVE PRICE ZONE. The daily chart of the emini S&P futures continuous contract shows how the adaptive price zone can point out reversals in a nontrending market. The blue dots represent reversal areas where price has violated the zone. On this chart, the number of periods = 30 and BandPct = 1.8.

ADAPTIVE PRICE ZONE EASLANGUAGE CODE

Double_Smooth_EMA Function

inputs:

Price(numericseries),
Length(numericinteger);

variables:

X(0),
Period(0);

Period = iff(Length < 0, 1, squareroot(Length));
X = Xaverage(Xaverage(Price, Period), Period);

Double_Smooth_EMA = iff(currentbar <= 1, price, X);

Adaptive Price Zone Indicator

inputs:

Price(close),
Period(20),
BandPct(2);

Value1 = Double_Smooth_Ema(price, period);
Value2 = Double_Smooth_Ema((H - L), period);
Value4 = BandPct * value2 + value1;
Value5 = value1 - BandPct * value2;

plot1 (value4, "UpBand");
plot2 (value5, "DownBand");

Adaptive Price Zone Strategy

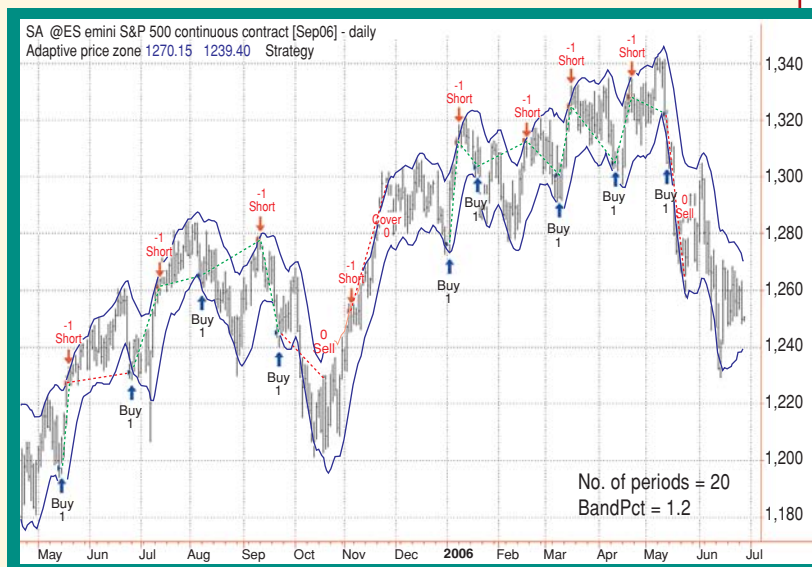
inputs:

Price(close),
Period(20),
BandPct(1.4),
ADXThreshold(30);

variables:

DsEMA(0),
RangeDsEMA(0),
UpperBand(0),
LowerBand(0),
AdxValue(0);

DsEMA = Double_Smooth_Ema(price, period);



SIDEBAR FIGURE 1: APPLICATION OF APZ. On this chart of the September S&P e-mini contracts, you can see how this strategy fared. On this chart, number of periods = 20 and BandPct = 1.2.

RangeDsEMA = Double_Smooth_Ema((H - L), period);
UpperBand = BandPct * RangeDsEMA + DsEMA;
LowerBand = DsEMA - BandPct * RangeDsEMA;
AdxValue = ADX(14);

if AdxValue <= ADXThreshold then begin
 if l <= LowerBand then buy next bar at market;
 if h >= UpperBand then sell short next bar at market;
end;

if AdxValue > ADXThreshold then begin
 sell next bar at market;
 buy to cover next bar at market;
end;

—L.L.

Applying the APZ to a chart will show that the majority of price action tends to stay within the upper and lower bands of the zone. When price deviates significantly from its average and crosses out of the zone, there is an almost magnetic attraction back toward the statistical average. This statistical “pull” forms the basis of the APZ’s logic. It is important to note that this pull only becomes significant in markets that are not actively trending.

TRADE ENTRIES

The APZ can provide a means of making objective trading decisions and works best in nontrending or choppy markets. For this reason, Wilder’s average directional movement index (ADX), with a short lookback period (14, for instance), can be an effective companion for the APZ. The ADX measures the strength of a prevailing trend and registers it on a scale of zero to 100. ADX levels that are below 30 and declining show that the trend is weakening and may provide the best opportunity for using the APZ to anticipate a reversal.

For this type of entry, price that penetrates the lower APZ band signifies a buying (or long) opportunity. Alternatively, price moving above the upper band signals a selling (or shorting) opportunity. When using the APZ as an entry method, traders should use proper money management techniques instead of relying on an opposing signal to exit (or reverse) the trade. Zone violations require a significant initial price push. These events do not necessarily occur symmetrically, so traders should not always expect to close out a trade with an opposing zone violation. For this reason, using a different type of trade exit or a profit target is recommended when using the APZ as a trade entry trigger.

Traders should be cautious when using this indicator in a trending market. This can be signified by ADX readings that are above 30 and rising. At this point, the market has formed a strong trend and as price approaches the upper and lower zones of the APZ, there may be a tendency to continue in that direction instead of immediately reversing. A penetration above the upper zone may continue to go higher and, subsequently, price falling below the lower zone may drop even lower. This is shown in Figure 2, where the QQQs penetrate the lower zone (signified by the blue dots) in early May and continue to fall. ADX readings above 30 in mid-May indicate that price probably will not immediately reverse in the direction of the average. Note that when the ADX is below 30, the other APZ violations show fairly consistent short-term reversals.

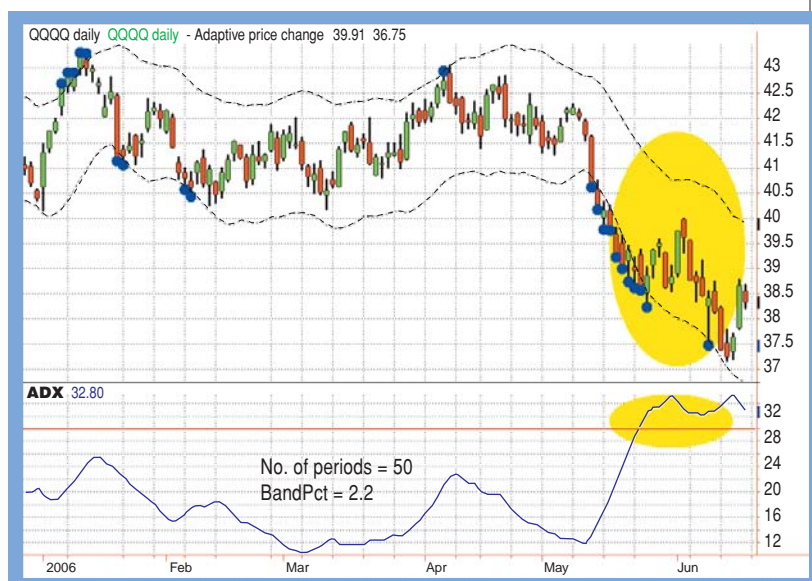


FIGURE 2: ZONE VIOLATIONS. The daily chart of the QQQs shows that zone violations may not be indicative of a reversal in strong trending markets. In this case, as the ADX climbs over 30, price continues to decrease. Number of periods = 50; BandPct = 2.2.

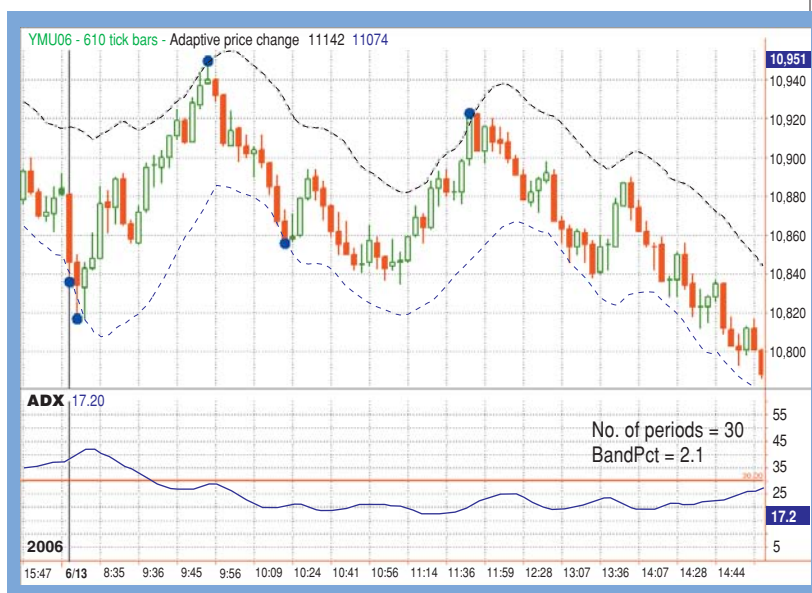


FIGURE 3: USING IT TO DAYTRADE. Here you see an intraday chart of the September 2006 Dow mini-sized futures contract with the ADX maintaining values less than 30. For this type of day, the adaptive price zone can be an effective daytrading tool. Number of periods = 30; BndPct = 2.1.

DAYTRADING WITH AN ADAPTIVE PRICE ZONE

Due to its ability to quickly react to price action, the APZ can be a useful tool in an intraday market. Daytrading with the APZ encourages an aggressive style that may buy into bearish

The adaptive price zone indicator can help traders find key reversal points in the markets.

conditions or sell short during a bullish phase. While this may seem counterintuitive, the advantage is that price often reverses soon after violating one of these bands. This can help daytraders get into a price move early, and allows for greater profit potential. Alternatively, when price does not reverse within a few bars of crossing outside of the zone, it may be an indication to exit the trade and take a small loss.

The intraday chart in Figure 3 shows the APZ applied to a 610-tick chart of the e-mini Dow. On June 13, the market did not form much of a trend as seen through the relatively flat ADX that quickly moved below 30. This provides a good probability for entering trades on the extremes of the APZ. Daytraders may also find these zones helpful for deciding when to exit a trade. As price makes a push to the outside of the zone, this may be an opportunity to close a trade (or part of the trade).

As with any daytrading indicator, traders must research the methods that suit their personal trading styles and the markets that they are trading. In addition, it may be necessary to adjust the settings (period and deviation factor) of the APZ to work with a specific market or chart interval. In just the right markets, the adaptive price zone can point out valuable trading opportunities.

THE VERSATILE INDICATOR

The APZ is a versatile indicator that can be applied to any market or charting interval. The calculations are based on the

volatility of price. This assumes that as price reaches an extreme, as defined by the APZ, there will be a tendency for it to snap back toward the average. This price behavior is especially prominent in markets that are nontrending. The adaptive price zone indicator can help traders find key reversal points in the markets.

Lee Leibfarth is an independent futures trader. He develops custom indicators and provides educational services for traders at PowerZoneTrading.com.

SUGGESTED READING

Leibfarth, Lee [2006]. "Intraday Market Forecasting," *Technical Analysis of STOCKS & COMMODITIES*, Volume 24: August.

See our Traders' Tips section for program code implementing Lee Leibfarth's technique.

†See Traders' Glossary



S&C