

## BOLLINGER BANDS AS AN ENTRY TECHNIQUE

Standard deviation bands or Bollinger Bands, named after John Bollinger who has popularized them, are bands equidistant above and below a moving average of price. The distance of the bands from the selected moving average is based on the standard deviation one desires. Most charting packages support the plotting of Bollinger Bands and allow the selection of:

1. The type and length of the moving average around which the Bollinger Bands are plotted, and
2. The number of standard deviations to calculate from the above moving average.

We prefer a 20-period, simple moving average and 2.0 standard deviation which will contain about 95% of price action. To use Bollinger Bands as an entry technique, we wait for price to penetrate one of the bands. If the upper band is penetrated, we will want to trade the long side. If the lower band is penetrated, we will trade the short side. We want a band to be penetrated preferably with momentum. If the ADX concurrently moves from below 10 or 16 to above 16, we have a potential trade. When price retraces to the moving average, we will want to enter the trade: long, if the upper band was penetrated and short, if the lower band was penetrated.

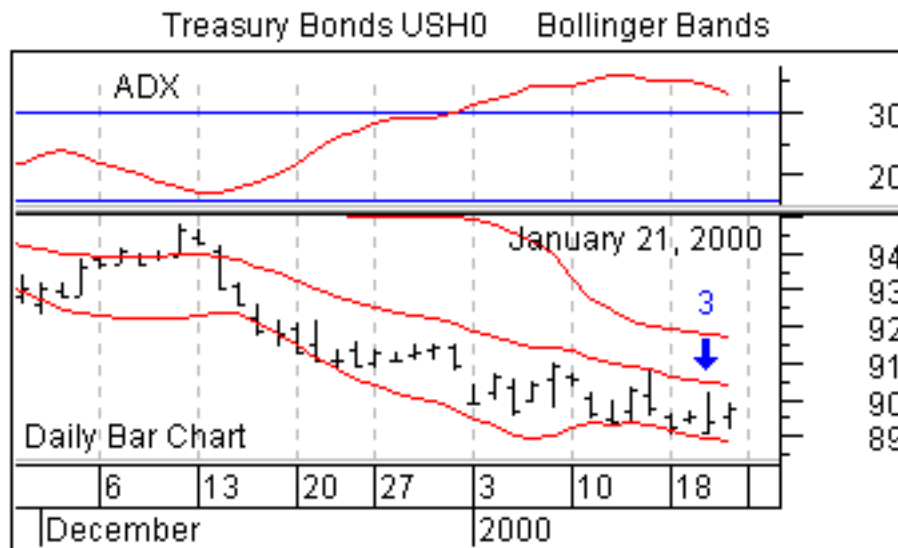


Chart A

Realize this should not be considered a stand-alone technique; this is an entry trigger only. Other, longer-term analysis must be done to ensure one is not trading into the maw of a black hole.

On Chart A, the Treasure Bonds daily bar chart, the daily moving average is active (meaning price momentum down has pushed the daily ADX above the 30 threshold). By looking at the daily Treasury Bond chart, one can see that the daily 20-period exponential moving average has reversed price at every recent attempt to move higher. Down Arrow 3 is the reversal from the proximity of the daily 20-period exponential moving average and corresponds with Down Arrow 3 on the following intraday charts (Charts 1, 2 and 3).

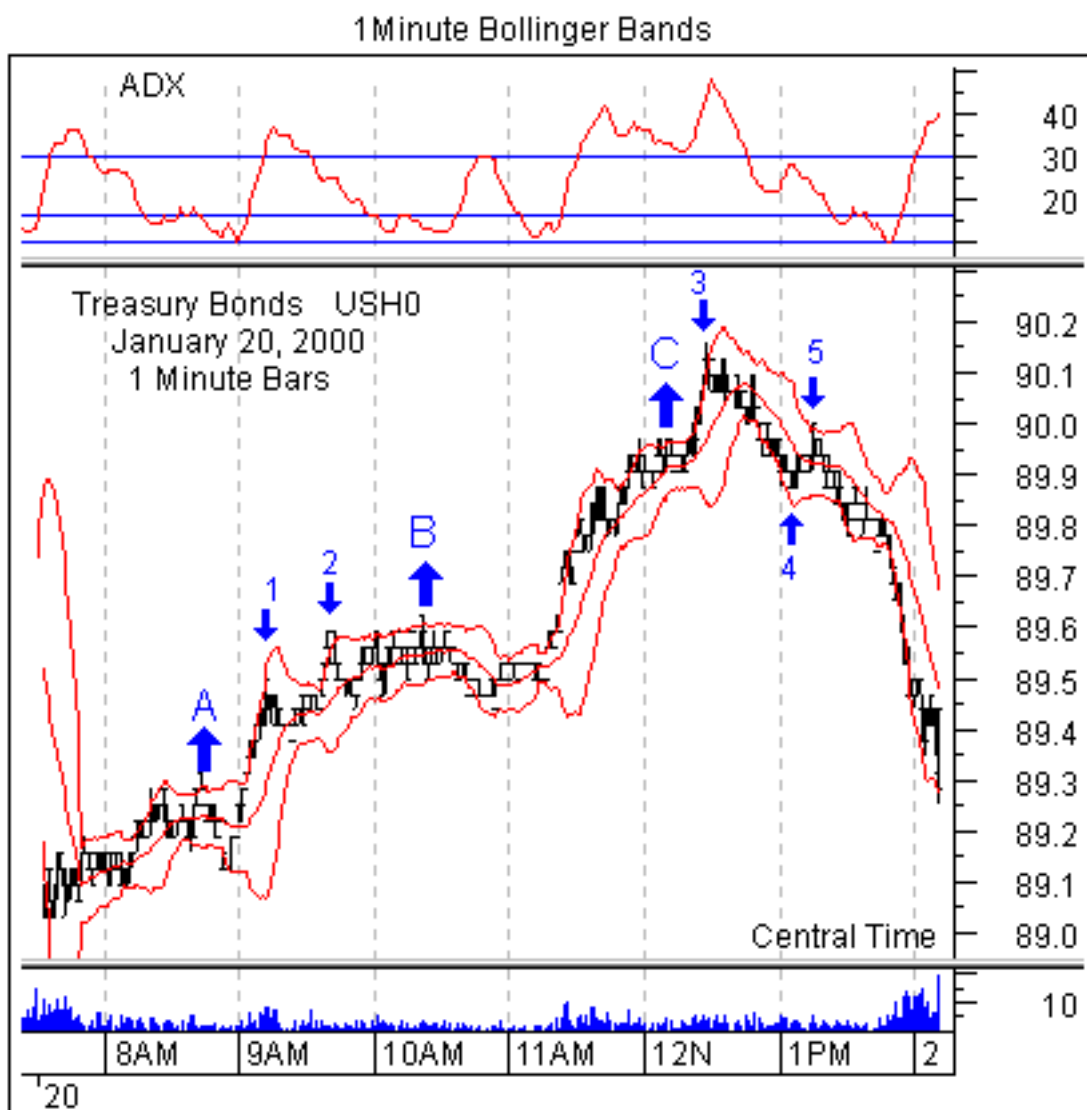


Chart 1

There are other considerations as well. One of our guiding tenets is that what works in one time frame, should also work in other time frames; if an approach, technique, or system is to have robust validity in the real world of trading, it should, on average, work in all time frames. What happens when price moves into the upper 1-minute Bollinger Band and the 3-minute Bollinger Band simultaneously? Does price reverse and move to the 1-minute average or the 3-minute average?

The answer to these questions lies in momentum and support/resistance levels. If price is trending strongly on the 1-minute chart, then price will probably be supported by the 1-minute, 20-period exponential moving average, probably three times, and will then be supported by the 3-minute, 20-period exponential moving average about three times.

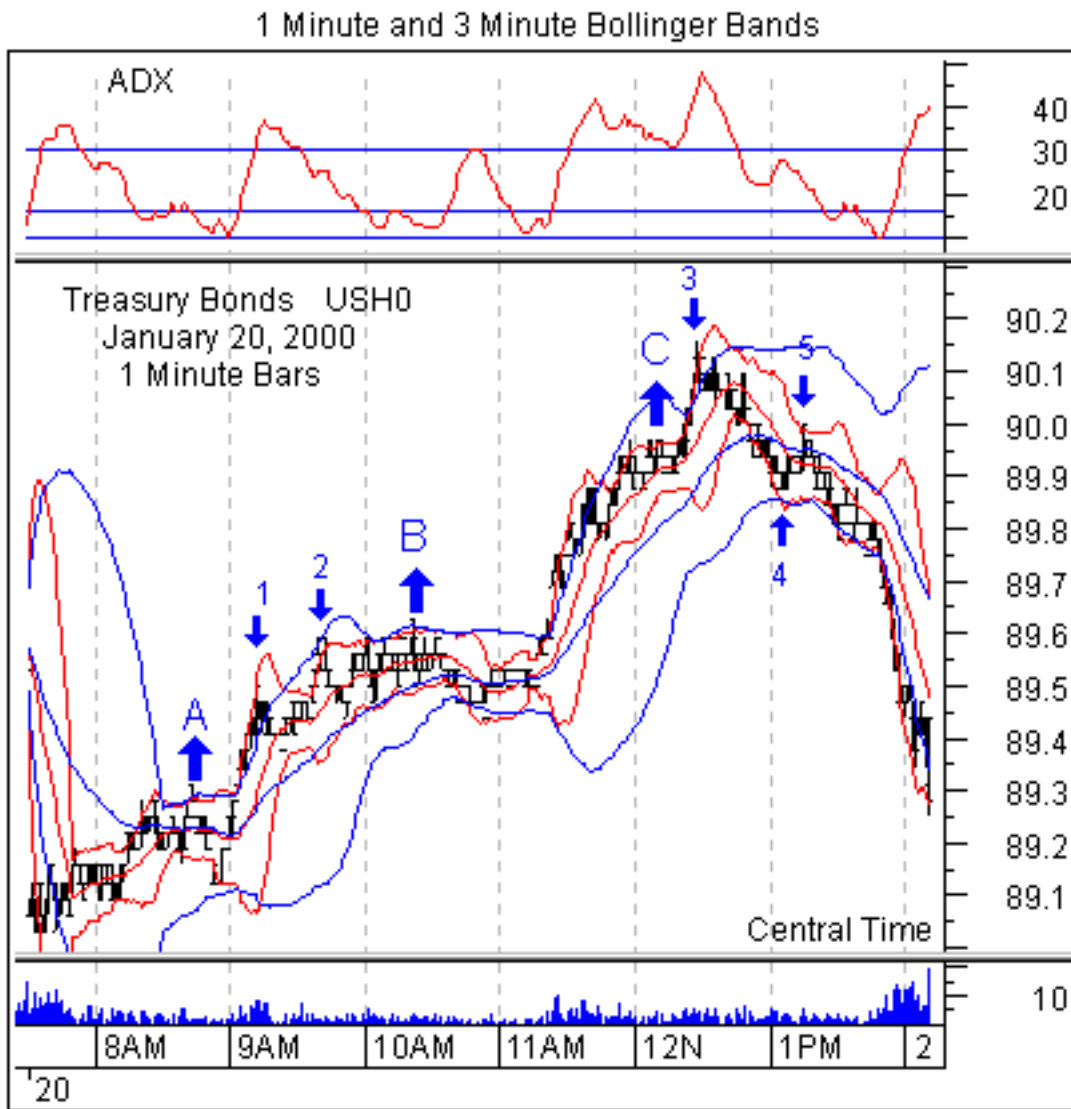


Chart 2

This is the ideal case in a strongly moving market. Successive longer-term averages will support price as the trend matures. Should short-term momentum have a spurt that forces the 1-minute ADX very high, that moving average or another, may be reactivated and the 1-minute average will again support price. As an example, three intraday charts are presented.

We have included the same 1-minute chart with the 1-minute Bollinger Bands only (Chart 1), another chart with the 1-minute and 3-minute Bollinger Bands (Chart 2) and finally, a chart with the 1-minute and 5-minute Bollinger Bands (Chart 3). We have done this in order to demonstrate how one can go wrong by looking at only one time frame and how multiple time frames can help this technique.

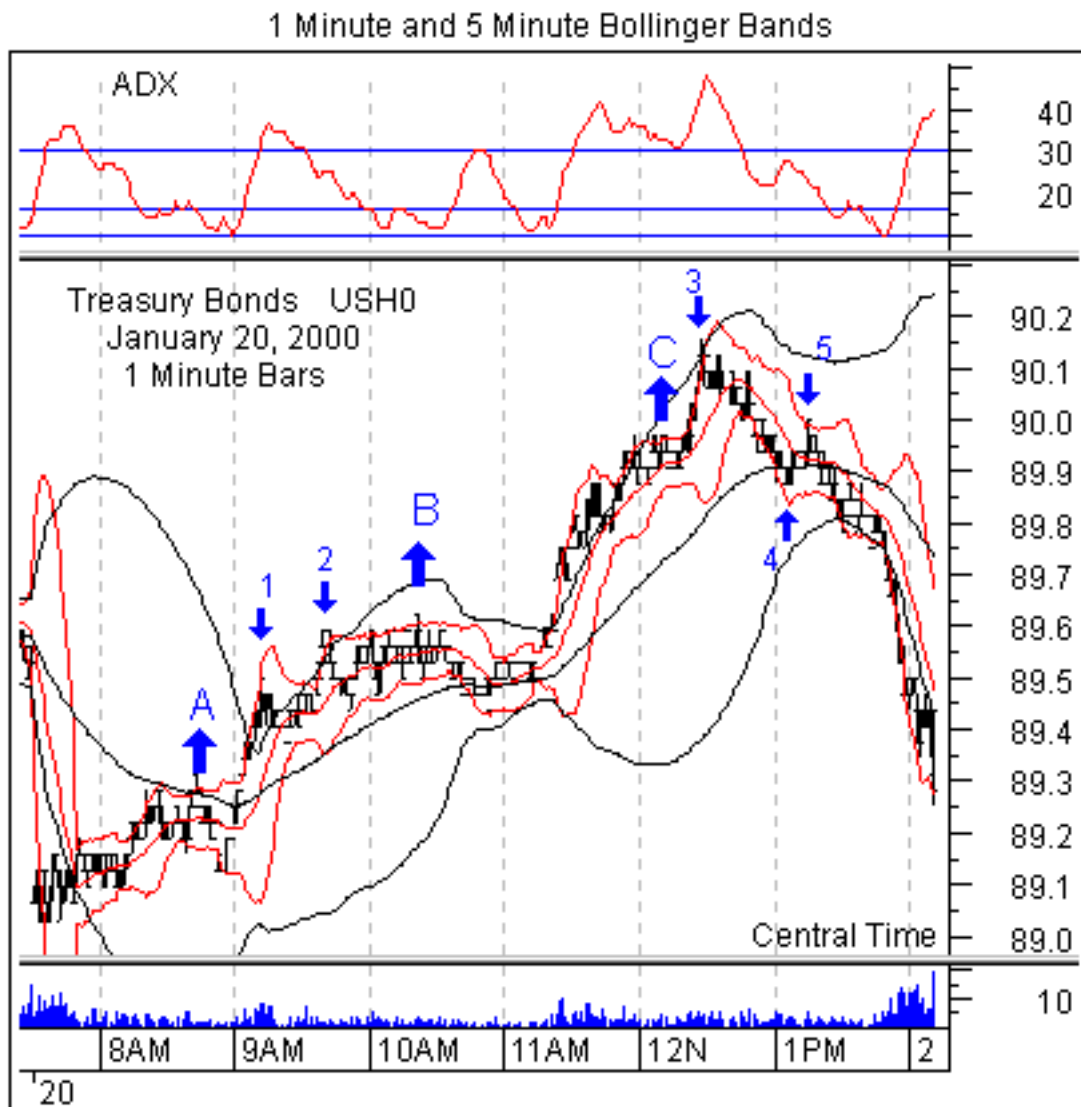


Chart 3

Chart 1 is a 1-minute chart with the 1-minute, 20-period exponential moving average (red) and a 2.0 standard deviation Bollinger Band around a 20-period, simple moving average (red).

Chart 2 is a 1-minute chart with the 1-minute, 20-period exponential moving average (red) and a 2.0 standard deviation Bollinger Band around a 20-period, simple moving average (red) and a 3-minute, 20-period exponential moving average (blue) with a 3-minute, 2.0 standard deviation Bollinger Band around a 20-period, simple moving average (blue).

Chart 3 is a 1-minute chart with the 1-minute, 20-period exponential moving average (red) and a 2.0 standard deviation Bollinger Band around a 20-period, simple moving average (red) and a 5-minute, 20-period exponential moving average (black) with 5-minute, 2.0 standard deviation Bollinger Bands around a 20-period simple moving average (black).

Charts 1 through 3 are all 1-minute Treasury Bond charts from January 20, 2000. This technique however works with all tradeable securities, including stocks. The following description and price action analysis applies to all charts.

At Down Arrow 1, price penetrates the 1-minute Bollinger Band and one can reasonably assume that price will move back down to support at the 1-minute average.

Instead, price moves down toward the 3-minute moving average because the 3-minute Bollinger Band was also penetrated. The same pattern occurs at Down Arrow 2 where the 1-minute and 3-minute Bollinger Bands have both been penetrated and price moves to the 3-minute average.

The reason the 1-minute average cannot support price is because not enough momentum to the upside has been generated. This is not the case on the move up after 11:00 Central. Price is trending as verified by the ADX moving well above the 30 threshold. The 1-minute average supports price very well through here until Down Arrow 3.

Because of the tendency for the daily average to reverse price because it has been "activated" by an ADX of 30 or greater, we must keep a tight stop. This is especially true after the third push up which is where price often reverses. These three pushes up are indicated by large up arrows labeled A, B and C.

At Up Arrow C, we would bring our protective stop up to the 89.85 level and higher once price made its 12:20 Central push up.

At Down Arrow 3, price reverses and closely follows the 1-minute Bollinger Bands down. At Down Arrow 4, price encounters the 3-minute Bollinger Bands and price moves higher. If one did not know that price had penetrated the 3-minute Bollinger Bands, one would assume that price would reverse at the 1-minute moving average. This is not the case here and price moves higher to retrace to the 3-minute moving average.

Another mistaken interpretation of the Up Arrow at 4 is that price is retracing from the 5-minute Bollinger Bands to the 5-minute moving average. In fact, price is retracing from the daily moving average and moving back to the lower daily Bollinger Band. A long at Up Arrow 4 would be proven wrong very quickly. If price is not interacting with the Bollinger Bands in the manner you anticipated, look at the longer-term interactions.

To the casual observer, the move up into the 1-minute Bollinger Bands at Down Arrow 5 could be taken as a price reversal rather than as a retracement to the 3-minute moving average. One could mistakenly buy the retracement to the 1-minute average here and immediately take a big hit.

The astute trader would recognize the movement of price up to Down Arrow 5 for what it was: a retracement of price from a penetrated lower 3-minute Bollinger Band back to the 3-period exponential moving average. Given the reversal off of the daily moving average, this would be an excellent shorting point. Price did in fact immediately move over half a point lower.

Because of this interaction of price with Bollinger Bands and the respective 20-period exponential moving averages, we plot multiple Bollinger Bands and moving averages in one price chart. On a 1-minute chart, we plot the 1, 3 and 5-minute Bollinger Bands and their respective moving averages. On a 5-minute chart, we plot the 5, 15, 30 and 60 minute Bollinger Bands and their respective moving averages. The longer-term averages take precedence.

Bollinger Bands, when used in conjunction with other analysis, can be used as an effective entry trigger. The Bollinger Bands validate direction of the trade and give a specific entry point. The usefulness and necessity of looking at these bands in a number of time frames cannot be overstated.