IWO Presents

Massive Profits From

Bollinger Band Trading
Introduction

“BUY STUFF THAT IS GOING HIGHER”

That tends to be the mantra for most stock investors.

But the problem with that idea is that it doesn’t tell you how much potential the stock has.

Let’s take an example with two different stocks, both priced at $20 per share.

In a month, the first stock moves up $2, while the second moves up $5.

It would make sense (in hindsight) to have put your money into the second stock, right?

Sure you would have made money either, way… but you are not taking into account a significant risk.

The risk of opportunity cost.

You only have so much money to invest and trade in the markets. That means you have to make decisions with how you allocate that capital. One of the major concerns you must have is how much reward you can versus the amount of risk you take.

Many traditional analysis techniques fail to account for this problem, but Bollinger Bands can give you key information about the potential movement on a stock that is not available on the chart.

By applying some simple statistical models to stocks, we can further our edge in trading and investing.
What are Bollinger Bands?

The best way to understand Bollinger Bands is to first get a foundation of knowledge when it comes to trends and volatility.

Volatility is Not Constant

I want to teach you about a big, nasty word that I can never spell correctly.

This word is *heteroskedasticity*.

The spelling is difficult, but the concept makes sense. Essentially, it means that volatility is not constant.

Fat Tail Risk and Fed-Fueled Fun

When it comes to trading there are “quiet” periods of and “not-so-quiet” periods.

A great example of a quiet period is during the holiday season. Many of the institutions have wrapped up their trading for the year and are planning the next year’s shenanigans or have gone home to see their family.

Because not much trade is facilitated, it means that price movement throughout that time will not be much.
But then we have other times. Those not-so-quiet times.

This is when we see **market violence**. Most of the time it’s driven by fear— either the fear of losing money or the fear of missing out.

Downside market violence is also known as “tail-risk.” It’s associated with events, such as the market crash in 2008 or the debt ceiling in 2011.

These are clear examples that tell us volatility is not constant.

And this has major implications when investing and trading.

**Risk Management and Volatility**

It’s intuitive that not all stocks or other markets will trade the same.

We know it’s riskier trading a biotech or a chinese internet stock than it is a stable company like Wal-Mart.

So it would be pretty silly to buy 100 shares of BIDU thinking that it’s going to be the same as buying 100 shares of WMT.

That’s because BIDU can move a lot more— it’s volatility is higher, which means its risk is higher as well. So you should probably pick up a lower amount of size as your risk and reward can be higher.

The same thing happens across individual instruments, or even markets. If we know that the market is going to be more volatile, then we lower our position size to compensate for the new risk.

Here’s the problem— how do we predict when volatility will start moving higher? When do we know that volatility will compress?

That’s where Bollinger Bands come into play.

We will soon get into how Bollinger Bands are calculated, but first you will need to understand some key concepts around the calculation.
UNDERSTANDING TRENDS AND DEVIATIONS

When there are motivated buyers in a market for an extended period of time, we will see the price of that market rise as the demand is high.

On the other side, when there are motivated sellers, the price will drop as the supply is high.

Tide goes in, tide goes out.

These long term “motivators” are what dictate market trends. A trend is simply a period in which a market has a sustained direction.

We can also have neutral trends, where the market “farts around” as buyers and sellers are at an equilibrium.

Moving From the Trend

There are times in which the market will see a move away from that trend—either higher or lower.
Deviations from the trend can either indicate changes in sentiment, or potentially a significant fundamental change that could alter the market.

We don’t know which one it is, but what we do care about is measuring it.

So any sort of deviation from that trend is the market volatility.

**What is “Normal” Volatility**

A good part of the price action in markets is random.

What we call statistical noise.

So how can we figure out when we are actually seeing significant price movement?

One way to do that is to look at the normal volatility and find out when price movement becomes abnormal.
A simple way to get an idea on normal volatility is to take an average of the deviations.

Now for some fancy statistical reasons, we don’t look at the averages like that. Instead we look at something called the “standard deviation.” This shows us how much deviation from the trend exists.

$\text{Standard Deviation} \rightarrow \text{Trend Deviation}$

From here we can then figure out what price action is statistically significant.

**Figuring Out the Trend**

In order to have an idea of what the trend deviation is, we need to know what the actual trend is.

There’s a handful of ways to calculate the trend of a market. A great example is a trendline.
If the market is making higher highs and higher lows, we are in an uptrend.

Lower highs and lower lows, we are in a downtrend.

The problem with trendlines is that they are subjective and open to a lot of interpretation. We need some sort of standardized methodology.

**Moving Averages**
The simplest way to identify a trend is to use moving averages. These analysis tools simply give us the average price over a certain timeframe.
Because the sampling window for these averages change over time, it means that they are an adaptive model. This is important when we consider how Bollinger Bands work later.

Since moving averages can give us the trend, and we can measure the deviation from that trend, then we can figure out the standard deviation from that trend.
This is the foundation for Bollinger Bands.

**CALCULATING THE BOLLINGER BAND**

Now that we have some of the key concepts out of the way, we can go into the nitty gritty of the Bollinger Band calculation.

Here’s the formula.
Sure looks ugly, doesn’t it?

That’s OK. The formula is calculated by your computer, but it’s still important to understand how the formula relates to the concepts you just learned.

Let’s break it down.

**The MA**

MA simply means “moving average.” To calculate this we look at the past closes for our sampling period.

\[
UpperBB = MA + D \sqrt{\frac{\sum_{i=1}^{n} (y_j - MA)^2}{n}}
\]

\[
LowerBB = MA - D \sqrt{\frac{\sum_{i=1}^{n} (y_j - MA)^2}{n}}
\]
So if you have a 20 day moving average, you’ll look at the past 20 days to get your value.

**The Standard Deviation**
From there we simply look at the current price relative to the moving average. We calculate the deviation from the moving average here, then square it.

By squaring it, we no longer need to care about whether we deviated higher or lower from the moving average.
Once we get the squared deviation, we add those together and then divide it by the sampling period. So it’s kind of like averaging the squares— in fact the term “root mean square” is what we’re doing. It’s the standard deviation.

The Multiple
From here, we look at the D parameter. This is set by you.

If you want to see 1 standard deviation, you use 1. If you want to see 2 standard deviations, you use 2, and so on.

I normally use 2— we’ll get to default settings in a second.

Relating Back to the MA
Now that we know our current deviations, you can now place the levels in relations to the current moving average.

By doing this for every bar, it creates a band. The reason it’s not a band and not a series of levels is that it is based off the current moving average.
This is why I call Bollinger Bands an **adaptive volatility envelope**.

**THE BEST INPUT PARAMETERS**

**The Main Tradeoffs**
This is all about signal versus noise.

If you make your Bollinger Bands too sensitive, then you will get a lot of false signals. Conversely, you can make it so you don’t have any signal at all.

The three main parameters you can change are the sampling window, the deviation, and the kind of moving average.

**Sampling Window**
This simply refers to how many bars back you want to look. The default setting in most charting applications will be 20 bars, which is equivalent to 1 calendar month if you are looking at a daily chart.

Your sampling window is going to depend on your timeframe.

For most traders, the default setting is fine.

If you are a long term investor, you may want to consider increasing the window to 50 or 60 days so that major moves will be the only thing that increases signals.

If you are a daytrader, you will need to use a smaller window in order to account for noise and any possible overnight gaps. A sampling window of 12 may be better if you are trading short term charts.

**Deviation**
Generally speaking, anything under a 2 standard deviation window will be too noisy for any trading you want to do. Price moves outside the 1 standard deviation many times, so it’s not the best signal.

The default setting of 2 works on most charts.
3rd standard deviation Bollinger Bands have a very specific use when it comes to single stocks that we will talk about in the “Patterns” section.

I do have one specific setup where I look at a “BB Envelope,” where the 1st, 2nd, and 3rd deviation Bollinger Bands are displayed all at once.

This serves as a handy visualization tool when looking for volatility expansion and contraction.

**Kind of Moving Average**
You can setup the Bollinger Band to look at an exponential moving average (EMA) or a simple moving average (SMA).

An EMA will be weighted more heavily towards the most recent price action, while the SMA equally weights all closes in the sampling window.
The EMA will give you much more sensitive readings, which means more false positives. But the benefit is that signals can come earlier to you.

This is up to personal preference. I use SMA, but if you feel EMA sampling works for you, that’s fine.

**Using Bollinger Bands in Technical Analysis**

Bollinger Bands help your analysis by answering two questions:

Is the stock overbought or oversold?

Is the volatility expanding or contracting?

But you can’t simply answer these questions in a vacuum, you must understand what’s going on in the context of market cycles.

**MARKET CYCLE THEORY**

To properly understand the nature of Bollinger Bands, you need to understand how markets trade.

Too many investors and traders only think in terms of “up or down.” But as you learned earlier, volatility is not constant over time.

This has major implications when you choose your position size and how you structure your risk (if you are trading options).

Let’s take a look at the 3 major market cycles.

**Supply and Demand Cycle**

When basic technical analysis looks at this concept, the general cycle is considered broken into 4 parts: accumulation, markup, distribution, and markdown. We can put this in pictures by considering that price
patterns often resemble periodic cycles, which often go along with behavioral finance patterns:

What we are doing here is simply identifying the trend. Are we in an uptrend, downtrend, or neutral trend.

When the markets are in a neutral trend (trendless), then overbought and oversold signals will matter much more.

However, if a stock is trending, then the stock can continue to be stretched as price expansion continues in the direction of the trend. This is a point in which Bollinger Bands are great for identifying when volatility is expected to contract, but not for catching tops or bottoms.

**Trend and Reversion Cycle**
Often when a stock or market goes from markup to distribution or from markdown to accumulation, we will see the trend weaken and we go into a state of “mean-reversion.” This means price is currently agreed upon and that any attempt to move price outside of a price band, sellers or buyers will come in as they believe price has moved out of value.
So we know that the market has a much lower tendency to mean revert during markup/markdown phases. In fact, that’s what we know as a “trend.”

This is essentially how we can find the relationship between trend/reversion and price supply and demand, as we know the odds of mean reversion are higher during accumulation/distribution phases. When we compare the overlay between the price supply/demand wave and the trend/reversion wave, we get something like this:

Bollinger Bands give us great insight into this cycle. If the Bollinger Bands are squeezing in, it indicates that we are in a state of reversion as the deviation from the mean is not occurring only in one direction.

But if we are in a very “trendy” market, then the Bollinger Bands will be expanding as volatility has increased due to stretched deviations.

**Implied Volatility Cycle**
This framework comes from having a deep understanding of how the options market operates.
Implied Volatility is different than Realized Volatility. Realized volatility refers to what has happened in the past, while Implied Volatility refers to what the options market is implying in the future. It is the cost for protection against adverse market movement.

Often what we will see during a strong markdown phase in the markets is an increased state of fear by investors—and with that fear they are willing to pay a higher price for protection in an asset.

We can take the inverse of this relationship— we know that as an equity market runs higher, investors have less fear and more complacency, so the demand for premium goes lower.

When we take this volatility cycle and overlay it on the third chart, we have a leading “phase shift” relative to the supply and demand cycle:

Does volatility tend to lead markets? It’s a more complicated question than that, but there are divergences with respect to how much investors want to protect themselves— this does require a little nuance, but you can see how these relationships start to take hold.
Bollinger Bands are great to use in this context if you are an option trader. If Implied Volatility is high but the Bollinger Bands are indicating an impending compression in volatility, you want to be an option seller.

If Bollinger Bands show us that we are ready to see a big move and options are cheap, then you want to be a net option buyer.

**OVERBOUGHT AND OVERSOLD**

The first thing Bollinger Bands help us with is to figure out when a market has seen a statistically significant movement.

Many times when a stock hits its 2nd standard deviation Bollinger Band, it indicates that it is time for mean reversion.
This intuitively makes sense. If a stock moves significantly higher in a short amount of time, buyers will tend to run out as they are not willing to invest in the company at these prices.

Other times, a stock will become oversold as sellers come out in force, but at some point buyers are willing to take back control and reverse the stock higher.

Using Bollinger Bands as way to identify stretched markets is a viable technique, provided you add confirmation readings from other indicators with it as well.

But first, a word of warning…

**STRETCHED MARKETS BECOME MORE STRETCHED**

“Markets can remain irrational longer than you can remain solvent”

One of the major dangers with Bollinger Bands is that you soon accept them to be some sort of a Holy Grail of contrarian trading.

Just because a stock outside of its Bollinger Band does not mean that it is ready to revert to the mean.
There are sometimes in which there has been a significant fundamental shift in the market which is leading the stock or market to run higher. A company that reports solid earnings is a great example, where the stock runs higher and becomes overbought, but it is justified by how the company is performing.

Other times we see “tail risk” in the market, where there is a nasty move to the downside and we become oversold. And then more oversold. And then more oversold.

It’s a cascade lower. And Bollinger Bands won’t help you there.

If you want to use Bollinger Bands as a contrarian indicator, that’s fine— but make sure you have a contingency plan in place if things go wrong.
VOLATILITY EXPANSION AND COMPRESSION

One of the most effective methods for Bollinger Bands is to identify when a market or stock is ready to make a move.

If a stock has been in a super tight trading range, it means buyers and sellers have agreed on a price or a price range.

But that can’t last forever.

If you buy 100 shares of stock, you can’t use the same capital to buy again. You have changed position from a buyer to a holder. So you can either continue to hold, or sell.

On the other side, if you already hold the stock and you sell it on the market, you can’t sell it again. You can either keep your cash or buy it.

And don’t forget those short sellers.

What does this all mean? Market participants change over time. And if they’ve been agreeing on the same price for too long, either buyers and sellers will run out and price will move.

Many times it moves big.

Playing charts that have compressed volatility is one of the best ways to get low risk, high reward profits.
On the other side, if a stock has seen significant volatility expansion, then it may want to slow down a little bit. Volatility can compress as well. If you can time that properly, then selling options with a contrarian bent is a good trade as well.

Now that we’ve taken a look at how Bollinger Bands can help your analysis, let’s go through specific setups to consider.

**Key Market Patterns**

These stock patterns are trades that I use day in and day out in my trading.
COMPRESSION BREAKOUTS

This pattern is a simple way of organizing traditional continuation patterns into a single “bucket.”

The trade setup here is to look for stocks that are in strong uptrends but have seen a significant decrease in volatility over the past month.

What we are looking for visually is a Bollinger Band “pinch,” which indicates that volatility is at stupendously low levels and that the stock is ready to make a move.

During bull markets and sustained uptrends, the volatility will be up, meaning that these tend to be bullish continuation trends.

This pattern is not used in downtrends, as volatility characteristics are different at bottoms compared to market tops.
THE STOCK MARKET “GRIND” HIGHER

The bull market that started in 2009 is the most hated rally of all time. This is due to a few reasons.

First, we have what is known as “disaster imprinting.” So many people got hurt during the market crash in 2008 that they don’t remember what a bull market is supposed to feel like. Since they feel bad, then the market must be ready to head lower.

Second, we’ve seen a major influx of new media that is perpetually bearish. Because “if it’s bleeding, it’s leading,” bad news tends to get more pageviews than good news. Also, disaster headlines tend to get more clicks on the internet, so editorial guidelines tend to be more bearish and shocking. It’s not profitable to say “everything is OK, go buy stocks.”

Finally, there has been a significant disconnect between stocks and the economy. This is due to intervention from central banks such as the Federal Reserve and the Bank of Japan. Because of these dislocations, many are still underemployed or have not seen material gain outside of the stock market.

But keep in mind— the stock market is not the economy. It is a leading indicator, one of many.

During this bull market, there has been a very specific “grind” to it. We can see this grind by observing how the market tends to have very orderly rallies between the 1st and 2nd upper bands.

The simplest way to observe this is for a very specific setup:
1. Wait for a cross **under** the 20 day moving average. This means sellers have taken control in the intermediate term.

2. Look for a cross back above the 20 day moving average, and the market needs to touch the 1st standard deviation upper Bollinger Bands.

This simple system allows you to participate in a good portion of the market rally while avoiding the nasty downturns.

**PARABOLIC MOVES**

One of the best shorting techniques out there is a parabolic fade.
This is where a stock sees a massive move higher, but is not supported by a market structure underneath. This can lead to aggressive profit taking. If you are a short biased trader this is a good setup to work with.

The problem with this setup is that a stock can see much more movement higher before it finally reverses, so it’s best to wait for confirmation before stepping in front of the freight train.

OVERBOUGHT AND OVERSOLD

“Buy the dips and sell the rips.”

This is a pretty cliché phrase when it comes to trading, but it often holds true.
The problem with trading reversion based off Bollinger Bands is that you have the potential for "cascade risk."

This is where overbought can become more overbought, and oversold can become more oversold.

So if you are going to use Bollinger Band signals to play reversion, you will need to add extra analysis techniques like candlestick analysis or support/resistance levels to dictate your entries and risk points. It would also be a great idea to have your entry dictated by a shorter term timeframe.
Using Bollinger Bands With Options Trading

VOLATILITY ANALYSIS IS KEY
There’s a way to get an edge over 80% of the option traders out there.

You see, option traders tend to be dogmatic towards one strategy or the other. Either they are always selling options, or they are always buying options.

But it doesn’t have to be that way—if you know the context of the markets then you have a leg up on the rest.

That’s why understanding market cycles is so important, and it’s why Bollinger Bands can help you so much with your trading.

If you are bullish and think volatility is going to expand, then you want to be buying calls instead of selling puts.

If you are bearish and think volatility is going to contract, then you want to be selling call spreads as that will give you the best risk adjusted reward.

Bollinger Bands can help you identify if the stock is too stretched, or if volatility is ready to explode one way or the other.

All you need is a simple two step process to identify the best strategy.

THE IWO TRADE MATRIX
The chart below will help you pick the best kind of options trade given different market conditions.
Obviously this isn't comprehensive and there are going to be exceptions to the rule.

But if you've ever wondered about what kind of option strategy to choose, then you can use this simple guide as a way to figure out what you want to trade.

### What You Can Do Next

Bollinger Bands will give you an extra edge in the market, but it is no way comprehensive. You need to understand a few other things:

- Basic Technical Analysis
- Volatility Analysis
- Managing Option Trades Using the Greeks
- Portfolio Management and Position Sizing

If you want help with becoming a better options trader, consider becoming a member of IWO Premium. You will receive education and trade alerts all in the same service.
About the Author

Steven Place is the founder and head trader at InvestingWithOptions. He is a private investor and trader, specializing in equity options.

His trading style is a mix of traditional technical analysis along with a new generation of statistical tools. The goal is to maximize reward and minimize risk through proper stock selection and structuring the best options trades.

Steven has a degree in electrical engineering with a specialization in stochastics and random processes. After a brief stay in the defense industry, Steven went on to trade accounts full time.

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About InvestingWithOptions

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THE BOLLINGER BAND TRADEMARK
John Bollinger, CFA CMT is the originator of the Bollinger Band analysis method.

WHERE THE CHARTS COME FROM
All charts in the text have been originated from TD Ameritrade, Inc.