TRANSCRIPT

Understanding Technical Indicators

Presenters:

Andrew Mcgowin, Active Trader Strategy Desk, Fidelity Investments
James Savage, Active Trader Strategy Desk, Fidelity Investments

ANDREW MCGOWIN: Hello, and welcome back, everyone. This is part 2 of the Technical Analysis Basics classroom series. This session in particular is going to be on what I would say a little bit more of the fun aspect of technical analysis-- learning about indicators. This is often what people first hear about, learn about when it comes to technical analysis, these magic esoteric indicators out there that are helping us make decisions in the world of technical analysis. Unfortunately, we may dispel some of the functions that they are not predictive by nature, but they are still very useful for us as traders and helping discern price action to help, again, make trading decisions.

Again, to reintroduce myself, my name is Andrew McGowin, part of the Trading Strategy Desk at Fidelity. You can find our team at fidelity.com/coaching. That is where we put on a variety of sessions on a daily basis, educational sessions around the broad topics of trading-- technical analysis, trading tools, options trading, everything that you can find here. I'm joined back again with my colleague James Savage for this session. How is your day going so far there, James.

JAMES SAVAGE: Yeah, going well, Andrew. And I brought this up in part 1, that the first thing that comes to mind when someone thinks about technical analysis is charts. And what they're probably imagining in those charts are technical indicators. So it is great to be talking about one of the most well-known parts of charting here. So I'm excited to dive into the variety and the many pillars of technical analysis.

ANDREW MCGOWIN: Yeah, couldn't agree more. Now, first and foremost, when we think about the basics of technical indicators, we will be discussing, at the end of the day, what ultimately a technical indicator is. So when we think about an indicator, again, it is natural. It is something that we would want more often than not, is for something that we can plot on the chart to tell us what is going to happen next. Unfortunately, to my knowledge, there is not a crystal ball indicator just yet. So we still have to use some sort of function of the variety of different types of indicators that are out there.

Ultimately speaking, when we think about a technical indicator, it is simply just going to be some sort of mathematical calculation based on historic price and/or historic volume. It is a way of taking data that has already existed, that has already happened and taken place, and displaying it maybe in a slightly different way than what the chart is ultimately showing us. So keep in mind it is not going to, again, tell us what's going to happen next. It's not predictive by nature.

Again, like we discussed in part 1, technical analysis is not predictive. It is reactive. It is looking for signals and moments in time out there that give us some sort of decision-making process to be made.

We have probably dozens of different indicators built into the trading tools at Fidelity. There are likely hundreds of them out there. We will spend the next hour or so predominantly just looking at the more popular indicators.

Is there a reason that we gravitate to the more popular ones? A little bit, because ironically speaking, a lot of the time when people first learn about indicators, they are looking for the indicator that no one else has, that no one else is looking at. But ironically enough, when we think about what drives prices and decision-making out there, the more eyeballs a technical indicator has, the more likely other traders are using that indicator in the decision-making process. So there sometimes is that important self-fulfilling component of an indicator that other traders are looking at.

So we'll look at a handful of the more popular ones here today, first and foremost, really just looking at the trend indicators. We spent pretty much the entire part of part 1 talking about how important trend is to the trader. And we talked about how you can use just simply lines on a chart that you individually draw to discern what trends are.

But what is the issue with that? Well, if we go back to what I just mentioned, that sometimes that eyeball just-- this eyeball component is such an important part of technical analysis. Well, if I'm drawing a different trend line than other people are drawing, does that remove some of that importance?

So what if we have something that is dynamically repricing a trend line for us? And that brings us to, really, the most original indicator that is out there, the simple moving average. So what is a simple moving average? Simply speaking, it is adding up all of the closing values over a defined period of time, dividing that value by the period that we've selected, and plotting that on the chart.

So let's imagine a scenario where we have a 50-day simple moving average. We have added up all 50 days of closing price action, divided that by 50, and plot that on the chart. We effectively then create the average price that that underlying has been for the last 50 days. On day 51, the 51st day gets added. The first day drops off. Now that line is replotted, and we continue to do that forever into the future. Why is that valuable for us? Well, it gives us, again, the average price over that period of time.

So if the simple moving average is positively sloping, we can say, mathematically, objectively, that over that period, the trend has been higher. It has been in an uptrend. That does not guarantee that the market and the underlying will keep going up. But it does tell us, objectively speaking, that the market has been higher over that period, because the average of the prices over that period has moved higher.

If the simple moving average is negatively sloping, well, the trend is down. Again, objectively speaking, trend has been lower over that period of time. So we use simple moving average in a variety of different ways-- one, simply to determine trend direction.

I mentioned the 50-day simple moving average. That tends to be a gauge of intermediate-term trends. The 200-day simple moving average is a common proxy for longer term trends. There are shorter period simple moving averages. There are longer period.

And we're trying to discern a few different things. One, what is the slope of that simple moving average? Is it higher or lower? Two, is the current price of the underlying higher or lower than that average price over that period of time? In essence, are there buyers willing to defend and keep that price level higher? Are sellers driving the equation? Again, it's a way of objectively determining what that trend direction has been during that period of time.

Is price above that a green light for us potentially? Is price below that a red light or something to allow us to get out of a position? As well as the third may end up being we're looking to see moving averages crossing over one another. Is a shorter term moving average crossing above or below a longer term moving average? In essence, is shorter term trend improving or not improving compared to longer term trend?

We can use those three different components of a simple moving average to help in our decision-making process. We can find a way to use that as a way of determining what type of trend are we in at this moment in time.

So I'm actually going to show a live chart for us. We'll look at what it means to look at a few different moving averages. So I mentioned things on a daily basis. Let's look at the last, say, five or so years on a weekly chart. So all of these moving averages-- 20, 50, and 200-- that you see here are the weekly, so instead of a 50-day moving average, a 50-week moving average. And you can see, during periods of accumulation, buyers defending those overall levels, during periods of distribution, sellers driving that equation, and then in periods again of accumulation, that function. We can feel just even simply looking at the indicators themselves. What is the predominant trend in this window of time? Shorter term basis, we'll see that roll over sometimes more. Intermediate term, a little bit longer. Longer term, even longer. And we really have not seen a change of the trajectory of a long-term, 200-week moving average throughout this entire period of time.

The way I tend to think about moving averages is that it's like boats on open water. If you are out there on a jet ski of sorts-- I'm from Florida originally. I'm well versed in the world of being near oceans. Out there on a jet ski, you can turn a jet ski around pretty easily, quickly out there on open water. That momentum can quickly change up to whomever is driving the jet ski.

But you think about larger boats. You think about a barge, a freight ship or something. It takes a lot of momentum to change that overall function of that boat. That is what we're using and looking at with longer term trends here. This 20-week was able to turn around with a little bit of price action changing. It took a little bit more effort to turn the 50-week around.

It would take a lot of effort to turn the 200-week around. And you can see how shorter term traders and longer term traders interact with these different levels.

This 20-week have been supportive throughout 2021 and 2022. When broken, we see that resistive, but we also see the 200 week acting as a concept of support. It gives us a function of what is the prevailing trend at this moment in time and what type of trend are we looking to take advantage of.

Now, the issue with simple moving averages, if we think about their history of sorts, they were the original indicator because, well, hey, they were simple. They were easy. We could do that math pretty easily with pen and paper, just simple arithmetic, adding up all the closing values, dividing it by those defined values, and that worked just fine through that period of time.

But what do we have nowadays? Well, luckily, we have the advantage of computers and quick calculus in that sense. And some people said, well, hey, if a 200-day simple moving average, it has days 1 through 200 all averaged out equally weighted. So what do I mean by that? Every single day is weighted the exact same in that calculation. Day 1 and day 200 have the exact same weight in the totality of that moving average.

And you say, well, hey, something that happened 180 days ago, is that as useful to me as something that is happening now? And some traders said, not really. Maybe there's something to be said about weighting more recent price action a little bit heavier.
And that's what we got with an exponential moving average. Using very similar rules and approaches as simple moving average with the minor change, which of course, leads to some major output of, what if we put a little bit more weight on more recent price action? We don't have to go into the actual calculations of it. If you have the time, you want to look up an EMA calculation, more power to you. But it is a fun calculation that we can allow a computer to do for us.

But eventually, what it leads to is it leads to a moving average that is more sensitive to more recent price action. So we can use it in a very similar approach as a simple moving average, but because it gives us a little bit quicker, more sensitive moves, does that allow us to potentially make a decision in a quicker manner?

So we see here both an EMA and an SMA on a 30-day time frame. It looks pretty similar during shorter term, choppy periods. But when the market really gets moving, we see that EMA react quickest. We see it also do that as price begins to improve here. And as that volatility starts to subside, we see them start to deviate back to one another. Those quick moves are more readily applied to an exponential moving average than they are to a simple moving average.

Which one's the right one? That's the natural question that people tend to ask now is, hey, well, I learned SMA. I learned EMA. Which one should I use? That's the fun part. It's ultimately up to you as the trader. Which one do you find more useful?

I will say me personally, I tend to gravitate towards simple moving averages for no other reason except for that eyeball effect that I mentioned earlier. In my experience in trading, I've come across more traders who prefer to use a simple moving average. Does that mean that you shouldn't use an exponential moving average? No, because it could be that some stock or ETF that you're trading is more responsive to an exponential moving average.

What's usually useful in my experience is to test out a few different ones. See where buyers and sellers are interacting with the most. And try to determine where is that going to be an important decision factor to be made. Could it be both? Could it be a little bit of both? By all means, you're welcome to have as many indicators ultimately as you want on the chart. But those moving averages are a very important driving distinction.

But from there, what's another fun one? What are some other ones that we can take a look at as well? Well, we've got a few different calculations that we find here-- the MACD, Moving Average Convergence Divergence. What is this one? Why is this one so different? Well, this one is actually a combination of three different exponential moving averages. That's what's so fun about it. It is a moving average convergence/divergence of three different exponential moving averages. So which ones are they ultimately?

Well, we've got the MACD line, which is a calculated difference of the 12-period exponential moving average minus the 26-period exponential moving average. I know that sounds complicated. You don't, again, always have to know exactly how the watch is made to know what time it is, but ultimately, that is where that 12 and 26 component comes in as well then a secondarily plotted nine-period EMA.

How do we use that as a trader? That's the important thought process here. The thought process is if the MACD line is crossing above its zero line, that is considered to be a bullish signal. If it's crossing below the zero line, that is bearish. Also, if it's crossing above its own signal line, that could be a bullish signal. Below it, a few different interactions. Let's look at what that ultimately looks like though on a chart.

As mentioned, we've got two different lines here-- the MACD line-- again, the difference of the calculation between a 12- and 20-period exponential moving average-- and then a nine-period exponential moving average of the MACD line. So it's that crossover effect that we were discussing around SMAs of, is the MACD line improving? In essence, is letter A potentially a bullish signal because the MACD line is crossing above its signal line? Is letter B also potentially a bullish signal because it's not only above its signal line? But it's also above the zero level. In essence, that 12 is now a higher value than the 26 period.

And then as price is improving, we start to see divergence here. We see the MACD line cross below its signal line, the first bearish signal that we see here. And as it continues to find distribution, we find that crossing below its own histogram level as well.

All of these different things are an important distinction of not only trend but also momentum. And that's where we can have that secondary component of technical indicators out there. We first, as technicians, want to focus on, what is the prevailing trend at this

moment in time? Are the prices improving or not improving? Are we in accumulation phase? Are we in a distribution phase? As I mentioned in part 1, maybe we're not in either. Maybe we're in a consolidation phase.

But from there, once we have the trend itself and an idea of what that trend looks like, we want to understand what the momentum looks like, the momentum of the trend, how that can be useful for us. I'll pause for a brief moment here, allow James to add anything that you'd like to the trend components. So, James, anything you want to get started with when it comes to momentum?

JAMES SAVAGE: Well, this is a great indicator to segue into the next pillar of technical analysis that you mentioned. And that is going to be the category of momentum indicators. Now, momentum indicators are often expressed as a bounded or unbounded type of oscillator.

Now, the term "bounded" is referring to a upper and lower range-- an upper and a lower range. Oftentimes, that range is 0 to 100, but it doesn't always have to be. Some of them are negative 100 to 100. And others, like the MACD, are viewed as an unbounded oscillator. So you can think that there's no theoretical upper and lower limit. But in practical purposes, we're oftentimes going to see when things start to reach in a relatively high or relatively low limit.

Now, I do also want to talk about just what momentum is in general. So Andrew gave an analogy that's oftentimes used of a large ship that might be starting to change direction, but it still has all of the momentum behind. The way I like to sometimes describe momentum and momentum indicators is that they help you with understanding how price is changing slightly behind the scenes, if you will.

So imagine this. A stock is trending upward. Maybe one week, it goes from $20 to $25. So it's rising. And then the next week, it goes from $25 to $29. It's still rising, but it only went up $4 that week. And then maybe the next week, it goes from $29 to $32. It's still going up. But it only went up $3.

So, as you can imagine, even the stock that's trending upwards, that rate of change going from $5 a week to $4 a week to $3 a week is decreasing. So that is maybe just one way that I've liked to-- maybe it's a simplified way, of course, but one way to just have an idea of what momentum is telling you. It's there to give you that additional piece of information that still price is telling you, but it makes it easier to oftentimes visualize when you have this separate set of indicators.

Now, within these oscillators that are oftentimes used to reference that type of idea within overbought and oversold range to characterize when it's in those upper or lower levels, and these oscillators are giving us oftentimes those warning signals when the price is vulnerable to a reversal. And that would be when these indicators leave from, say, an overbought or an oversold range.

And I think it's best, I guess, understood by looking at a few examples that we have here. So we've got maybe two of the most common types of momentum indicators, first being the stochastic oscillator. Now, what this is is that it is giving us a value, an index value based on the location of the close of price relative to the high-low range of price within a set number of periods.

So you can imagine if that close is closing at the higher end of a range, it's going to be moving this stochastic oscillator value upward. If the closing price is occurring during the lower end of the range, well, it's going to be moving this stochastic value down. Now, being a bounded oscillator, in this case, it is bounded between 0 and 100.

So as you can imagine, if closing prices are occurring at the high end of a range, well, that value will be getting closer to 100. Inversely, if those closing values are occurring to the lower end of the range, it's going to move that value down to a zero.

Now, in the classical creation of the stochastics oscillator-- and I say classical because certain values can be changed-- what is considered high? And what is considered low? Or the terminology that we use-- overbought when it's high and oversold when it's low-- is above 80 for overbought and below 20 for oversold.

A sell signal-- and personally, I like to say bearish signal. And the reason is that sell signal almost implies that you have one signal is going to be the final deciding factor of whether you're going to be buying or selling that underlying. And that's not often the case.

We're going to use the-- maybe a multiple set of indicators so we can have multiple pieces of information and evidence to determine our buy and sell. So I like to use the term, maybe, a bearish signal. So a bearish signal is given when the oscillator is above 80 and crosses below 80. So it goes from the overbought zone and leaves it. A bullish signal is given when the oscillator is below 20 and goes above that 20. So it leaves the oversold range.

Now, understand that when it comes to momentum indicators, all because it goes, say, in this case of stochastics into that overbought range, that doesn't necessarily mean it's bearish, because when stocks are trending-- and oftentimes when they're trending strongly, they're going to remain in a given overbought or oversold range. So does the departure from that range, that is what's going to signify that bullish or bearish signal.

So let's take a look at a live example. So there's the, I guess we could say, the initial approach of it, and it's just looking at the departure from those ranges. So here in the example, we've got the stochastics down at the very bottom of our chart, very similar to how the MACD and the location of it.

And we've got a few of these circles. Now, the circles at the very bottom are signifying when price-- in this case, when the stochastic index-- is going from below, through and above our 20 level, that oversold range. When we are looking at those upper circles, that is showing when price is going from our overbought zone and leaving it. So that is where we would generate those over-- those bullish and bearish signals.

Now, the direction of the line or lines is also important. And you'll notice there's actually two lines there so that we can maybe smooth out, you could say, some of the stochastics index data. But a great, valuable way that these types of momentum indicators can also help us-- it's not just the departure from overbought and oversold ranges, but it is also from the divergence between what the index value is showing us and what price is doing.

So going back to the introduction of the MACD indicator that Andrew showed, the Moving Average Convergence and Divergence, that's based on the divergence of price and our moving averages. Well, in this case, we're looking at the difference, the divergence between what price is doing and the stochastics index is doing. So if we look at the right side of our chart, where we're putting in higher highs-- so going back to what we learned about trend-- that is talking about an uptrend-- higher highs, higher lows.

Our stochastics value is putting in lower highs in this case. So that divergence between price going up and stochastics going up can also be used as a bit of a warning sign. And remember the calculation behind the scenes. That's letting us know that despite price going up, it's actually closing at the lower end of its range. So it's seeing that weakness that's happening behind the scenes or under the hood, so to speak.

And as traders, we're still relying on price. Ultimately, price is going to be what pays. And we can see after some time, though, price did ultimately reverse. So a trader could been using the stochastics indicator or possibly another momentum indicator to give them that warning sign of the weakening condition of price, the weakening of the uptrend that they were currently on.

So stochastics is one of the most common, well-known momentum indicators. But I want to give you a few here. And probably number two that at least we've run across here on our team would likely be the relative strength index, so yet again another momentum indicator. And the difference is it's using a different calculation. In this case, the RSI measures the speed and change of price movement.

So if you were someone that added both RSI and both stochastics on your chart, well, you'd be having two different indicators with two different calculations but ultimately helping you with the same thing. And that is understanding the momentum. Is it overbought? Is it oversold? Or are we noticing any divergences between the direction of price and the direction of the index?

So in the relative strength index, it is still a bounded oscillator, simply enough, going from 0 to 100. The overbought and oversold area is slightly different. Classically, the overbought zone is at 70 and above. The oversold zone is at 30 and below.

It is the departure of that index value from one of these overbought or oversold zones that can generate bullish and bearish signals. And we're also looking for divergences-- so when price is moving in one direction and the index is moving in another.

So if we take a look at this on a chart, just like stochastics and MACD earlier, it's going to be placed underneath price. And we've got a few different areas highlighted. First, we have the two lines showing a lower low on price. And during that same period of time, we saw a higher low on our relative strength index.

So that is that divergence. And that is that warning sign that the direction of trend could change. So a trader might decide to wait still for price to turn around. They may still want to see price start to put in the beginning of a new uptrend-- again, higher highs and higher lows. But that could have at least given them the warning.

There are also two areas circled, when price was leaving the overbought zone, so leaving that value of 70. And we can see on our chart, well, price was also decreasing at that same point in time. So whether you're someone that's a fan of, say, stochastics or whether you are RSI, keep in mind that it's not to say one's going to be better or worse than the other. They're just two different calculations, two different approaches to help you with understanding that underlying momentum of what you're following-- that stock, that ETF, that index, as an example.

And it's something that is a great tool as we create enough evidence for supporting our final buy and sell decision. So those were some of the two most popular. We might even say three most popular if you want to group the MACD as being that duo of momentum and trend indicator. But we do have a few other pillars to cover, Andrew, so I'll let you jump in on the next pillar.

ANDREW MCGOWIN: Yeah, absolutely. Just to add to the momentum perspective a lot, this is something that we see very often with new traders, that they first learn about-- let's just use RSI as an example. And they hear this, quote unquote, "overbought/oversold perspective." And what they then find themselves doing a lot of the times is when something gets oversold, they rush in to buy the stock. Or if something becomes overbought, they rush in to sell the stock.

And we want to circle back to the component we discussed in the first part, that momentum is an important distinction that we still want to discern what is the predominant trend at this point in time. Momentum becoming overbought does not mean that the stock has to turn around and go down. It might just mean that it's time for some mean reversion, that if we assume that the trees don't grow to the sky and that markets tend to have moments of mean reversion within the confines of a trend.

So I'd encourage you to always think about it through that lens, that if we're out there on an open road and trend is the direction that we're driving, momentum is the velocity that we're driving. But just because that we need to slow down doesn't mean we need to turn around. The way I tend to think about it, an old adage is how could too much demand for a stock be a bad thing? That overbought does not inherently mean it has to go down. It just might mean that it needs to digest a little bit, that it's gone up a little bit too fast. It might bring in some people taking some profits along the way, and it might just have moments where its mean reverts.

And we can see it on this chart here that it did hit a peak. And it became overbought, and it did go down to some degree. I mean, $7 to $5 is not a small amount, but it didn't go back to the lows. It did not create a new trend. It digested that move to some degree. It shook the trees out a little bit. And that's the important thing to always remember when it comes to momentum.

Now, another way to think about a confirming or diverging perspective of trend is actually volume. So when we think about actual volume components out there in the marketplace, we generally look for-- at least in classical technical analysis approach, volume was a way of reinforcing trend. If we're seeing price with or without volume, the corresponding volume, that was something that we'd want to take heed of, in essence that if price was doing something but it was on low volume, it might create somewhat of an asterisk with that price. Or if price is doing something on high volume, that's reinforcing that. Are we getting divergences in volume?

Now, in the world that we find ourselves in nowadays, the world of algorithmic trading and computer trading, volume has maybe taken a third seat of sorts, because volume might be happening nowadays with some stocks agnostic of bullish or bearish sentiment. It might just be a correlative trade. So we don't put as much pressure on volume as maybe we did in the '70s, '80s, and '90s, when it came to technical analysis. But it is still important for us.

So I'll actually switch to my Fidelity Trader+ for a moment, simply just to show the very core tenet of volume-- volume itself. How many shares actually exchanged hands at these levels? And you can see that at a more important moments in time, say the COVID drawdown-- very, very high volume, a lot of activity. As we were drawing down in 2022, more activity. In the drawdown of April 2025, more activity. We see volume being very replicative on these periods of time. And that is an important distinction of volume over a defined period of time and why that is an important distinction.

We can also use what is called volume profile. What is volume profile? Well, it's, simply speaking, a way of thinking about volume. Instead of over basically the x-axis over time, what do we think about volume on the y-axis, over price? How many shares have exchanged hands at these levels?

And like what we discussed in part 1, is there sometimes a support or resistance aspect to that? If there's enough traders with a cost basis at these levels, does that level become defended? If it's broken, does that create more supply? We can see volume found in this sort of way. We can utilize volume over price. We can utilize volume over time.

And we can actually combine a different perspective of volume here. If we want to combine volume in a trending capacity, how can we incorporate both volume and price together? Well, there's a great new indicator here on Fidelity Trader+, the anchored volume weighted average price.

So very simply speaking, the volume weighted average price is a algorithm of sorts saying what is, again, the average price that's taking place, like a moving average would be, but incorporative of volume. And if we then anchor that to a specific moment in time, well, we get effectively the volume weighted average price since that arbitrary moment in time. We generally will anchor that to important inflection points on the chart.

I picked the 2022 high because you can see how throughout this drawdown, that is where sellers remained, and sellers found themselves continuing to sell at those levels until it flipped. And you'll notice that coming out of that 2022 drawdown, that concept of prior resistance becoming support.

In that case, too, if we had added an anchor volume weighted average price to the lows of that, we saw that confluence of evidence. We saw this component of a volume weighted average price anchored to the high of '22 and another one anchored to the low of 2022, found itself at the exact same level going into this period of time. Does that mean it had to bounce there? By all means no. It does not mean that it had to do anything. Price never has to do anything.

But was there enough traders that said, hey, maybe this is a spot to get back in the position after a period of drawdown because we're now seeing that concept of resistance becoming support? Didn't quite get back down to it in this 2025 drawdown, but it sure did get close. And I can imagine some people saying, hey, is this an opportunity to get back in close to that prevailing anchor volume weighted average price? And how that was important to us at that moment in time.

In fact, maybe to add another one to this level in particular, you can see how important these levels have been along the way. Now, I mentioned divergence/convergence. When it comes to volume, there is another indicator that we want to spend a brief moment on that does dissect that a little bit further, effectively what is called on-balance volume.

What is on-balance volume? Well, it's a way of measuring volume in an accumulation perspective or a distribution perspective. What do I mean by that?

Effectively, there is a cumulative number for on-balance volume. And on days that the underlying goes up, a green day where we went up close to close, the total volume for that day is added to that cumulative number. And on days where the underlying goes down, it is subtracted by that number.

Why is that important for us? Well, it basically gives us a function that if the volume on green days is higher than the volume on red days, well, we see on-balance volume effectively improving. That seems to be good. That means that there's better volume on green days and more people are likely accumulating. Or maybe if we're in a downtrend, if there's more volume on red days, well, it confirms what price action is doing, that there is a distribution taking place.

But also, those divergences are very important to us, like James mentioned on momentum. When price is going up but on-balance volume is going down, what does that tell us? It tells us that the volume on red days is higher than the volume on green days. Could that be an important, say, canary in the coal mine for us, that something is happening under the surface that we want to be cognizant of? Again, it does not inherently mean that we need to take a countertrend trade.

When we think about all of these indicators, I tend to think about moving averages and trend indicators as the primary indicator that is helping to inform our decisions. The other ones-- momentum, volume-- we'll look at volatility next-- are more secondary. They are ways of telling us the story on a more under-the-surface capacity that maybe doesn't tell us that we need to take a countertrend trade. But it maybe tells us we need to get our ears perked up for anything that may be starting to take place.

We want to be cognizant of potential changes in trend as they are beginning to take place but still respectful of what that trend is, because momentum divergences, they can improve. Volume divergences, they can improve. But trend itself is going to be our still driving force, our guiding light of sorts. Again, we're trying to find the prevailing winds to point our sails accordingly to.

But I mentioned it in passing there. The next thing that we want to take a look at is volatility indicators, a way of explaining somewhat around what this maybe sometimes wild or lack of wild price action is doing from time to time. I'll pause, bring my colleague James back in. Anything, James, you wanted to add to the volume indicators? Any volatility indicators you want to take a look at?

JAMES SAVAGE: Well, I think there are certainly some volatilities out there that I believe would be helpful. And when it comes to volatility, I would bet almost anyone listening to this can tell volatility when they see it. You can imagine if a stock is just dropping down like it's a riding an elevator going downstairs, well, oftentimes, that's associated with volatility or a stock. Moving upwards and possibly doubling its price in a very short period of time, well, that can be viewed as a very volatile situation.

So you might not think to yourself that, I don't need a volatility indicator. I can see volatility. But remember, it's oftentimes these subtle changes that can be very difficult to discern just from looking at price, which is why traders rely on volatility indicators to help them better quantify the deviation that we're seeing of price.

And another misconception is that, well, you think volatility. OK, that's just when a stock goes down. There's no such thing as volatility when it goes up. But keep in mind that as when we were discussing volatility, we're talking about that deviation of price, the fluctuations that occur, the size of those changes. And that can take place whether a stock is going up or down or down or up.

Now, there are two great indicators that approach the way to measure volatility that we see fairly often, again keeping with that theme-- there are multiple types of indicators within each

different pillar of technical analysis. We're just covering some of the more common ones that we find traders using in our space here. And one of them is going to be Bollinger Bands. Now, these are referred to as price envelopes. So they are plotted on your chart, both above typically and below price. In the case of a Bollinger Band, these are price envelopes of a simple moving average. And they are created two standard deviations above and two standard deviations below. And that's in the classical sense.

As we talked about in some of the other indicators, they can be modified to fit your own custom preferences, but by default, they are those two standard deviation price envelopes. So one above, one below, of a 20-period simple moving average. So you can think of this as the relative high and low range of the 20-period price.

Now, the bands can help us in more than a few ways. Now, of course, they can be used for volatility. And we can imagine the wider these bands stretch, the greater the volatility that's being expressed. And the closer these two bands are to one another, the lower the volatility that's being expressed in the Bollinger Bands.

Now, they can also be used-- so not only can they be used to just measure volatility, but they're used to provide a relative definition of a high and low price for that given time frame that you are using. Now, all because price touches a particular band, whether it's an upper or lower band, doesn't necessarily mean that it is a buy or sell decision.

And I like the example that we have here because you can see quite often price is-- almost looks like it's bouncing. If we go back to part 1, talking about support and resistance, it almost looks like whenever it touches the bottom of the band, it bounces and then goes to the top. Or when it touches the top, it bounces and then moves to the bottom.

So that's how they're helping us with that relative high and low range within this band. But they can even help us, to some extent with trend, because remember that the Bollinger Bands are based on a 20-day simple moving average. So even the creator of this, John Bollinger, even mentioned that a tag of the band-- so meaning it's touching, as it is in the example here where it's riding the upper band-- a tag of the band is not necessarily a trading signal, because in trending markets, price can and does often walk the edge of those bands.

So we need to remember, when it comes to indicators, we're not oftentimes basing our buy and sell decision on just one indicator, one signal from one indicator alone. We're using these in conjunction with one another to help formulate a thesis, a forecast of whether we want to be long, we want to buy, or we want to sell or we want to remain out of a given trade. And this is there to help us understand volatility with the size of those bands.
Is volatility high or low? Again, that's size of the bands. Are we within a relatively higher low point within a range? Or possibly could we be in a bit of a trending environment? Are we writing those bands to the upside or the downside?

And even again, I like to cite the creator, a quote from him mentioning that they do not provide continuous advice. Rather, they help identify setups where the odds may be in your favor. And that is the odds might be in the favor of your forecast. So they're helping us not

predict what price is doing, but they're helping us react given where price is relative within the bands.

So this style of indicator is overlaid over price. So we already looked at a few overlay indicators. The moving average is an example in the beginning.

Now, another type of volatility indicator that is going to be based underneath price in the under study is the average true range. And this might be a more of a simpler type of indicator to grasp for the volatility component, because in this case, it is just measuring volatility, the true range so to speak, of price over a given period of time. And the calculation that it's using is looking at the distance between the high and low of a given period, how extreme that is, as well as the difference between that high and low on the previous period.

And it does that to account for any gaps in price movement. So in short, it's trying to see just how extreme price is within a given period or two periods. And it's measuring that. And an expanding ATR index indicates increased volatility.

So if this index value is increasing, that means it is measuring values that are quite apart from one another, a high and a low, for example. If this ATR value is decreasing, well, that lets us know that volatility is also coming back in.

Now, it is also used for another type of trading signal or trading technique referred to as volatility stops that I can briefly talk about here. But taking a look at our chart, I think this is a great example because we can see the ATR value down at the bottom. That's that blue line. And it's measuring the extreme range in prices within the time frame that it's looking at. And by default, it defaults to 14 periods.

When that value goes up-- we can see in the first component here, the first highlighted spot-- it rises as price is falling. And we can see that those are some bright red, large candles relative to the price before it. So those are some large intraday movements taking place.

And the ATR is capturing that by showing it rising in price. So the movements-- those extreme, in this case, moves to the downside are reflected the rising ATR value. And then interestingly enough, price almost turns around, doesn't it? And we can see a very, very large, I guess, green candle and even larger red candle. So again, a very large movement in price where it opened much higher and then went down and actually ended up lower than the previous candle. So that's a great example of it capturing just these intraday swings.

And in the right side that we've highlighted here, well, there was a period where there was a gap in price. Well, one day, it closed at a price. The next day, it opened significantly higher. And again, the ATR value is useful in that it can capture those types of gaps.

And we're given a value, now, in this case, of the average true range by price. There are little values towards the bottom there. It's 10. It looks like 13. At the final value, when the screenshot was taken, it was at 14.

So some traders might even take-- this is maybe more of an intermediate, getting to advanced technique, is that they'll look at what that average extreme range in price is, knowing that, OK, at this point, that's what we can expect in price. If it were to ever get larger than that, that could indicate that volatility is expanding. And whether volatility expanding is a good thing or a bad thing, it's based on you, possibly your own risk tolerance, and how you are trying to profit.

Some traders think to themselves, though, if it starts getting too volatile, they may not want to be involved on those types of stocks, hence how the idea of a volatility stock gets created. So a trader might look at that ATR value. In this case, it's at 14. And they might think to themselves, well, if it ever gets maybe 1 and 1/2 times that or maybe 2 times that, I'm going to get out of the trade.

So this is somewhat separated from what price is doing. And they're saying that if price gets too volatile, which could be a sharp increase or sharp decrease in price, that is even greater than what it currently is-- I use the example of 1 and 1/2 times or 2 times-- they might decide to exit out of that trade, just on the basis of volatility expanding greater than what they had expected in the past.

So average true range-- and we can see how it somewhat is-- complements or is different to Bollinger Bands, where it is more of a pure measurement based on price and those average true range of price versus the high and low within a given range based on our simple moving average. So as we talked about with the other indicators here, there's no best way to measure it. It is going to be what you find that could be more useful to you.

And oftentimes, it's going to be a trial and error. You can give them an attempt, give them the opportunity to see if you find it to give valuable information for your trading decisions. So that's going to wrap up many of the at least most important pillars of technical analysis that we oftentimes cover. We talked about trend, momentum, volume, and volatility, price also being another pillar there. Andrew, any thoughts on volatility or possibly next steps from here?

ANDREW MCGOWIN: Yeah, absolutely. Like we mentioned on a few of these, the primary indicator that we're trying to discern is trend. From there, volatility helps tells us the story of that trend. Momentum helps tells us the story of that trend. Volume helps tells us that story of that trend.

We're still bringing things back to trend. On that Bollinger Band, we're still thinking about mean reversion within the confines of the predominant trend. But trend itself is the most important thing. Trend is our friend. That's what we think about when we are thinking about technical analysis.

Now, this session dove deeper into maybe the more scientific, the more objective mathematical calculations of indicators. The next event, the next session, chart patterns, the more fun, artistic side of the world of technical analysis-- a little bit more subjective, a little bit more, as mentioned, art versus science, of looking at chart patterns that are out there and

how that psychology and behavioral components can drive decision-making and technical analysis. So appreciate everyone joining us for this session. As always, stay tuned for part 3, where we dive deeper into chart patterns.

Investing involves risk, including risk of loss.

Technical analysis focuses on market action - specifically, volume and price. Technical analysis is only one approach to analyzing stocks. When considering what stocks to buy or sell, you should use the approach that you're most comfortable with. As with all your investments, you must make your own determination whether an investment in any particular security or securities is right for you based on your investment objectives, risk tolerance, and financial situation. Past performance is no guarantee of future results.

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