

Congratulations! You are now enhancing your quest to become a successful trader. The tools and tips you will find in this technical analysis primer will be useful to the novice and the pro alike. While there is a wealth of information about trading available, BigTrends.com has put together this concise, yet powerful, compilation of the most meaningful analytical tools. You'll learn to create and interpret the same data that we use every day to make trading recommendations!

This course is designed to be read in sequence, as each section builds upon knowledge you gained in the previous section. It's also compact, with plenty of real life examples rather than a lot of theory. While some of these tools will be more useful than others, your goal is to find the ones that work best for you.

Foreword

Technical analysis. Those words have come to have much more meaning during the bear market of the early 2000's. As investors have come to realize that strong fundamental data does not always equate to a strong stock performance, the role of alternative methods of investment selection has grown. Technical analysis is one of those methods. Once only a curiosity to most, technical analysis is now becoming the preferred method for many. But technical analysis tools are like fireworks – dangerous if used improperly. That's why this book is such a valuable tool to those who read it and properly grasp the concepts. The following pages are an introduction to many of our favorite analytical tools, and we hope that you will learn the 'why' as well as the 'what' behind each of the indicators. In the case of technical trading, quality is far more important than quantity.

The very essence of technical trading is really quite simple – spot trends, buy low, and sell high. The most challenging of these is spotting the trend. Once you learn that, the buying and selling is easy. Just as important is the ability to spot a non-trending market, so you can avoid it (or at least use alternative strategies). To maximize profits from a trend, you'll need to do two things. First, you want to enter in the early stages of the trend. Second, you want to be able to exit promptly when the trend is over. To do that effectively, you must be able to spot exactly when trends start and stop. This book will show you how to do both.

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Section 1: Charting

There are several types of stock price charts, and they all basically show the same information. However, there are some very simple price charts that actually show much more information than just price movement. Let's look at a simple line chart first, and then compare that to a bar chart and a candlestick chart. The two latter charts show you volatility, and possibly additional clues about developing trends.

Line Charts

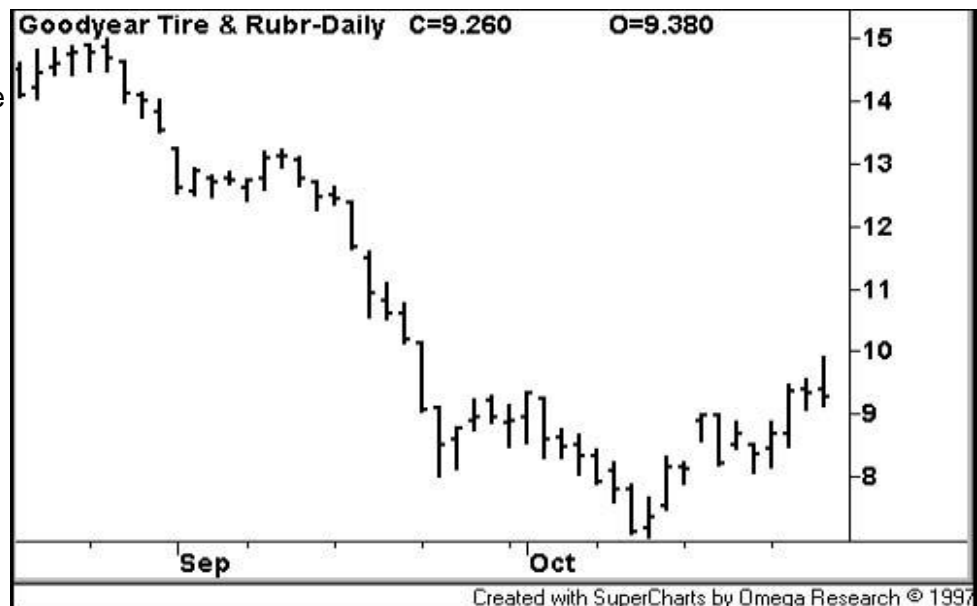
A simple line chart draws a line from one closing price to the next closing price. When strung together with a line, we can see the general price movement of a stock over a period of time.

Bar Charts

A bar chart also shows closing prices, while simultaneously showing opening prices, as well as the daily highs and lows. The bottom of the vertical

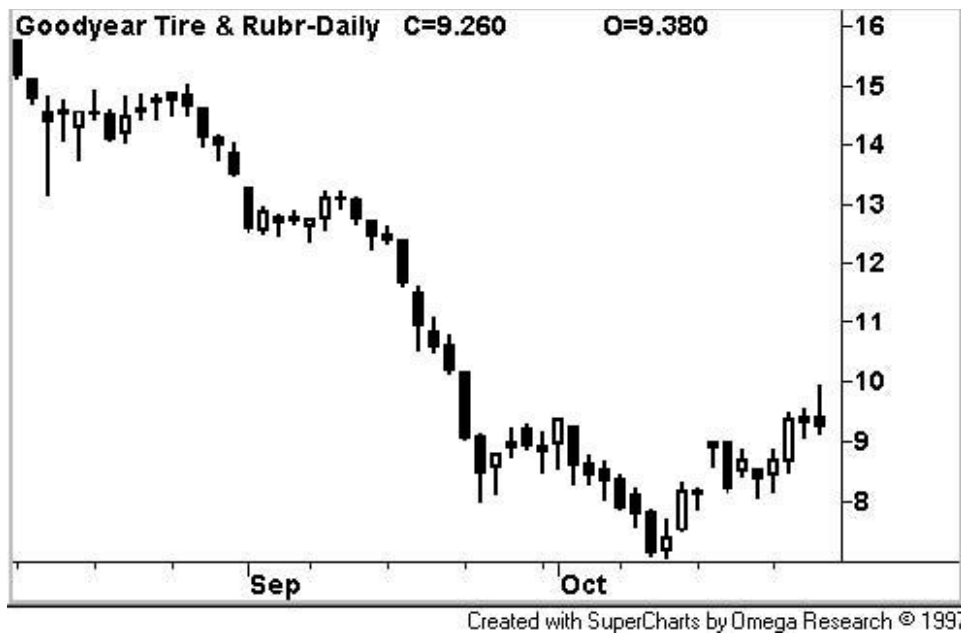
bar indicates the lowest traded price for that day, while the top of the bar indicates the highest price paid that day. So, the vertical bar indicates that day's trading range. The horizontal hash on the left side of the bar is the opening price, and the right-side horizontal hash is the closing price.

Bar charts are also called "OHLC" charts, because they indicate the **O**pen, the **H**igh, the **L**ow, and the **C**lose for that particular stock.



Candlestick Charts

Candlestick charts show the same information as a bar chart, but in a different graphic format. Candlestick bars still indicate the high-to-low range with a vertical line. However in candlestick charting, the larger block in the middle indicates the range between the opening and closing prices. Traditionally, if the block in the middle is filled or colored in, then the stock closed lower than it opened. In our example, the 'filled color' is black. For our 'filled' blocks, the top of the block is the opening price, and the bottom of the block is the closing price. If the closing price is higher than the opening price, then the block in the middle will be hollow, or unfilled. In our example, you can see the consecutive individual days of losses (filled blocks) that make up the major downtrend. When it reversed to the



upside in October, we start to see more hollow, unfilled blocks.

The purpose of candlestick charting is strictly to serve as a visual aid, since the exact same information appears on an OHLC bar chart. The advantage of candlestick charting is that you can easily see strength of trends as indicated by filled or unfilled blocks,

where the bar charts may be visually less clear.

NOTE: Not all candlestick charts are drawn the same. Some charts use red print for down days and green for up days. Or, depending on the background color of your chart, you may see up days as filled blocks and down days as unfilled blocks – especially if your background is a dark color.

Throughout this book, and throughout most technical analysis literature, you will see the word “bar” in reference to a single piece of data on a candlestick or OHLC bar chart. While this usually refers to one day on a chart, don’t assume it always does. A bar is simply one segment of time, whether it be one day, one week, or one hour. When you see the word ‘bar’ going forward, be sure to understand

what timeframe it is referencing.

For the purpose of this workbook, we will primarily use candlestick charts to illustrate our information.

Moving Averages

One of the easiest ways to smooth out or “clean up” a bar chart or candlestick chart is to convert the closing prices into a line. This is what a line chart (from section 1) does. However, this still doesn't help you see major trends if there are wide swings from one closing price to the next closing price, since a line chart just shows you the progression from one day to the next. A moving average, however, will even further smooth out a price chart to show you which direction a stock is going.

By 'moving average' we mean the average closing price of a stock for the last x number of days. There are two types of moving averages: simple, and exponential.

The formula for a 3-day **simple moving average** would be:

$$\frac{\text{Closing price 3 days ago} + \text{Closing price 2 days ago} + \text{Closing price 1 day ago}}{\text{Price}} = \text{Average 3}$$

As each day passes by we drop the price from 3 days ago from the formula (since it becomes 4 days old) and add the newest closing price. The result is a rolling average called the moving average. We then plot these average prices in a line chart. The result is a much smoother (and more meaningful) chart of a simple moving average.

By comparison, we can also use an **exponential moving average**. Again, we are plotting the moving average of the last x days, but with an exponential moving average, we are giving more weight to recent prices, and less weight to older prices. In doing this, we make the exponential moving average move faster than a simple moving average.

A possible formula for a 3 day exponential moving average would be:

$$\frac{(\text{Close from 3 days ago} \times 1) + (\text{Close from 2 days ago} \times 2) + (\text{Close from 1 day ago} \times 3)}{\text{Price}} = \text{Average 6}$$

*(we have to change the divisor to 6 to adjust for the additional weight on more recent days)

As you may guess, these different formulas produce different results when charting their values. Each particular method has both good and bad aspects.

Simple Moving Averages

Exponential Moving Averages

Pros:

Draws a very smooth chart, Effective at showing recent price eliminating most fake-out signals. swings.

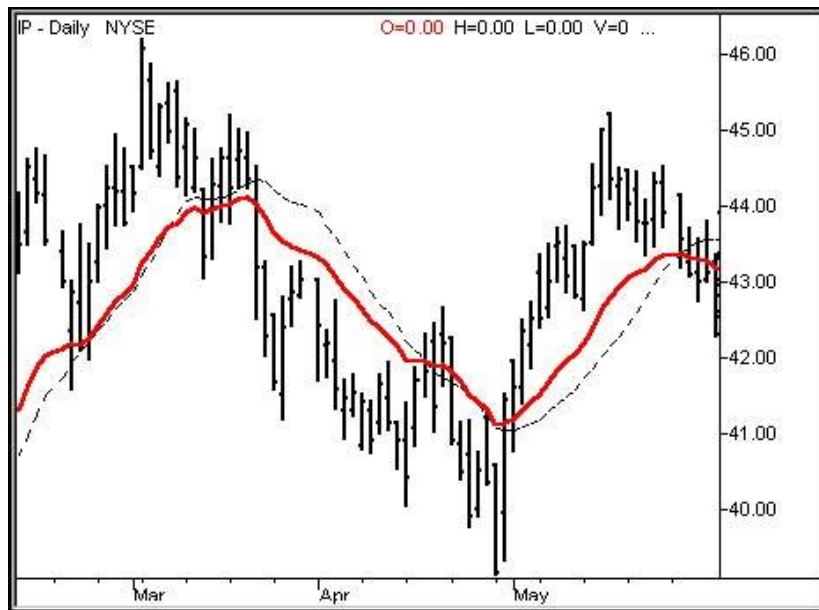
Cons:

Slow moving, which may cause lag Subject to errant or meaningless price swings, which can cause errant signals. (see early September in the example) In our example to

the right, we can see how the exponential moving average (solid) more closely follows the actual price movement, where the simple moving average (dashed) is slower to respond and lags behind the exponential average.

Using moving averages as indicators

The most common use of moving averages is simply to interpret the cross above a moving average line as a buy signal, and a cross under a moving average as a sell signal. This would have given you good results in the chart above. The other common use of moving averages is taking crossovers of two moving average lines as a buy or sell signal. If the faster moving exponential average line crosses over the slower simple moving average, that often indicates a strong uptrend that you want to buy into. In the chart above, we can see that we got a crossover in late October that would have been a very good purchase point. From the time we saw the crossover, the stock climbed from \$20 to nearly \$23 in a matter of days.



Conversely, if a faster moving average crosses under a slowing moving average, then that is often a sell signal. In our example above we can see that we received an accurate sell signal in the beginning of March.

Timeframes of moving averages

In our sample formulas you saw how to calculate a 3-day moving average, but any number of days could be used. The more days you use, the smoother lines you will produce, but you get lagging signals. The fewer days you use, the sooner you will get crossovers, but at the expense of potentially false signals. This situation is illustrated in the next example.

One of the basic technical signals is a cross above or below a moving average line. Using Accredo Health (ACDO) in our example below, let's assume that we'll buy when shares move above the 10-day exponential moving average, and we'll sell when it falls below the 10-day exponential moving average.

As you can see, using the 10-day line may have resulted in a few errant signals.

In this next chart, after changing the 10-day exponential moving average to 20-day exponential moving averages, we get a smoother line. Therefore, we see fewer crossovers, but the quality of the signal improves dramatically.



Support /Resistance

In the chart below there are two straight lines plotted in relation to the price of the stock. The line above the bar plots is the **resistance line**, which serves as a ceiling. The idea is that prices are not likely to go through the ceiling, and when they do, it often is the beginning of a strong trend. The line drawn below the prices is the **support line**, which serves as a floor. Prices aren't likely to go below that line, but when they do it often signals the beginning of a big downtrend. This is very evident in the case of Lockheed Martin (LMT), when it fell under the support line at 64.50, and continued to drop. These



support and resistance lines can be broadly called **trend lines**.

There is no formula for support or resistance lines; they are almost always drawn manually. In the examples above and on the next page we can see that, over time, the price movement will make its own lines with highs and lows. The key is to connect prior important highs for resistance lines, while support lines should be drawn using prior significant lows.

Here's another example of support and resistance. The trend lines here are based on a much shorter timeframe, but the effect is still the same. After the second close above the resistance line,



we saw that BBOX had plenty of strength, and enough buyers, to move upward.

The more times a stock's price hits a support or resistance line and turns back the other way, the more meaningful those trend lines become. Usually, the longer a stock stays inside support and resistance lines, the stronger the breakout is when it does occur. It is recommended to use at least three points to draw a trend line.

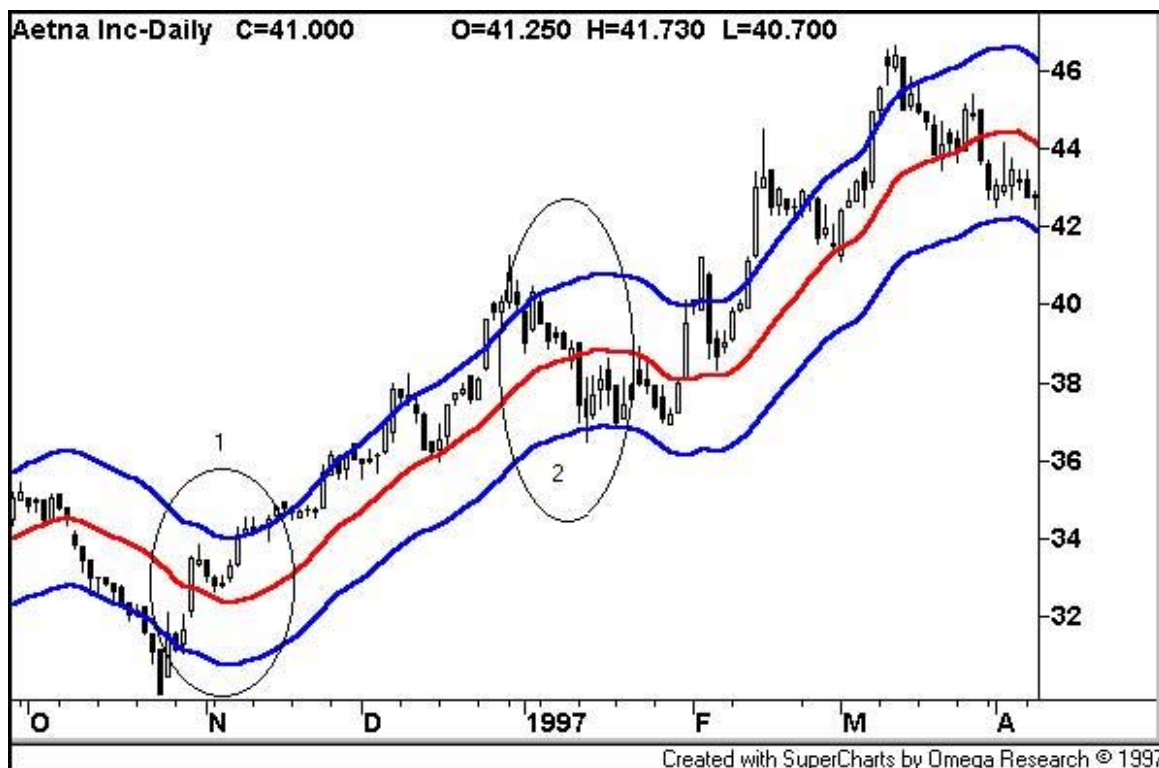
Trader's Tip: Not all support and resistance lines have to be straight. Although conventional trend lines are straight, support and resistance levels may fluctuate to reflect price changes. Many analysts use moving average lines as support and resistance lines.

Envelopes

We can reasonably expect a stock price to mildly fluctuate over any given length of time. But how much fluctuation should we allow? One of the most effective ways to determine how much fluctuation is normal is to establish price boundaries, or an envelope, that the price of a stock will usually be inside. What you are looking for, then, are the points that the price begins to move outside the envelope. When the envelope line is pierced, that often serves as a signal of a new trend.

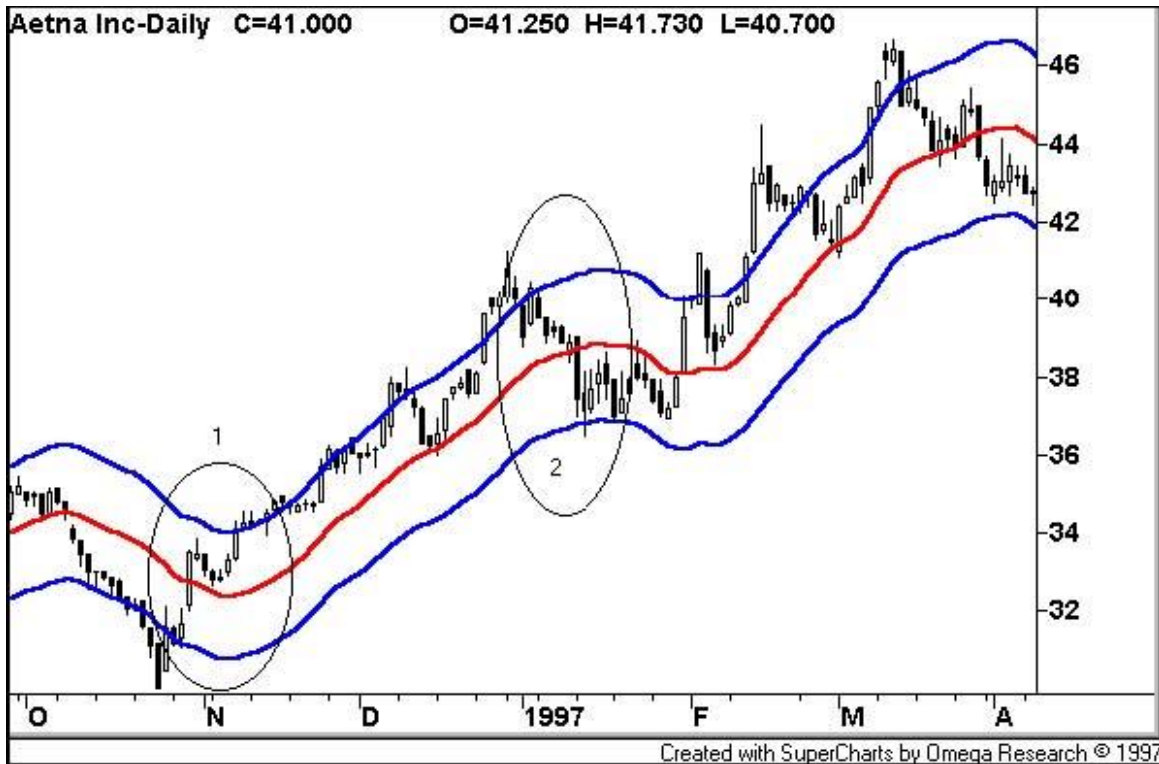
To establish this envelope, we simply plot a moving average (as we did in a previous section). Then we plot two more lines that will serve as the boundaries of our envelope. The first line will be the top portion of our envelope, which is plotted at x percentage greater than the moving average. The second line is the bottom portion of our envelope, which is plotted x percentage less than the moving average. Since the moving average will change from day to day, so too will the two moving average envelope lines. The result is a **moving average envelope**.

In our example of a moving average envelope, we can see the 20-day moving average line in the middle. The line on top is the upper portion of our moving average envelope, and is drawn at points that are 5% higher than the actual moving average. The lower boundary of the envelope is plotted at points 5% less than the moving average line. As you can see, the price of Aetna Inc. (AET) shares is usually inside this envelope. But in area 1, you can see what happens when the closing price starts to pierce the upper portion of the envelope. It doesn't just touch it and reverse; it continues to move above it. As the price moves up, so will the moving average, and therefore, the envelope will move higher too. The fact that the closing price continually breaks through the upper envelope is a testament to the strength of that trend.



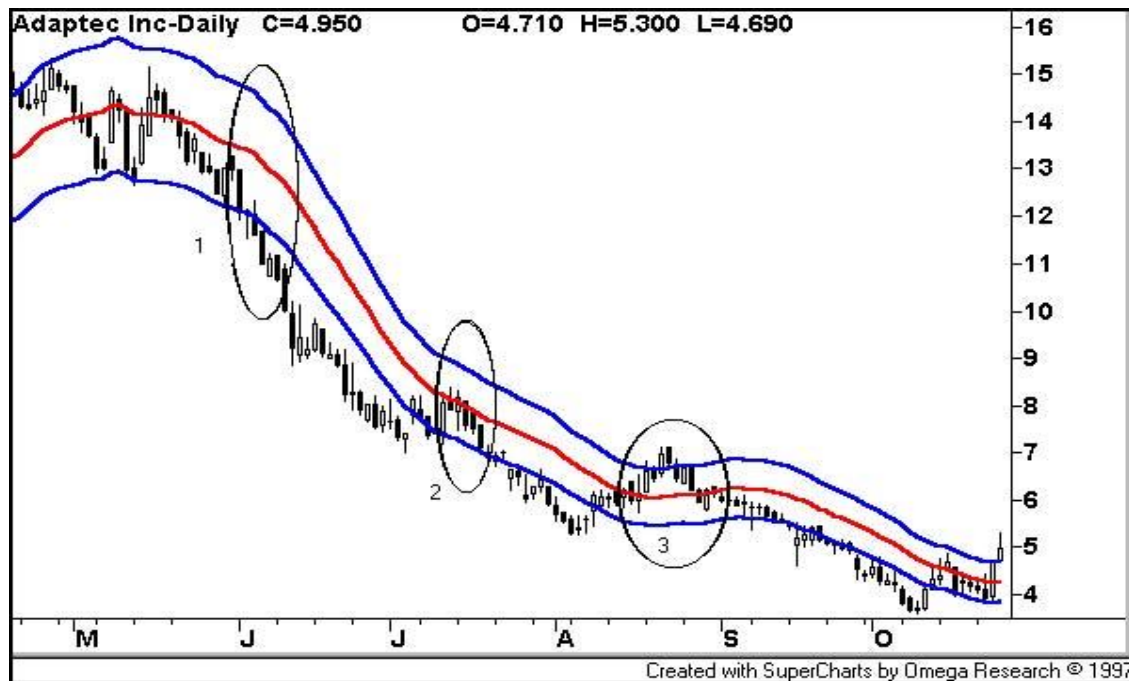
(cont.) That strong trend doesn't end until the price reversal you see in area 2. While we were mildly concerned that the price of the stock fell back inside the envelope in area 2, we didn't necessarily consider that a time to sell. After all, we saw the same occurrence just a few days before that, when the price dropped back inside the envelope and almost closed below the moving average. However, at that time it just bounced off of the moving average line for one more surge higher.

In area 2 we can see that this time, the moving average line would not act a support, and the closing



price would fall below it. This confirmed the end of the uptrend. Remember, we saw the potential end of the trend in area 2 with a few closes back inside the envelope, and we confirmed the end of the trend when the price broke below the moving average line.

In our other example of moving average envelopes, we can see in area 1 that shares of Adeptec (ADPT) broke under the lower boundary in June on its way to about a 30% decline. It showed signs of a reversal in area 2. But there, instead of staying above the moving average, it met resistance at that moving average and continued downward. Even in area 3 we saw the price move back above the upper envelope boundary, but when it came back inside the envelope again it did not find support.



Rather, it fell through it, and went on to further losses.

Bollinger Bands

Moving average envelopes allow for normal fluctuations in price. But how can we be sure that a breakout is actually a breakout, and not just a temporary shift in price? Bollinger bands can solve that problem, because Bollinger bands adjust for volatility. Moving average envelopes do not adjust for volatility.

The application of Bollinger bands is the same as a moving average envelope, in that closing prices outside of the upper or lower bands can signal the beginning of a new trend. To avoid an errant signal generated by a closing price outside of the bands, Bollinger bands incorporate the daily highs and lows of stock prices. If there is a wide gap between the high and the low, then that stock is very volatile, and Bollinger bands will expand. If there is very little difference between the daily high and low price, then there is very little volatility, and the Bollinger bands will contract. The result is fewer closing prices outside of the bands, but those closes outside of the bands are better signals.

In our example below, you can see that the upper and lower Bollinger bands are contracting until mid-April, when shares of Compuware (CPWR) start to accelerate higher. At that point where Compuware shares move high enough to close above the upper Bollinger band, the bands start to separate. Yet, shares continued to close above the upper Bollinger band, even though the widening bands made it increasingly difficult. This is an illustration of the principle of acceleration, and you can



see why closes outside the bands are often good buy signals

Obviously not all closes outside of Bollinger bands signal a breakout, but when they do, the price movement can be explosive. A close under the lower Bollinger band can serve equally well as sell signal.

We see another example of Bollinger bands below. In area 1, we can see that the first close below the lower band leads to many more consecutive closes below the lower band. We almost got a sustained reversal in area 1, but the exponential moving average failed to act as support in late July after we made three closes above the moving average line. In area 2 we can see that the first close above the upper band preceded many more consecutively higher closes. It almost appeared that we would see a reversal of that uptrend at the beginning of September, but the stock bounced up off of the moving average line. We finally did get a confirmed reversal in area 3, when the closing price broke below the



exponential moving average.

There are two key differences between Bollinger bands and a moving average envelope. Moving average envelopes are plotted based on a specific percentage above and below a simple moving average.

Bollinger bands, on the other hand, are based on an exponential moving average, and are drawn a specific number of standard deviations above and below the exponential moving average, incorporating price volatility into their calculation. A standard deviation is simply a unit of any given measurement. For instance, since most stock charts plot prices in terms of dollars, one standard deviation unit would equal one dollar

Parabolic/SAR

So far we've looked at what the beginning of a trend looks like on a chart. But is there a way to spot the reversal of a trend? A chart pattern called a parabolic stop-and-reversal (or 'SAR' for short) can do just that. The parabolic SAR places dots, or points, on a chart that indicate a potential reversal in the price movement. In the chart below, you can see the parabolic points that coincide with a new trend.

In August, the parabolic point moves below the actual price, indicating the reversal. As the trend develops strength through August, the parabolic points move closer together and eventually intercept the price. In October, we see the reversal of the previous trend when the parabolic point moves above the candlesticks, indicating that the trend has lost momentum, and prices are beginning to fall again.

As you can see, when the parabolic marker moves from above the price bar to below it, it is a buy



signal. Conversely, when the marker jumps from below the price bar to above it, it serves as a sell signal. What exactly causes the shift of the parabolic point? If you look closely at the chart above, you can see that the SAR marker switches placement the day after the price bar intercepts (or touches) the SAR marker for that day. The formula used to calculate the placement of the parabolic SAR marker is too complex for our purposes in this workbook, but fortunately, you don't have master it to use this indicator effectively. We'll see another example on the following page.

The best feature of a parabolic stop-and-reversal is that it is easy to interpret, because there can only be bullish or bearish signals. It assumes that either a stock is moving up, or moving down, and that you want to be in the market, either long or short, at all times. As stated previously, a buy signal is generated when the parabolic dot moves below the price information on a stock chart and begins to climb along with the stock itself. Likewise, a sell signal is generated when the price of a stock hits a top, loses momentum, and begins to fall.

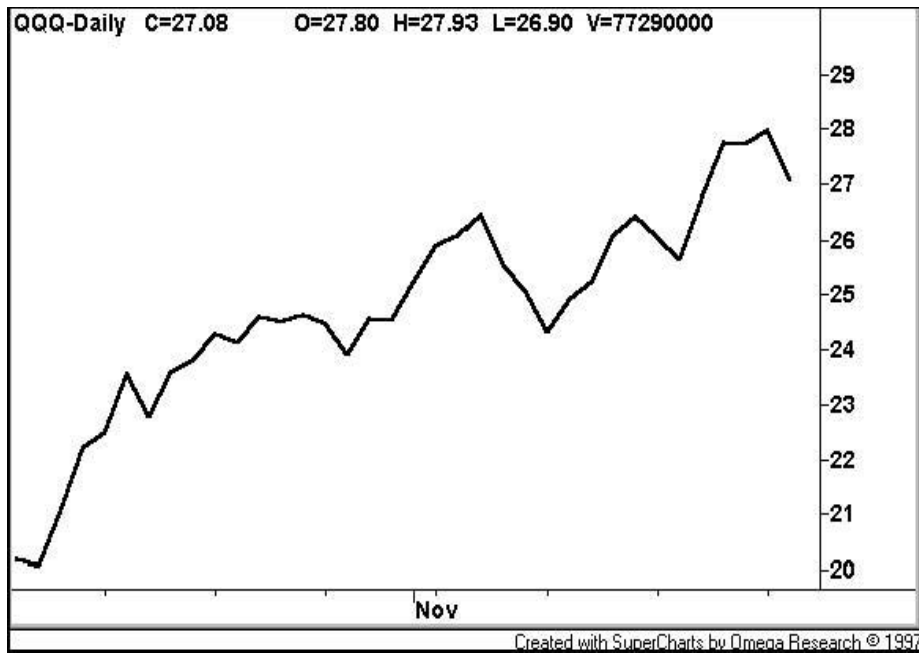


As you can see in this example, the parabolic marker switches whenever there is an intra-day price that pierces that line of parabolic points. In area 1 we can see that the day prior to the dot being placed below the candlesticks, the intraday high was greater than the parabolic plot line. The inverse is the case in area 2, when the parabolic SAR switched to bearishness.

The parabolic SAR method is a very useful tool in a trending market that can make sustained rallies and downturns. This technique, however, is more difficult to use in a choppy, indecisive market. As you may notice in the examples, the parabolic SAR did not switch positions until a few days into a new trend. In a back-and-forth market, you may get signals right around the point in time when the market turns the other direction. All the same, the parabolic SAR indicator is a great tool.

Checkpoint 1

At this point you should be able to identify each type of price chart, as well as functionally use price chart data, such as moving average envelopes, Bollinger bands, and others. To get the most from this workbook, it is important that you understand these basic concepts before moving on to the next section. It is recommended that you be able to answer all questions correctly before moving on to the next section "Important Chart Patterns".



1. The following chart is a _____ (type) chart.
2. This type of chart (above) plots which daily data?
 - a. Opening price
 - b. Average price
 - c. Closing price
 - d. High price



3. The following chart is a _____ (type) chart.

4. The four letters marked on the chart (above) point to which price data?

- a.
- b.
- c.
- d.

5. The following chart is a _____ (type) chart.

6. The four letters marked on the previous chart point to which price data?

- a.
- b.
- c.
- d.

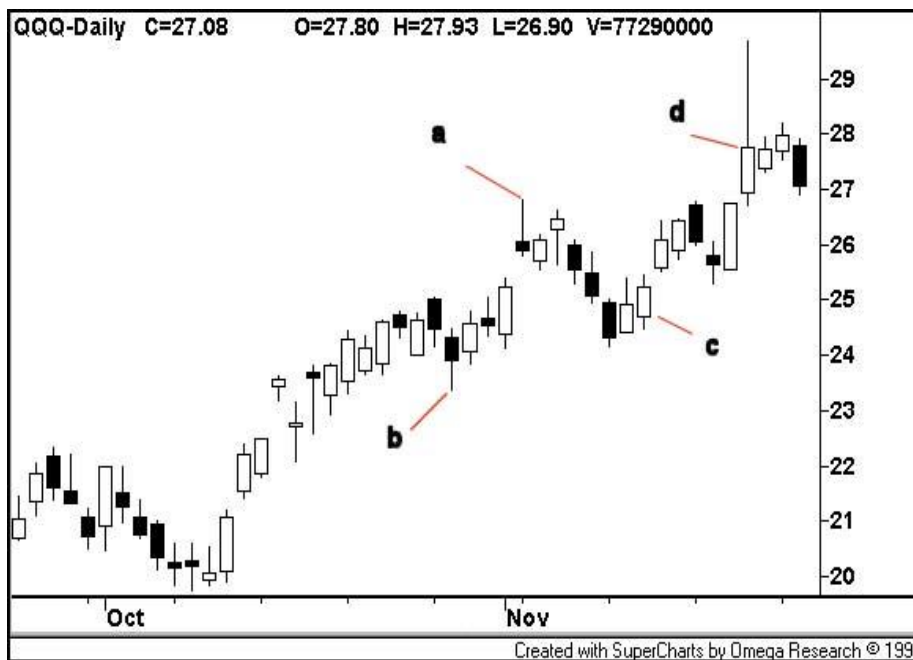
7. What is the benefit of using moving average lines over raw price data?

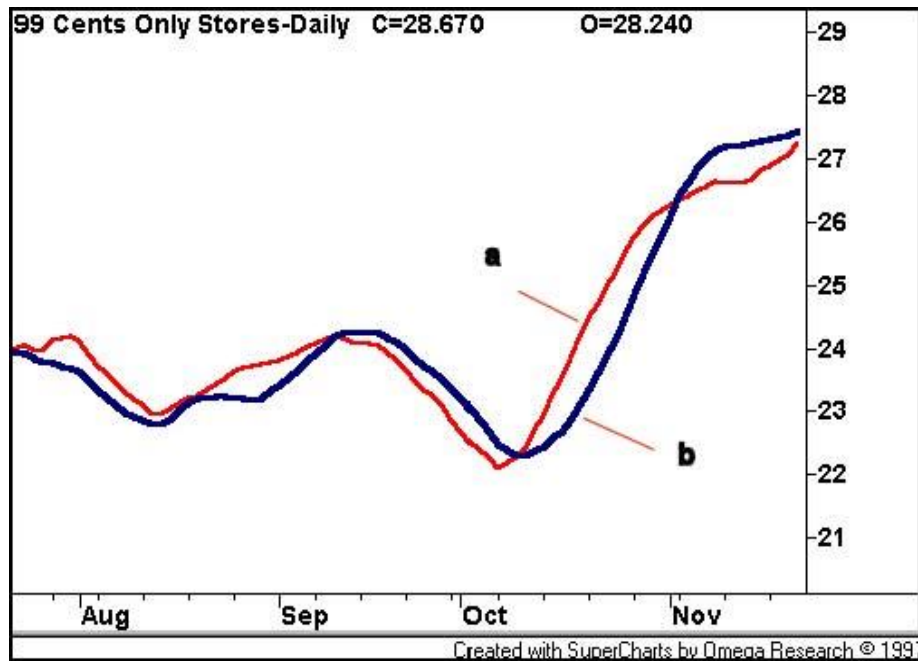
8. Which of these two lines is more likely to be an exponential moving average? _____

9. Why?

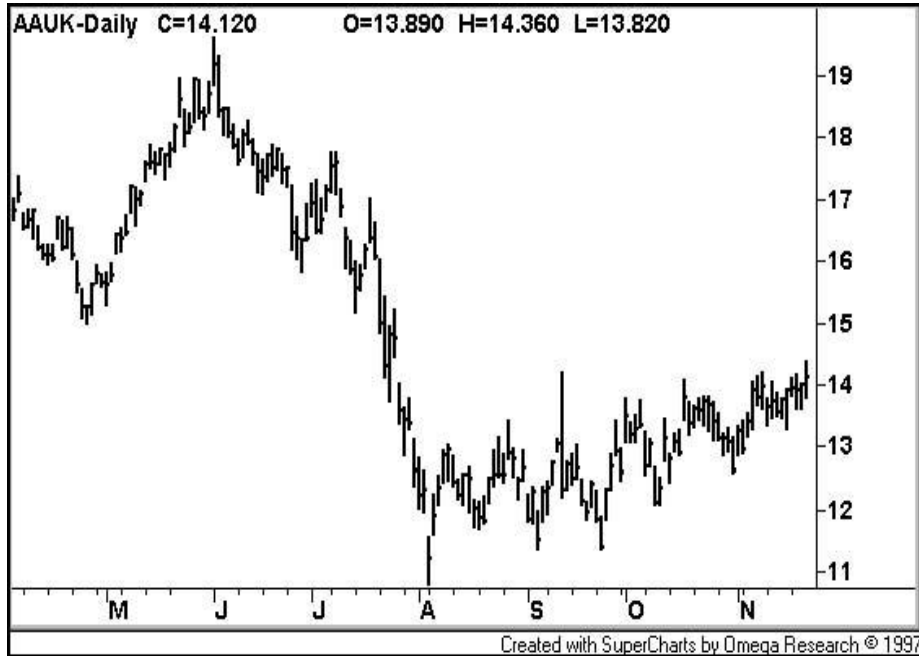
10. What is the primary drawback of using exponential moving averages instead of simple moving averages?

11. What is the primary drawback of using simple moving averages instead of exponential moving averages?





12. On the following chart draw a support line (Hint: It will not be perfect)



13. On the following chart draw a resistance line (Hint: It will not be perfect)

14. Why are support and resistance lines useful?

15. How many points on a chart should be used to draw support and resistance lines? ____
16. Moving average envelope lines are plotted a certain ____ above and below a simple moving average line.
- a. standard deviation
 - b. percentage
 - c. volatility factor
17. Why wouldn't the last bar you see below necessarily be a good buy signal, based on its relationship with its Bollinger band?

18. Based on the last information you can see below, what is the next likely direction for this stock? _____

19. Why?

20. Correctly identify the following three occurrences on the chart with the appropriate description below: 1) _____ Resistance at moving average line 2) _____ Support at moving average line 3) _____ Moving Average Crossover

21. True/False. Bollinger bands reflect volatility by incorporating the daily high and low prices into the calculation.

22. True/False. Bollinger bands are less likely to draw smooth lines compared to moving average envelope lines.

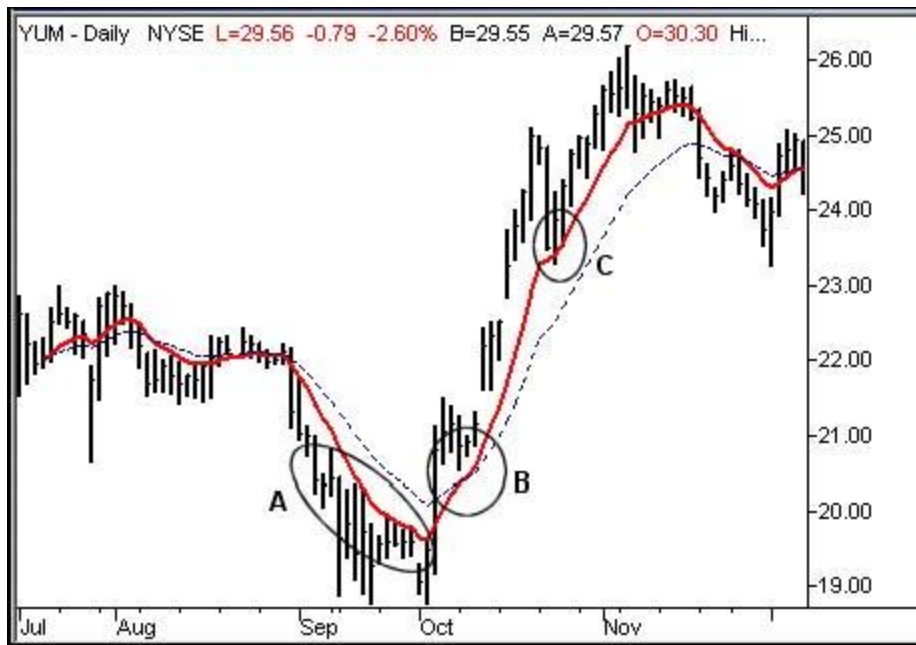
23. True/False. Bollinger band lines are drawn a certain percentage above and below an exponential moving average line.

24. On the chart below, based on the last information you can see, what direction would you expect this stock to go next? _____

25. On the chart below, why are the Bollinger bands narrow in “area a” but widened in “area b”?







Answer:



26. In the most current portion of the chart below, is the parabolic stop-and-reversal indicator



showing bearishness or bullishness? _____

Stop! You have completed section 1. You may check your answers with the answer key. We recommend that you be able to answer all questions correctly before proceeding to the next section.

Checkpoint 1 Answer Key

1. Line
2. c: closing price
3. OHLC, or open-high-low-close
4. a. close
- b. open
- c. high
- d. low
5. candlestick
6. a. high
- b. low
- c. open
- d. close
7. The price change is smoothed into discernible directions. Trends appear clearly.
8. a
9. It moves faster. The other one moves noticeably slower.
10. They may move too fast. Being more reactive to recent price changes, they are also more subject to volatility.
11. They may move too slow. If a new trend is established quickly, the simple moving average may not reflect it in a timely manner.



12. See below.



13. You could have also drawn a resistance line from March's high to the high of the day right before the big gap in July.
14. They indicate likely points where a stock will either reverse or begin a breakout.
15. 3, at least. (2 can be used, but at least 3 are recommended)
16. b. percentage
17. It didn't close above the upper band. Rather, it reversed intra-day.
18. Lower
19. A close under the lower acceleration band is an indication of a downtrend. In general, assume the trend will continue until it has a reason not to.
20. 1) a 2) c 3) b
21. True
22. True
23. False. They are plotted using standard deviations.



24. Higher. Breaking above the upper Bollinger band is bullish.

1. Bollinger bands adjust for volatility. If the high-to-low range is greater, then Bollinger bands will expand. If the stock's trading range is narrower, the Bollinger bands will be too.
2. Bearish. If the marker is above the price bar, it's bearish.

Section 2: Important Chart Patterns

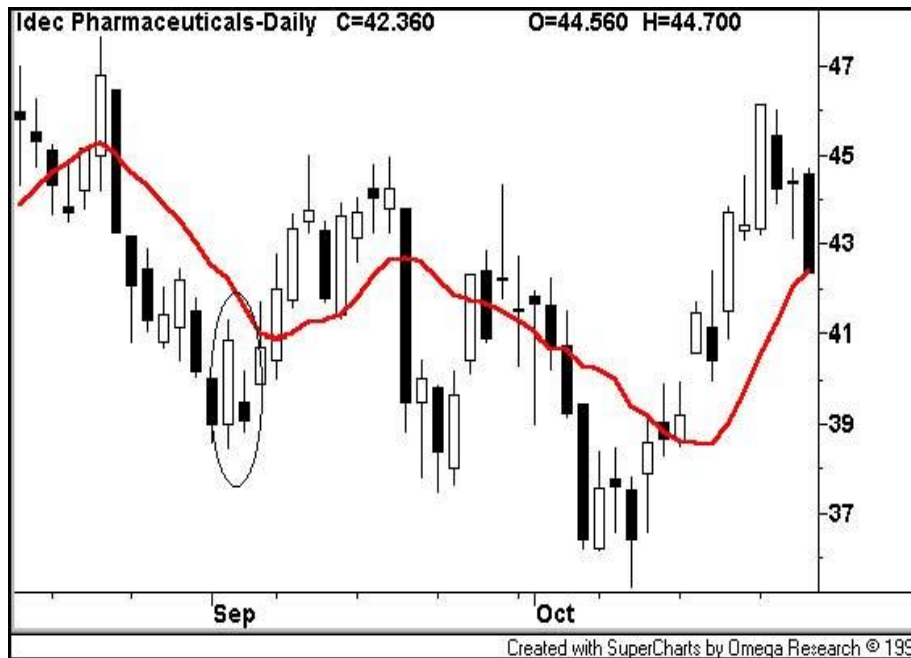
We've seen how charts are drawn. Now let's take a look at the interpretation of some of these chart patterns. While we will highlight some of the most common chart patterns, this is by no means an exhaustive list of useful chart interpretations.

Inside/Outside Reversal.

On a candlestick chart (or an OHLC bar chart), we can see the daily trading range (high to low) in the height of the bar. What does it mean when there is a change in the trading range from one day to the next? While this is not an absolute rule, a significant change in the high-to-low range often indicates a reversal of a

trend. This concept is better explained with the charts below.

A smaller trading range than the previous day indicates that traders have become much stricter about price levels at which they are willing to buy and sell. In the circled area to the right, we



see that the first day had a wide gap between the open and the close, and an even wider trading range (high to low). The following day we saw a much narrower high-to-low range, and a smaller gap between the open and close. This pattern coincided with the short-term reversal. This is called an inside day reversal, because the high-to-low range of the second day was contained inside the high-to-low range of the previous day. Something significantly changed about the stock on that day, and it caused a raised amount of discretion.

Trader's Tip: The inside day does not in itself indicate a reversal, as there are many times the pattern occurs. Use the inside day pattern as added support for other indicators, or in conjunction with fundamental data.

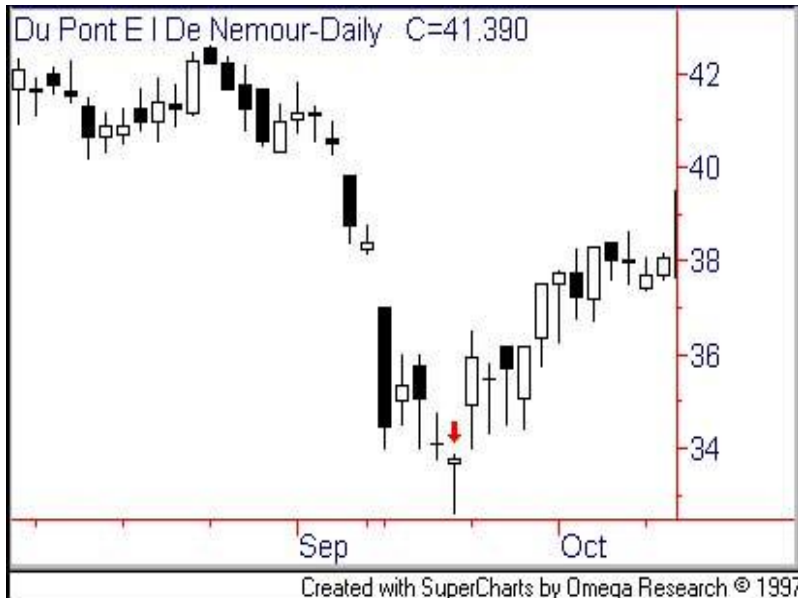


Above we see an example of an outside day reversal. The circled area shows that the first day had a very narrow high-to-low range. The following day, however, indicates a higher high and a lower low than the first day. In other words, the high and the low of that second day were outside of the high and low levels set on the first day. Again, this pattern coincided with a reversal. What we are seeing is a sudden need to sell, and/or a willingness to take any price to do so. It is likely that there was bad news announced that day, and the panic resulted in a volatile day that started a sell-off lasting several days.

Hammer

A simple way to spot a possible reversal of a bear trend on a candlestick chart is finding a bar formation that resembles a hammer. On the marked candlestick below, you can see that this stock opened near its high, traded very low, but ended up closing near where it opened. Like hammer that has a long wooden handle with a perpendicular metal head at one end, this candlestick pattern has a long 'handle', and a perpendicular 'hammer head' near the top.

The psychology of this interpretation is that there were willing buyers for this stock. They were just waiting to purchase on the low end of the trading range. Ironically, while someone did actually purchase the stock at the low end of the bar, we can see that buyers ended up paying a price near where the stock opened. That willingness to forego a bargain price indicates that there may be many more buyers out there.



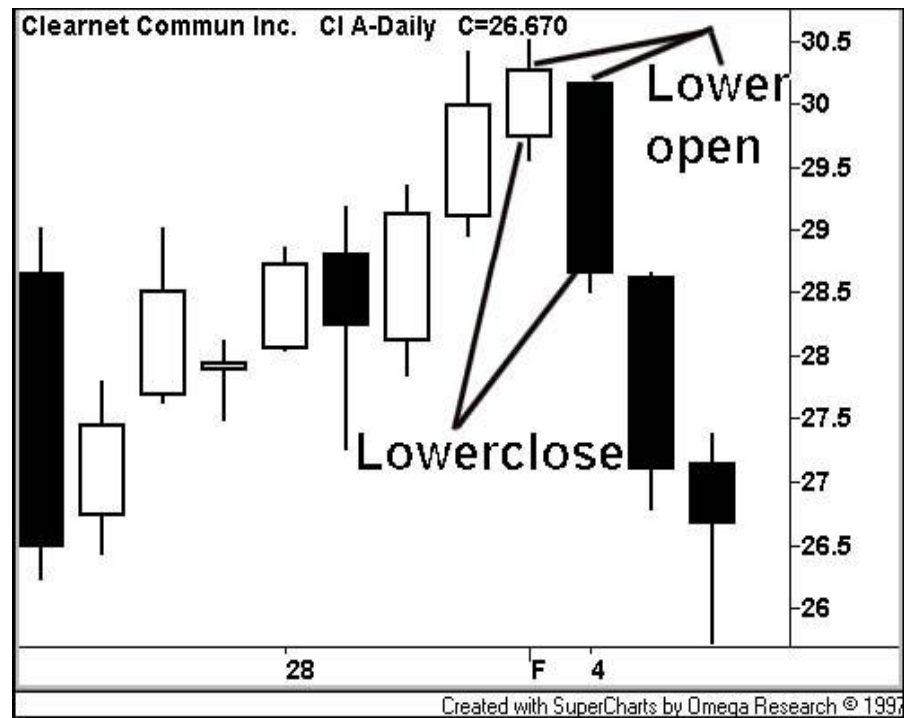
Here we see another example of a hammer formation.



Elephant Trunk

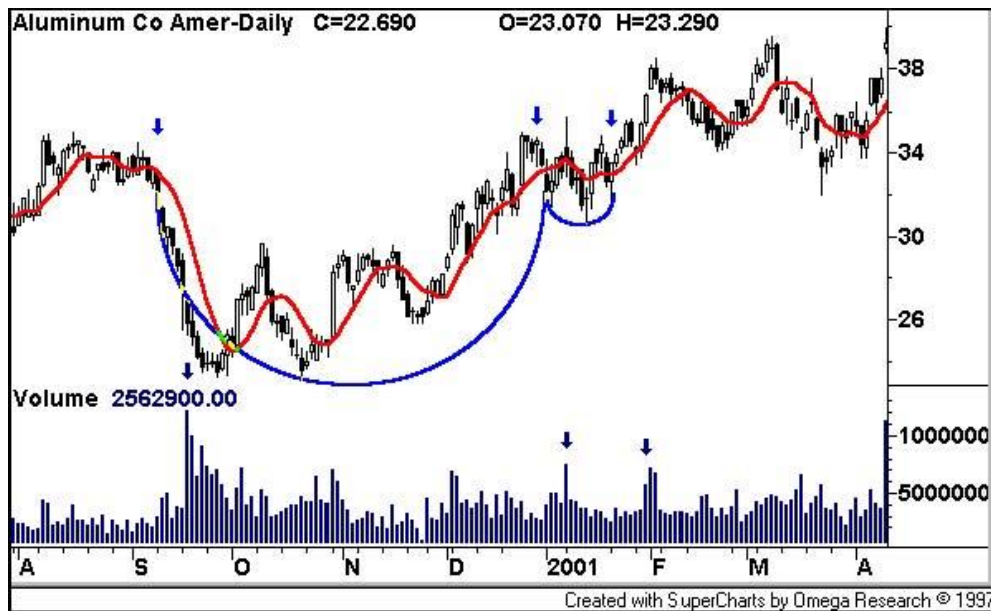
The Elephant Trunk (or 'ET') sell signal is a signal developed here at BigTrends.com. It derives its name because the sell signal bar formation literally looks like an elephant trunk. To officially be an 'ET' sell signal, the opening price for the first down day must be lower than the closing price of the previous up day, and the closing price for that same day must be lower than the previous opening price. There must also be a trade on that first down day that is lower than the low of the previous day.

A lower low and an opening price lower than the previous close does not automatically constitute an ET sell signal. The ET sell signal is best applied after an excessive run-up that caused a price to go too high. The ET signal indicates that investors have caught their mistake or are taking profits. In either case, it's best to take the signal as a sign of worse things to come, as in our example.



Cup and Handle

One of the more interesting interpretations of a longer term chart is the “cup and handle” formation. While the specifics of what constitutes an actual cup and handle formation are always debated, suffice it to say that the pattern does indeed look like a cup with a handle. In our example below, we can see that the stock makes a new term high in August, and then sells off sharply on much higher volume. It’s not until late on 2000/early 2001 that the price is trading at the same levels that we saw before the downturn in September. To complete the other side of the cup, we need to see trades at prices we see in August, and we need to see those trades on higher volume. The final piece of the puzzle is the handle. To properly develop the handle, we have to see another reclamation of those August prices



after a pullback, and then new highs on higher volume.

This formation usually takes weeks to actually develop, although you may see it occasionally form over a period of several days. It is recommended to use cup and handle charts for intermediate term or longer term strategies.

As you may guess, there will never be a perfect cup and handle formation. Nor will any two cup and handle patterns look the same. All the same, the price and volume data can be very telling when charts start to look similar to the one above.

Head and Shoulders

Another longer-term chart pattern worth knowing is called a “head and shoulders” pattern. The price chart literally looks like a head with a shoulder on either side of it, and typically occurs right before a significant decline. In the example below, you can see how this three peak pattern developed right before the Nasdaq fell about 100 points.

To understand the psychology behind this pattern, see the sample below. Essentially, the first surge (the shoulder on the left) indicates a possibility of an uptrend. After a pullback, people are acting on the bullishness they saw in that first surge and rush into the market. This stronger buying spree creates the head. At this point some investors begin taking what profits they may have, and a sell-off begins. Shortly thereafter, there is one more buying surge from the last hopefuls who are still bullish. That last surge creates the shoulder on the right. If the third rally fails and prices fall back below the



neckline, that is usually a set up for a sell-off.

The degree of decline after the formation occurs is usually about the same as the degree of ascent between the bottom of the first shoulder formation and the top of the ‘head’. In other words, you can reasonably expect the market to fall about as much as it grew (in terms of total points) between neckline and the top of the head.

The head and shoulders patterns works upside down too. If you see an inverted head and shoulders pattern, that is often a set up for a bullish rally. These are just as common, yet may be more difficult to spot since we usually don’t mentally view heads and shoulders as upside down. However, it would be wise make this effort, as they often coincide with bullish reversals of bear trends.

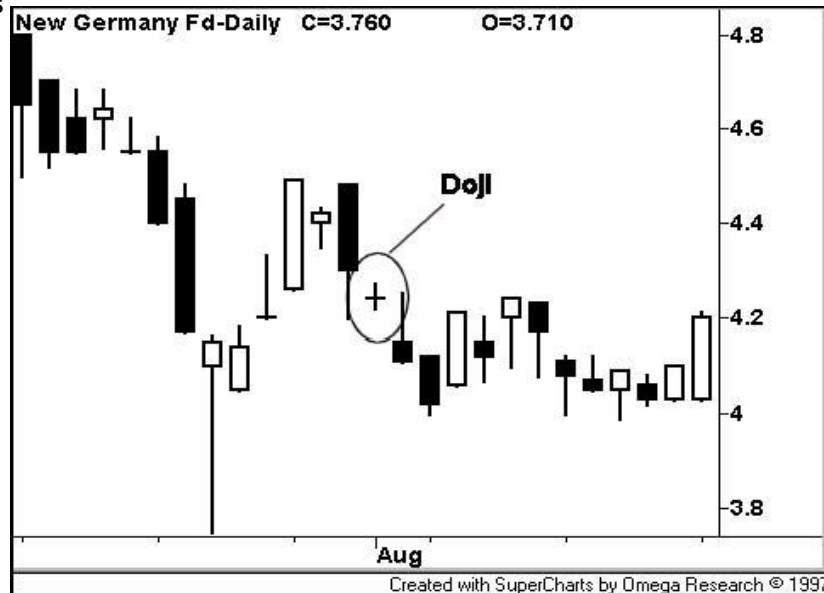
Trader’s Tip: Don’t assume that you’re seeing a head and shoulders pattern in development. The

first two peaks in the three peak pattern occur naturally on their own and don't necessarily lead to the third peak being formed. Rather, wait for the market to confirm that it won't be able to rally after three attempts. By then there will be enough bearish sentiment to drive a downturn.

Doji

As we had mentioned earlier in this workbook, candlestick charting was originally developed by the Japanese. The word 'doji' specifically refers to a single candlestick formation. While doji interpretations often depend on other circumstances, the formation of the doji itself is always the same. To constitute a doji pattern, the opening price and the closing price are essentially equal, resulting in a single candlestick that simply appears to be two crossed lines.

The doji formation is not as important as the meaning behind it. Think of a doji as a battle between bulls and bears that ended in a stalemate. Like most stalemates, it often coincides with a change in momentum, or is the result of uncertainty. If people are collectively confused about whether to buy or sell a stock, that is a signal of significant change.



To the left we see two



examples of a doji. Example A signaled a market top, while example B indicates that people were waiting to buy this stock in a slight price dip. In both cases, we see that the doji correctly signaled a reversal of some sort.

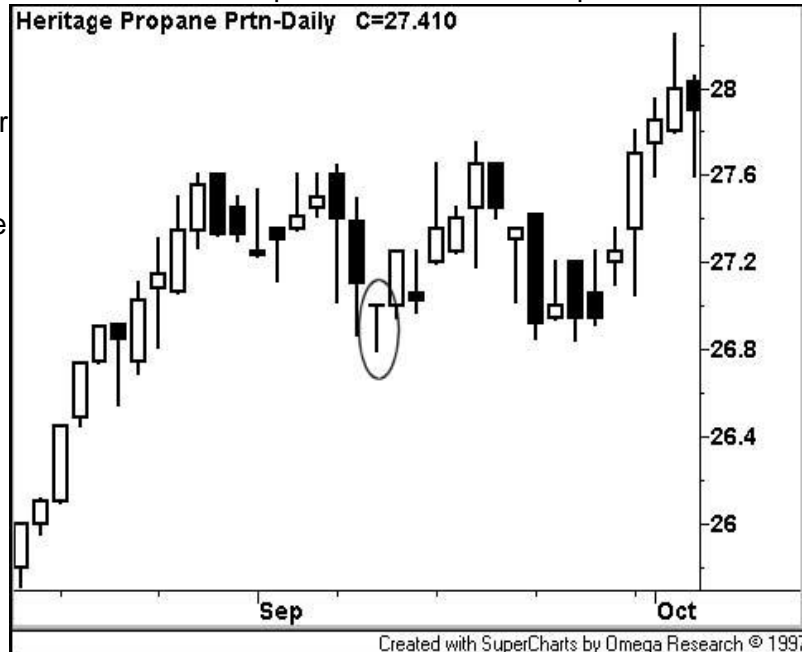
In your interpretations of doji formations, recognize that the pattern is simply an equilibrium. The buyers are

satisfied that day with the price they are paying, and the sellers are satisfied that day with the price they are receiving. It just so happens that for that day, all the buyers and sellers met in the middle at

the beginning of the day as well as the end of the day. When both the buyers and sellers are simultaneously satisfied, you may be seeing an opportunity.

Again, the doji itself is not as important as the meaning behind it. Let's look at a couple of noteworthy doji patterns to explain how we can see important clues in the shape of the candlestick.

A 'dragon-fly doji' has a high that is not any higher than the open or the closing price, but has a low that is lower than the open/close level. The implication is that there was plenty of selling of this stock during the day, but buyers came in before the close and were willing to pay prices right up to the very levels where the stock opened. Hence the stock closed where it opened, and then reversed the downtrend. As the recovery on the chart indicates, this type of doji can be bullish.



A "gravestone doji" is essentially an upside down dragonfly doji.



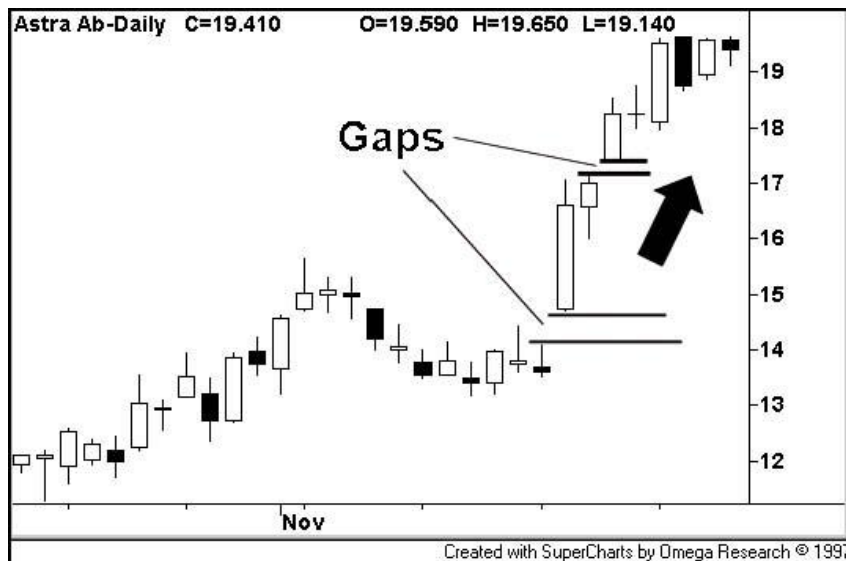
The open, the close, and the daily low trade are all essentially the same, although there were trades much higher than that. The implication is that the sellers weren't going to take any less than the opening price, yet buyers finished the day unwilling to pay any more than that same price. The stock's failure to stay at the higher trading range ultimately spelled trouble, as you can see three days after the gravestone doji.

Dojis are also referred to as 'tails', due to their shape. We'll look at other types of tail reversal patterns in an upcoming section.

Gaps

We've seen important single-candlestick formations. Now let's look at some important multiple-bar formations. By that, we mean that we are looking for important chart patterns that occur over a period of two or more bars. A "gap" occurs when there is a price range where no trades have been executed between two bars. For instance, if XYZ shares trade as high as \$26 for one bar, and then the low for the next bar is \$27, the stock is said to have "gapped up" between \$26 and \$27. No trades have been

made at that \$26 to \$27 range. This is better explained on the chart below.

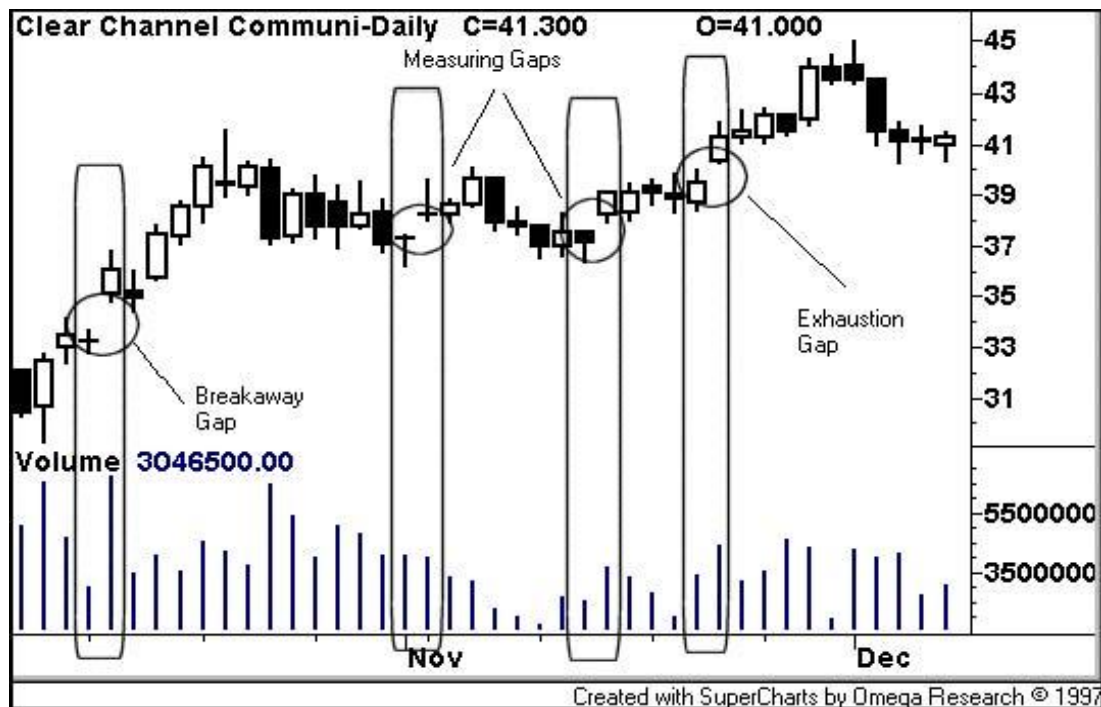


As you can see, these shares never traded between 14.00 and 14.60 as they rose in a strong trend. There was another bullish gap between 17.10 and 17.40. Upward gaps are very bullish, while downward gaps are bearish.

While individual gaps are important to note, you will also find that there are patterns of gaps that often occur within a trend. While no two trends are alike, you may see three or four gaps occur at different intervals in the lifecycle of a trend. We'll look at an example chart in a moment, but first let's define each of these gaps.

1. **Breakaway gap:** This is the first gap of a new trend. It is usually a very clear gap with strong follow-through the next day, and typically occurs on much higher volume. This is the signal that there are plenty of buyers available who are willing to drive the price up.
2. **Measuring gap(s):** Measuring gaps are called so because they can often be used to gauge the length of a trend. They usually come in the middle of a trend, so you can expect that the number of days between the breakaway gap and the measuring gap will also be about the same number of days between that measuring gap and last gap of the trend. However, there may be several measuring gaps in a trend, and there's not always a clear definition about which one signals the "middle" of a trend. Measuring gaps should occur on moderate volume. If you see a gap on extremely high volume, that gap may be due to volatility rather than trend pressure.
3. **Exhaustion gap:** This is the last gap of a trend, and typically occurs on rising volume (volume higher than the previous day), although this is not crucial. Exhaustion gaps are named so because

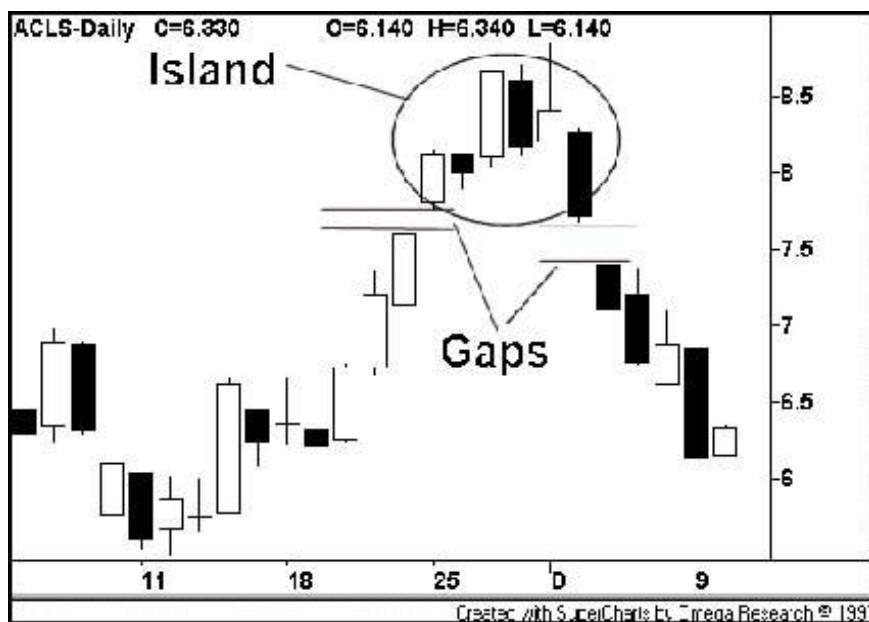
it is usually the last gasp for a trend. Momentum has been lost, but there are still investors who are (erroneously) acting on the trend.



In this particular rally from \$31 to \$44, we can see four price gaps. The first (breakaway) gap is on much higher volume, while there are two measuring gaps. The last gap is the exhaustion gap. There is no clear rule for defining why one gap would be an exhaustion gap while another would be a measuring gap, but volume is an important clue. The first measuring gap occurred on the same volume as the previous day, while the second measuring gap occurred on relatively average volume. The other key characteristic of this exhaustion gap is when it occurred. If you look closely, it occurred thirteen days after the first measuring gap. The first measuring gap occurred fourteen days after the breakaway gap. This is a very good example of how a measuring gap can provide clues about the length of a trend – a measuring gap is usually right in the middle of a trend.

You can even use gaps to spot a reversal. If you see a bullish gap soon followed by a bearish gap, that often signals a major reversal of a trend.

On a price chart, if a bullish gap and a bearish gap leave a section of bars away from the general price flow, then you have an “island” formation. These islands, unconnected to any other bars due to gapping, usually coincide with a major change or reversal in price momentum.



Two-Bar Tails

Our final chart pattern we'll discuss are often called 'tails'. Again, you will need to use an OHLC or candlestick chart to make this analysis, as you will be looking at the highs and lows, along with opening and closing prices. The relationship of these four pieces of data on one price bar can signal a potential reversal, and a particular structure of two consecutive price bars can confirm the likelihood of a reversal.

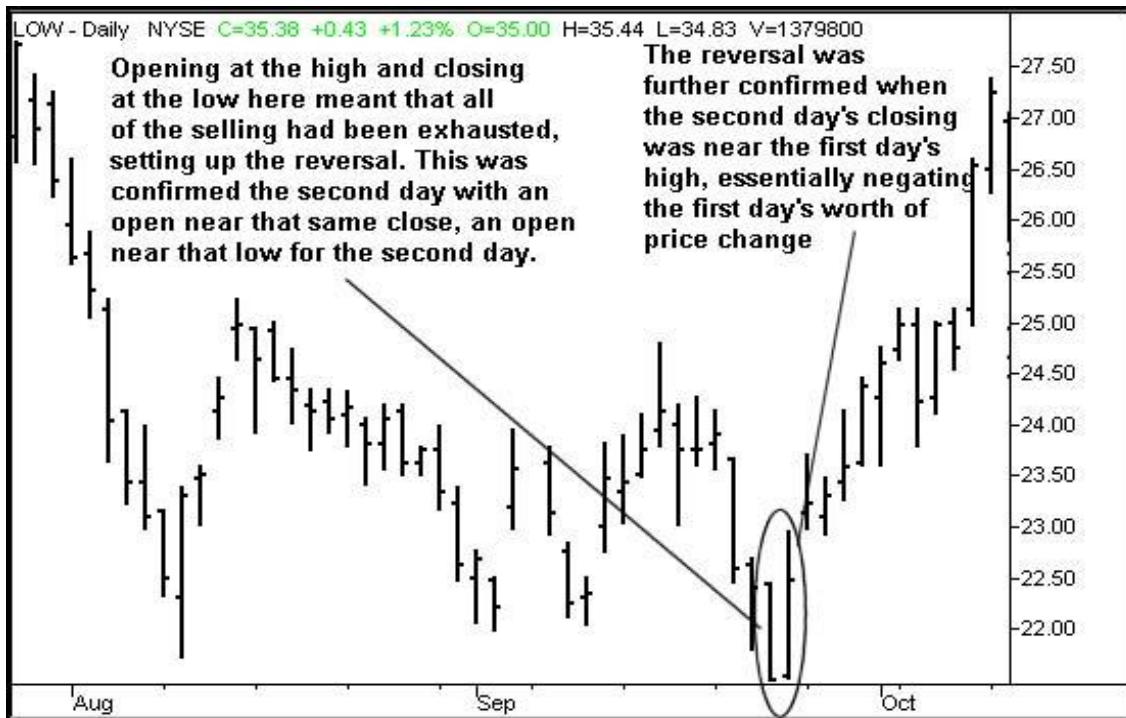
This particular pattern is called a 'tail', since the chart appears to have along, isolated extension similar to the tail of a cat, dragonfly, or any other long-tailed animal. In fact, the 'dragonfly doji' is a one-bar example of a long-tail reversal pattern (so is the 'gravestone doji' – just the other direction). Since we have already seen examples of these one-bar tail patterns, let's focus now on the two-bar tail patterns that can also signal a reversal. We can still consider these tails, since the pattern of a long, isolated extension is visible on the chart.

What we are looking for when attempting to spot pivot (reversal) points are indications that buying or selling has been exhausted. In other words, we want to see a panic in buying and selling. This is often the case when you see an open at one end of the price bar, and a close at the other end of the price bar. And we don't mean near the top or bottom of the price bar – we mean at the end of the price bar (ideally).

When you have an opening at the high for the day, and a close at the low, that's an indication that investors rushed out of a stock over the entire day. But often, it's an indication that ALL of the sellers have sold their positions that day. As a result, the following day, a rally is sparked and the bargain hunters push the stock higher. While the first day's bar is a decent indication that selling has exhausted itself, the reversal can be confirmed on the next day by a mirror image of that first bar. The second bar shows that the buyers really wanted the stock, and were in something of a panic to buy it, pushing the stock up to close at the high.

An example appears on the following page.

Here we see an example of this type of reversal signaled by a tail. On the first day we opened at the high and closed at the low, and made the opposite pattern on the next day. The more symmetrical the pattern is, the more meaningful it is. In other words, we want to see an open on the second day right where it closed on the first day. And, we want to see a close on the second day right at least as high as we opened at the first day. In this example, we got a very high trade on the second day, but the overall pattern was largely intact. No chart pattern will ever appear perfect.



In the next example you'll see the opposite situation, where we set up a bearish reversal after a bullish run. On the first day we'll see a close at the high for the day, and an open at the high for the second day. While not as crucial, we'd also like to see an opening price right at the low of the first day, and a closing price right at the low of the second day



a closing price right at the low of the second day

Here we didn't get the open and close at the lowest part of the bars for the two circled days, but we clearly got the close and the open at the top of the bars.

It's important that you open the second day where (or at least very near where) you closed the first day.

Trader's Tip: It would be rare to get a perfectly set-up tail indicating a reversal. There's almost always one component that doesn't quite appear as you would like. All the same, the principle is broadly applicable, and very effective.

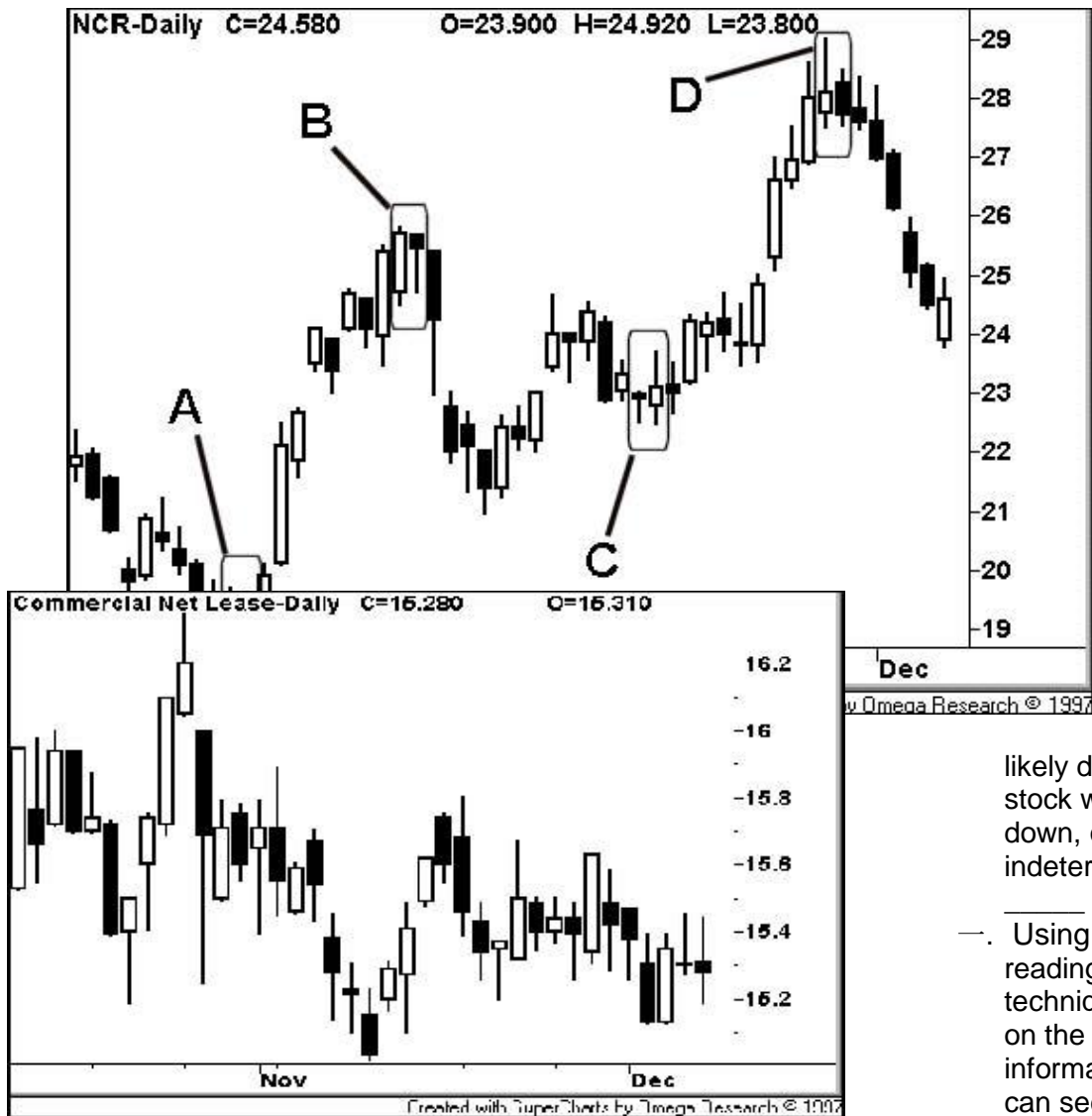
One idea to keep in mind is that the taller the price bars for both of the days, the stronger the signal. In other words, if the trading range jumps from an average of a 50 cent range to a 1.00 range for the 2 days in question, the chart pattern is that much more meaningful. Look for the long tails to be better indications of a reversal.

Checkpoint 2 At this point you should be able to identify the more common chart patterns and explain their interpretation. It is recommended that you be able to answer all these questions correctly before proceeding to the next section “Indicators – Interpretation”.

1. Identify the marked areas on the chart below as inside or outside days. A. _____
B. _____ C. _____ D. _____

2. Using candlestick chart reading techniques, based on the last information you can see, what is the next likely direction this stock will go? Up, down, or indeterminable? _____

3. Using candlestick chart reading techniques, based on the last information you can see, what is the next likely direction this stock will go? Up, down, or indeterminable? _____
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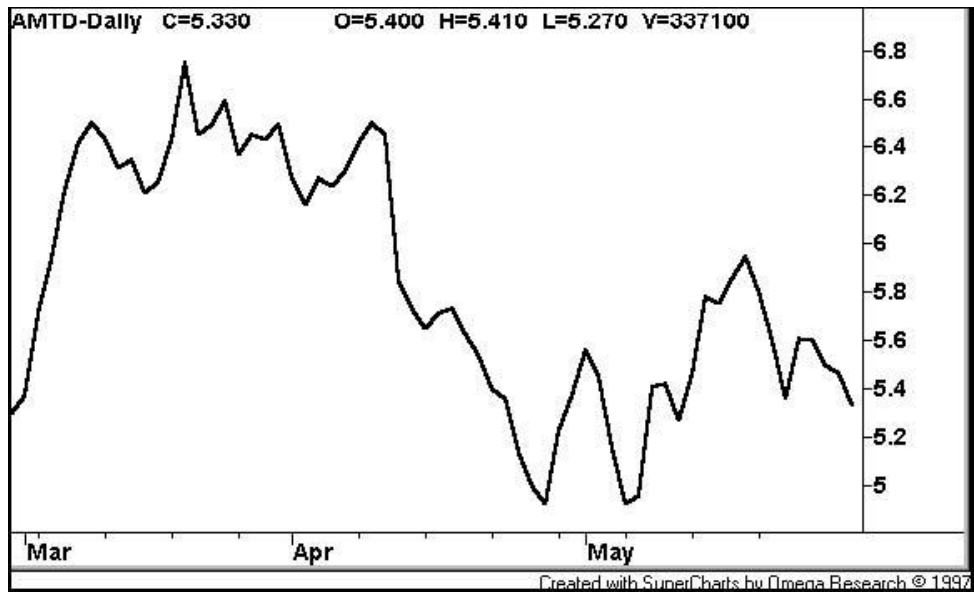
- Using chart reading techniques, based on the last information you can see, what

is the next likely direction this stock will go? Up, down, or indeterminable? _____

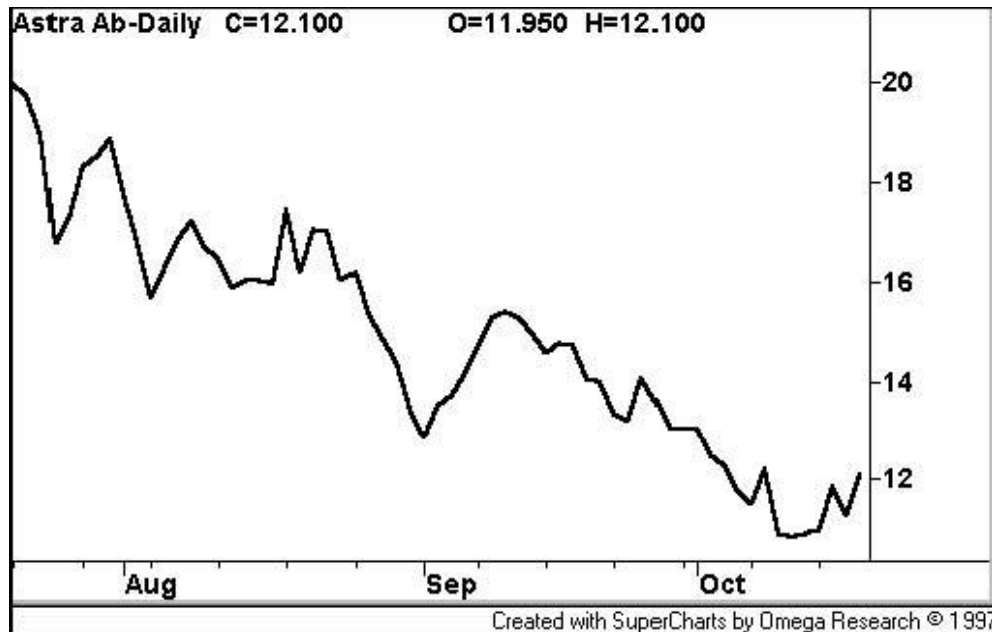
- Using chart reading techniques, based on the last information you can see, what is the next likely direction this stock will go? Up, down, or indeterminable? _____
- Draw the cup and handle lines that best fit on this chart:







Stop! You have completed section 2. You may check your answers with the answer key. We



recommend that you be able to answer all questions correctly before proceeding to the next



section.

Checkpoint 2 Answer Key

1. A. Inside
B. Inside
C. Outside
D. Inside

1. Indeterminable just using candlesticks
2. Up. This is a hammer formation
3. Down. This is a bearish outside reversal
4. Up. A close at the high indicates bullish momentum
5. Down. This is an Elephant Trunk sell signal
6. Down. This is a head-and-shoulder sell pattern
7. Indeterminable





9. Up. This is an upside down (bullish) head and shoulder pattern

10. Remember, there are also volume patterns that should correspond with the actual chart pattern when plotting a cup and handle formation.

Section 3: Indicators – Interpretation

So far we've only looked at price charts. However, some of the most useful technical charts are not price charts at all. Instead, these charts plot information such as moving averages, the moving averages of moving averages, the amount of change from one day's highs or lows to the next day's highs and low, the strength of price change, and so on. We'll take a look at the basic ones first, and then move on to the more complex charts.

DMI/ADX

The directional movement index analysis is one of the more powerful technical analysis tools. Developed by J. Welles Wilder, the directional movement index (or 'DMI') incorporates the intra-day highs and lows of a stock price, instead of the closing price. Wilder saw that the change in daily highs and lows from one day to the next could indicate bullishness or bearishness that was not visible when just looking at the daily closing price. So, the DMI lines plot those daily changes in the highs and lows. Intuitively, higher highs is bullish, and lower lows is bearish.

There are three components to Wilder's DMI analysis.

1. **DMI+** : The DMI+ line charts the daily change in intra-day highs. If the DMI+ line is going up, that indicates a high price that was higher than the high of the previous day. Likewise, if your DMI+ line is headed down, that indicates consecutively lower highs.
2. **DMI-** : The DMI- line charts the daily change in intra-day lows. Watch out! A rising DMI- line actually indicates lower lows. Since making lower lows every day is bearish, **during a downtrend**, you'll see a **rising** DMI- line.

NOTE: Usually when one of the DMI lines is rising, the other is falling. After all, if a stock is making intra-day highs that are higher than yesterday's high, it's not likely that it would also have an intra-day low that was lower than the low of yesterday. However, there are some cases where both lines will move the same direction.

3. ADX: The ADX line charts the average of the difference between the two DMI lines. In other words, the further apart the two DMI lines are, the higher your ADX line is. A high ADX line indicates the strength of the trend, since this would only occur after several days of consecutively higher highs or consecutively lower lows. As you may guess, a low ADX line indicates that a trend is relatively weak. **Remember**, a high ADX line only indicates strength of bullish and bearish trends. It does **not** determine in itself whether a trend is bullish or bearish – that is what the DMI lines are used for.

It's also important to note that the ADX line is actually a moving average of the difference between the DMI lines. If it were not a moving average, it would be far too choppy and inconsistent to use to spot trends. The usual timeframe for that moving average is 14 days, but you may want to try other timeframes. The important factor is that you have a smooth ADX line, but not one that moves too slowly to give timely information.

ADX/DMI analysis is much easier to understand when seen on a chart, which is what we'll do next. However, before you continue on, it's critical that you understand at least these basic premises.....

- 1) The DMI+ line charts the difference in highs from one day to the next. If the DMI+ line is rising, that is bullish since we are making consecutively higher highs. 2) The DMI- line charts the difference in lows from one day to the next. If the DMI- line is rising, that is bearish since we're making consecutively lower lows.
- 3) The ADX line is the average difference between the two DMI lines. A high ADX line indicates a high degree of separation between the two DMI lines, and therefore indicates a strong trend.

ADX lines and DMI lines are typically all overlaid on one another, since we are looking for crossovers of each of these lines as our signals. To the right, on the bottom half of the chart, we can see that the DMI- (thin solid line) line rose to very high levels in September, as the Nasdaq made lower lows nearly every day. In September, you can see that as the DMI+ line and DMI- line continued to separate, the ADX (dashed) line



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notice that the ADX line is a much smoother line than the DMI started to rise, indicating lines, since it is a moving average. In October we can see that a strengthening the high ADX line accurately indicates the strength of that downtrend. In October bearish downturn. When the downtrend ends in mid-October, we we saw the DMI+ can see that the ADX line begins to fall, indicating that the (thicker solid) line move difference between the two DMI lines was shrinking. In other very high, coinciding

words, the downtrend was losing strength.

with a bullish market.

We have seen a basic overview of ADX analysis, but we'll need to look at some more detailed facets of ADX chart interpretation. How exactly do you get buy and sell signals, and which signals are best ignored? The examples on the next pages will describe effective use of ADX/DMI analysis.

BUY Signals: Below in box 1, we can see that DMI+ crossed over DMI- in late July. The stock had been going up for the days before that, but by waiting for the actual DMI crossover, we were able to confirm the uptrend and avoid a false signal. It was an excellent purchase signal, as the stock did quite well in August.

SELL Signals: In box 2 we see that the DMI- line crosses over the DMI+ line, showing strength in



the downtrend. Again, this was a good sell signal as the stock crashed shortly thereafter.

In areas 3 and 4 we see ADX line crossovers of the DMI- and DMI+ lines, respectively. These crossovers are not an official signal, but you can see that in this case, they gave an early indication of things to come. We'll look at these ADX crossovers in more depth in the next example.

In looking at the same chart from earlier, we can see that the ideal points to buy and sell were at the times designated by areas 3 and 4. These were points where the ADX line crossed over the dominant DMI line. Or more correctly, these were points when the dominant DMI line crossed under the ADX line. The DMI lines (whether DMI+ or DMI-) reflect the day to day change in the highs or lows. In area 1 when the stock stopped making new lows, we realized that the sell-off was losing momentum. As a result, no new lows were being made and the DMI- line lost momentum. The inverse is true in area 4, when there were no new intra-day highs were being made. In both these cases, the buying or selling



pressure had been exhausted well before you actually get the DMI line crossover.

How can the DMI lines fall so quickly when the ADX line seems to move so slowly? Remember, the DMI lines are based on the day-to-day changes in the highs and lows. The ADX line, on the other hand, is a moving average of the last x days. The ADX line, like all moving averages, will move slower than the daily DMI gap that it's based upon.

While it is tempting to use the ADX crossover of one of the DMI lines to spot the end of the trend, it is not always the ideal signal of an end of a trend. If you look at the days before area 3 on the chart, you can see that the DMI- line and the ADX line crossed each other several times. It's better to wait for a clear signal.

Trader's Tip: Remember, just because you are using ADX to spot entry points doesn't mean you have to use it for your exit signals. Perhaps there are better exit signals that work with your investing style.

MACD

'MACD' is an acronym for Moving Average Convergence Divergence. As the name implies, this indicator is designed to spot moving averages that are indicating a new trend, both bullish and bearish. To officially give the signal, a fast moving average of the price must diverge from a slower moving average of the price.

Technical Note: It is not necessary to know the formulas used in MACD charting to successfully use the charts. However, in the interest of a complete understanding of all technical tools, the explanation is included here.

With MACD charts, you typically will see three different timeframes listed as numerical parameters of the study. The first is the number of bars used to calculate the fast moving average, the second is the number of bars used in the slower moving average, and the third is the number of bars used to calculate the moving average of the difference between the faster and slower moving averages.

For example, if you were to see "12,26,9" posted as MACD parameters, you would know the following three facts: 1) The faster moving average is based on the previous 12 bars. 2) The slower moving average is based on 26 bars. 3) The line that plots the difference between the two moving averages is based on the average difference between them over the last 9 bars.

While you are using these three pieces of data to draw MACD lines, you are only plotting two data lines on a chart. Here's the twist - neither of the lines on a MACD chart is a 12 day nor a 26 day moving average of a price. Rather, it is a plot of the difference between the 12 day moving average and the 26 day moving average. The difference between these two moving averages is considered the "fast moving average" line you see plotted on the MACD chart.

The second line on a MACD chart, the "slower moving average", plots the average of the previous MACD line. If using the parameters we mentioned above, this would be a 9 day moving average. In other words, we have taken the original MACD line and smoothed it even further by averaging it over 9 days, resulting in a less erratic (less error prone) line. This is called "double smoothing" since it is a moving average of a moving average.

The stumbling block that many people can't get past is that nowhere on the MACD chart is the 12 day nor 26 day moving average. Only the difference between those two is plotted. Since we already know that moving averages are inherently lagging, your intuition may tell you that a moving average of a moving average creates even further lag. However, MACD is one of the favored tools of technical analysts.

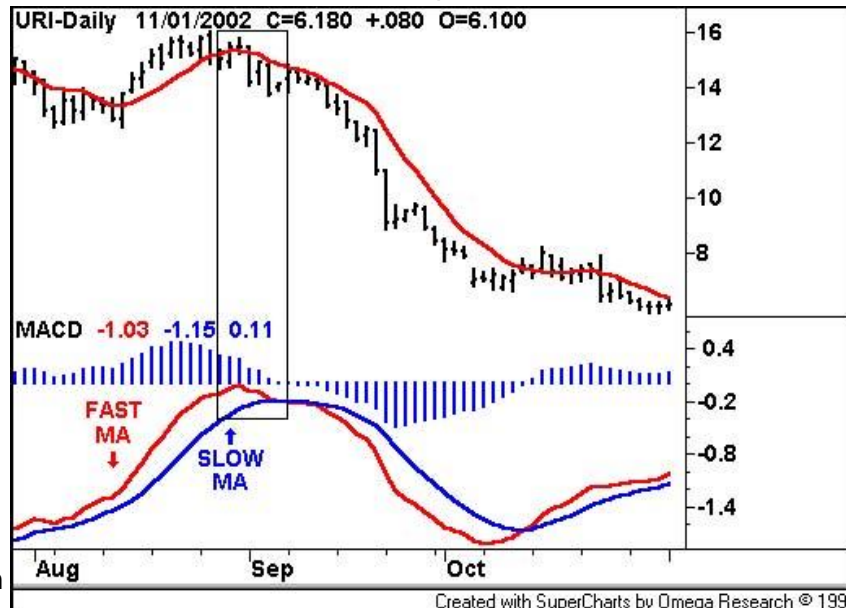
To use MACD analysis, the two moving averages are plotted on top of each other. When a new trend develops, the faster moving average is more reactive than the slower, and eventually the two cross each other. After a crossover, the faster moving average is said to have diverged from the slower moving average, and that often indicates a new trend has developed. This is better seen on the actual MACD chart.

To the right, in the bottom part of the chart, we can see that the faster moving average crossed under the slower moving average in early September. This bearish signal correctly identified that the stock had peaked (see the upper portion of the chart) and was beginning to fall.

Do you see the vertical lines in the MACD portion of the chart? Those plot the difference (degree of separation) between the faster and the slower moving average. When that

vertical histogram shows lines above 0, the faster moving average is greater than the slower. Vertical bars under the MACD zero line indicate that the faster moving average is less than the slower. It is here that you can determine what degree of divergence you're seeing. If the bars are relatively short, you may only have minimal divergence. Higher bars indicate a great deal of divergence. If the bars are shrinking, then you actually have convergence, which comes at the end of a trend.

In reality you don't necessarily need the vertical histogram to show the degree of separation. Many charts will have this, though, simply because the zero line can act as a consistent point of reference (where the two moving average lines are always in motion and difficult to gauge). On the chart you may even notice that the histogram largely moves in tandem with the stock itself.



On the next MACD charts, notice that the MACD analysis is actually based around the aforementioned centerline, or “zero” line. Sometimes the moving averages lines are above zero, and sometimes they are below zero. This is also a significant part of using MACD analysis, as the moving average line location, relative to the zero line, indicates the strength of that trend. Bullish MACD signals ideally come when the moving average lines are above the zero line. Bearish MACD signals ideally come when the moving average lines are below the zero line. It’s worth looking at examples of each of these scenarios.

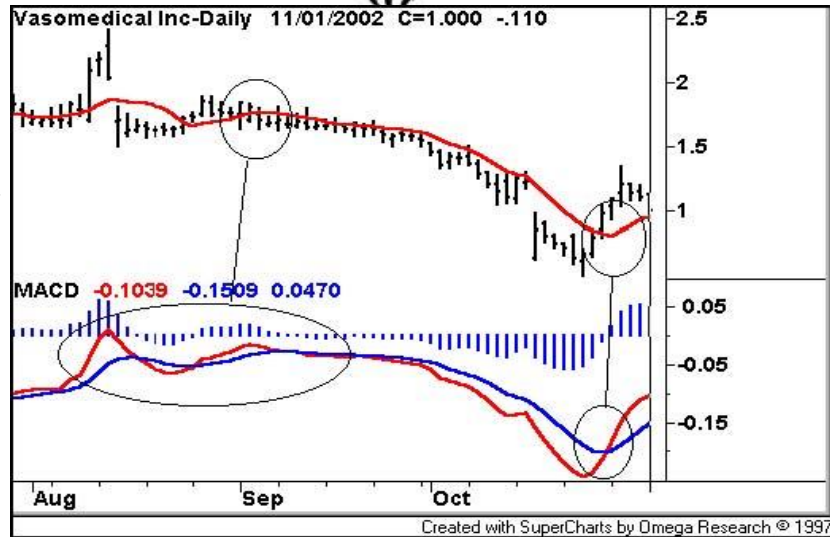
In this example we get the bullish “buy” signal when both moving average lines are just above the zero line, which was still bullish enough to be a good purchase signal.



Here we see the dangers of taking sell signals when the moving average lines are above zero. While we technically saw a bearish signal when the fast moving average crossed under the slower moving average, this stock still had a lot of bullish momentum. All four sell signals would have been errant signals.



Here we see a very good MACD sell signal. The stock had shown weakness, and the MACD lines below zero confirmed this. When we finally got the divergence in September, we see that it was a very good sell signal as the stock dropped about 50 percent.



Here's a good example of why bullish crossovers under the zero line aren't always good buy signals. We did get a crossover, but the moving average lines were well under the zero line. You can see that there was very little price appreciation of the stock, despite how bullish the MACD average line looked.



Stochastics

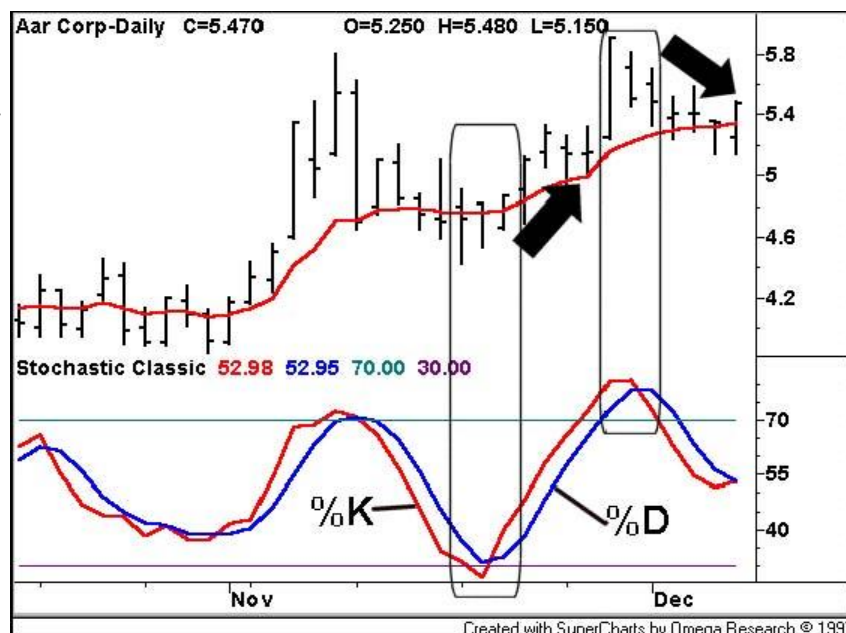
While MACD and DMI are designed to spot the beginning of new trends and generate signals, Stochastics is a tool that can be used to spot over-extended trends where a stock or index is overbought or oversold. This is a bit different from other technical indicators, since its purpose is to spot a reversal of a trend, rather than a trend itself. When you can spot these overbought or oversold situations, you can capitalize on the impending reversal by taking the opposite position (i.e. selling when it's overbought, and buying when it's oversold).

Stochastics are a mathematical study of where a stock closes in relation to its price range over a specific period of time. It is regarded as an oscillator, since it is designed to move back and forth only between 'overbought' and 'oversold' areas on a chart ranging from 0 to 100. Typically, readings over 80 indicate an 'overbought' condition, and readings under 20 are an indication that the stock or index may be 'oversold'. When the data of a stochastic calculation is not in one of these two regions on a chart, then the indicator is essentially ineffective, or neutral. A neutral stochastic chart does not necessarily mean that there is no trend – it simply means that a stock is not overbought or oversold.

There are many variations of stochastics, but the basic premise is two plotted lines that move in tandem at different rates of speed into overbought and oversold chart areas. Line 1, the faster moving line, is called "%K". The second line is called "%D", and is a moving average of "%K". Like any moving average, this "%D" will move slightly slower than the "%K" it is based upon. Since one moves faster than the other, as price levels change, the "%K" and "%D" lines will cross each other. It is these crossovers that can serve as buy and sell signals.

We will look at the exact mathematical formulas used in stochastics after this explanation of how to interpret stochastic charts. It's easier to first understand what you're looking at, and then understand exactly how we calculate that data. Like DMI and MACD analysis, it is not essential that you understand the calculation, but it is essential that you know how to interpret it.

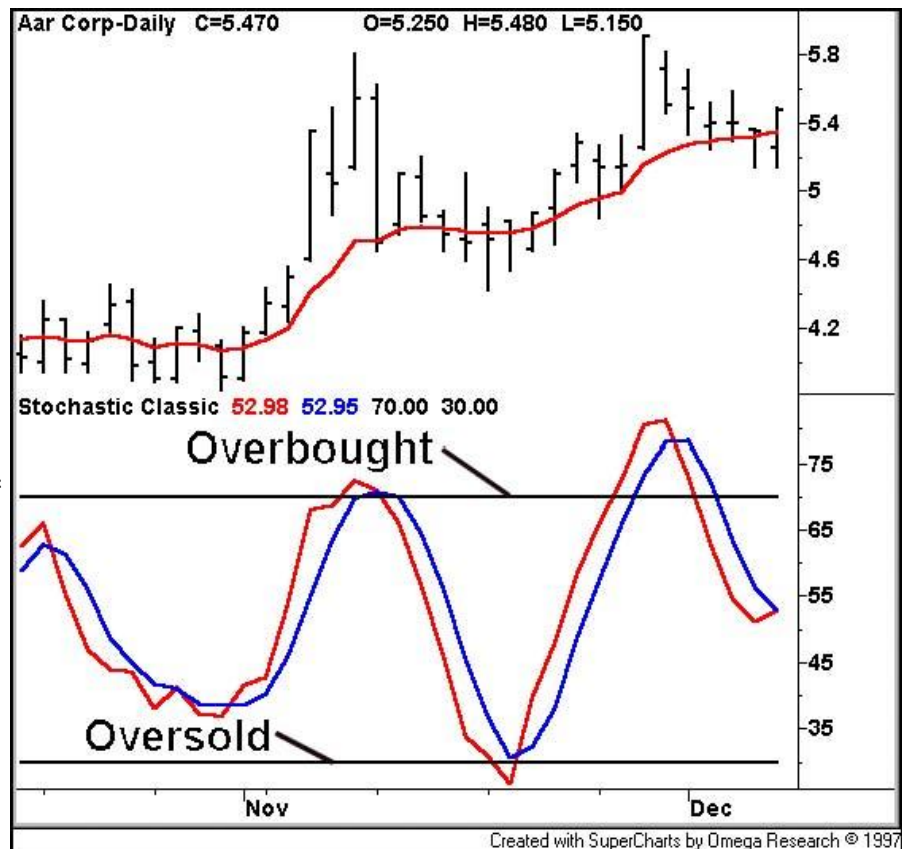
Here's an example of how stochastic crossovers indicate buy and sell signals. The faster moving %K crosses the %D. Notice that the first crossover successfully indicated the beginning of an uptrend, while the %K line crossing under the %D line signaled the potential downturn.



Now that we understand how crossovers generate signals, let's take a look at how to interpret overbought and oversold situations. We had mentioned that stochastics is regarded as an oscillator that moves back and forth between "oversold" and "overbought" regions on a chart. When the stochastic lines are between these two regions, the crossovers aren't as meaningful, since the price of the stock really hasn't worked itself into an extreme situation. The most meaningful crossovers occur after a major price run-up or a major sell-off. Typically, a stock is overbought when the stochastic lines cross above 70. A stock is oversold when the stochastic lines cross under 30. Some technical analysts use 80 and 20 as the thresholds, as we mentioned previously.

In the same example as before, we see that the crossovers occurred when the %K and %D lines were below 30 and above 70 on the stochastic chart. The crossovers that occurred in October and November quickly reverted, but the crossovers occurring on the extreme ends of the charts truly did indicate a reversal of an overbought and oversold situation.

As we had mentioned, it is not crucial that you understand stochastic calculations to effectively use stochastic analysis. In the interest of complete knowledge, though, here are the formulas used to plot the stochastic lines:



There are three pieces of data used; one for %K, and two for %D.

- 1 %K periods: the number of periods/bars the calculation will use
- 1 %D periods: the number of periods of %K to use in calculating the moving average of %K (again, fewer bars/periods gives you faster moving lines, but at the expense of erratic movement)
- 2 %D method: the method in which the moving average of %K is calculated (simple, exponential, variable, are just a few of the options)

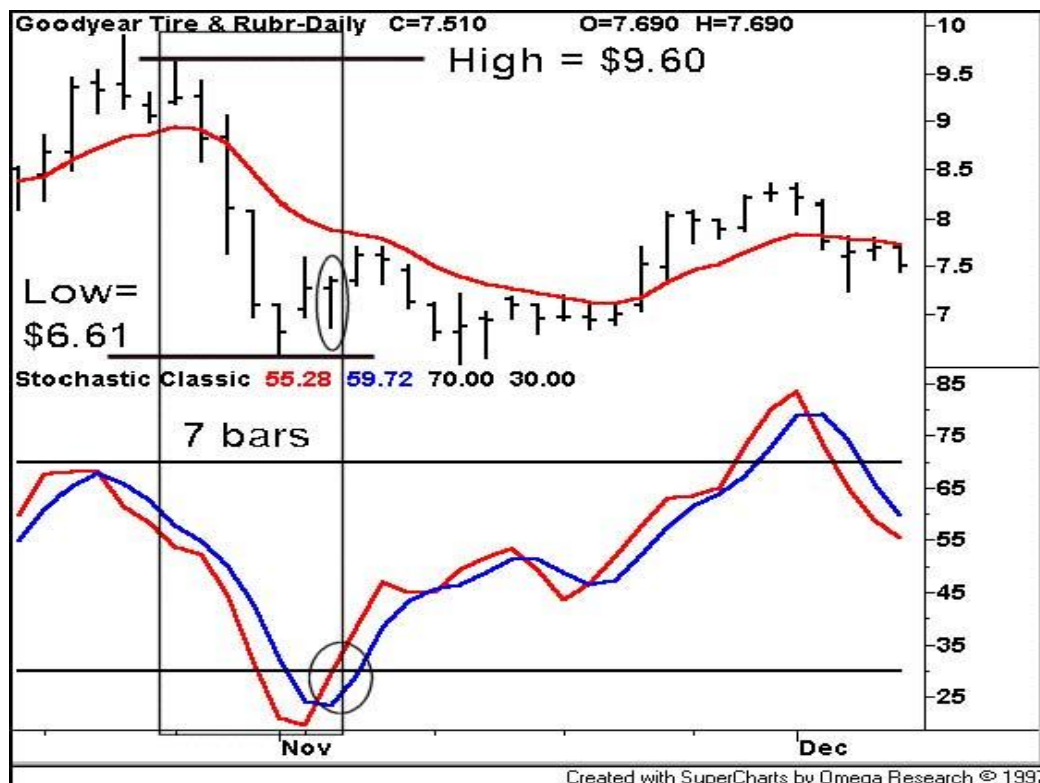
The formula for the %K line is: $\frac{\text{Closing Price} - \text{Lowest Low in \%K periods}}{\text{Highest High in \%K periods} - \text{Lowest Low in \%K periods}} \times 100$

In the upper portion of the equation, we can see the numerator yields the current difference between where the price is now, and what the lowest price was in that period of time. In the lower portion of the equation, we can see that our denominator is the high-to-low range over that same time period.

It is this denominator that allows us to compare “apples to apples”, as it provides the range of the stock over the last number of price bars used in the calculation. In other words, if the current closing price is 50, the highest high was 50, and the lowest low over the number of bars in the study is 30, then we would get a very high stochastic number. But what if the high in that same period was as high as 70? If that were the case, then our current price at 50 wouldn’t indicate anything in the way of “too high” or “too low”. It is because of this denominator that we can get a relative level (a standard) of pricing for a stock at any given time. (We multiply the whole ratio by 100 simply to give us a whole number scale rather than a fractional or decimal scale.)

The formula for the moving average of %K, the %D line, is the same that we had discussed in section 1 of this workbook, but we are now applying the parameters called for in our stochastic calculation.

Let’s work through an example. Our parameters are 7 bars worth of data for GoodYear Tire Company (GT). During those 7 days we saw a high of \$9.60 and a low of \$6.61. Our last price was a close of \$7.34. All of this data is contained within the box marked on the chart.



Based on that information, our formula would look like this:

$$\frac{\$7.34 - \$6.61}{2.99} \times 100 = 0.73 \times 100 = \mathbf{24.4} \quad \$9.60 - \$6.61$$

If you look closely at the chart, our %K line (the faster moving stochastic line) is around the 24.4 level on the last day of that 7 bar period. This would serve as a buy signal for two reasons.

1. We got a crossover of the %K line over the %D line.
2. We got this crossover in the “oversold” area under the 30 level.

Our slower %D line, again, is just the moving average of the %K line. The crossovers you see in mid-November aren’t terribly important or meaningful, since they occur in the neutral range of the overbought/oversold chart. There are several variations of stochastic calculations, but this is the basic foundation of all of them.

We’ve seen how stochastics can spot situations where stocks are oversold (undervalued) or overbought (overvalued). However, it certainly is possible for a stock to stay overbought or oversold for quite some time. For this reason, stochastics shouldn’t be your only tool to use when looking for reversals, but stochastics can be a very good indicator when used with other information.

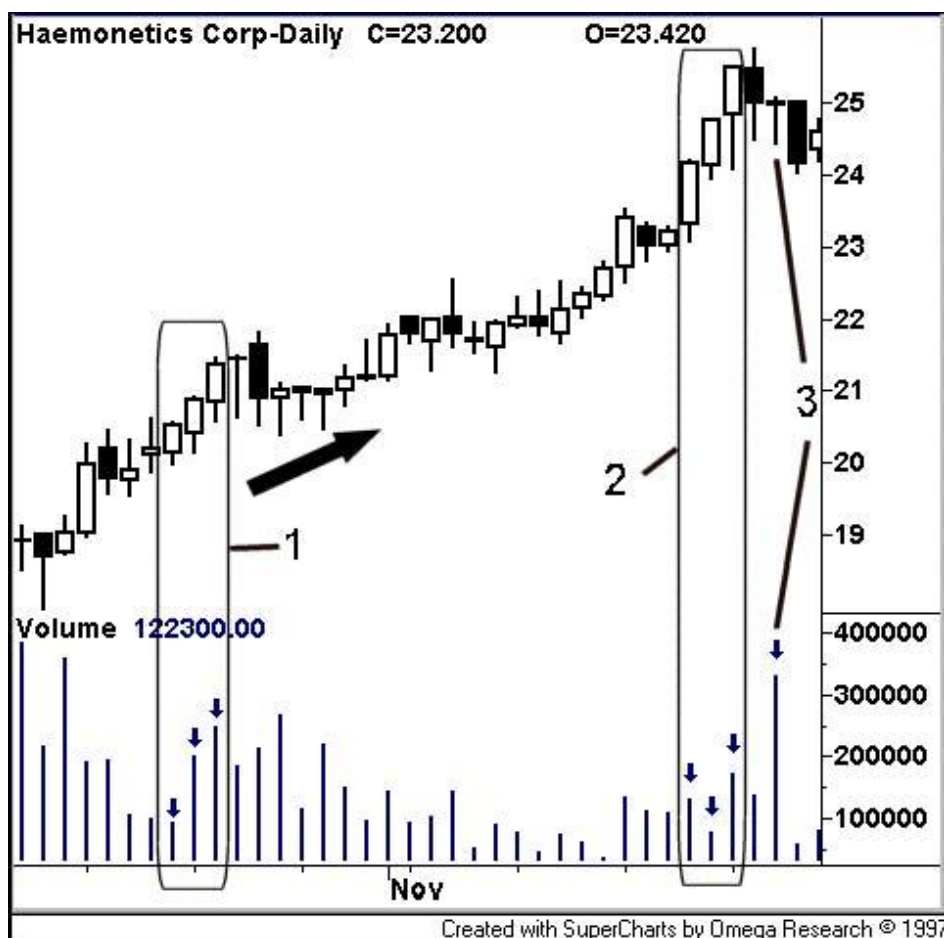
Volume

While trade volume is not the same type of data as closing prices, highs, and lows, it can serve to confirm the conviction of the market. It can also mark major pivot points, as investors rush in or rush out of a stock, depending on the news.

Conventional Volume Interpretation

One of the interpretations of high volume associated with major moves indicates that the majority of the market is in agreement with a movement, and will most likely support more price changes in that direction. Conversely, price changes made on relatively low volume indicate that there may not be many people who agree with a price change, and are unwilling to buy or sell at those prices (in hopes of a reversal). When the majority of the market is moving one way, you want to take notice. When a small minority (low volume) causes a major price change, you may not want to count on the price continuing to move that direction – there just aren't enough buyers or sellers to support that change.

In area 1 we see three consecutive days of gains, and each one of these were made on higher and higher volume. This ultimately set into motion a very nice bull trend. We also saw three consecutive gaining days marked in area 2, but what is different about these? The second day of the three was on much lower volume, and the third day of area 2 was still on relatively low volume. These big gains on low volume days was our first red flag that the rally was winding down. This was confirmed on the single day marked “3”, when there was an enormous amount of selling on very high volume. When you see a lot of buyers, it's bullish. When you see a lot of sellers, it's bearish. In the case of area 2, despite a rising price, we saw that there were not enough buyers to support continued rising prices.



Volume as an Overbought/Oversold Indicator

However, high volume must not be confused with “abnormal” volume. It is these extreme spikes in volume levels that can often serve as a pivot point, or a reversal. In this case, instead of high volume supporting the price movement, extremely high volume indicates an exhaustion of that price movement. In other words, most all of the buyers or sellers all rushed in or out at the same time, and there are very few left. As a result, the stock is likely to reverse.

Sometimes when volume is extremely high, and the price gaps up or down, that can be a sign that all the owners are selling at once, or all the buyers are buying at once. In this example, we can see that the stock took a major fall on very high volume. Shouldn't this suggest that a bearish move was in motion? Normally yes, but in this case, all the sellers got out quickly, and apparently without regard for the price at which they sold. When everybody sells at the same time, there aren't any sellers left – only buyers are left. As you can see, the buyers benefited from the major sell-off. The extremely high volume acted as a pivot, or a reversal point.

We've seen how volume can act as a significant signal. Unfortunately, there are no specific rules about volume signaling a strong trend or setting up a likely reversal. What's more, there may be times when volume tells you very little. Volume is the sort of thing that must be considered on a case-by-case basis. Like all things, experience will help you determine how and when to apply volume information.



Relative Strength

There are two types of technical analysis that utilize the idea of (and name) relative strength. However, they couldn't be any more different than one another.

The tool called 'Relative Strength' is interpreted exactly as your intuition would tell you. Some stocks or indices perform relatively better than others. You want to own the top performers, so you purchase stocks that have higher relative strength in comparison to your alternatives.

The Relative Strength Index, though, is something completely different. The Relative Strength Index only compares the performance of a security with its own historical performance. The purpose of this tool is spot instances where a stock is likely to reverse after a significant run-up or significant sell-off.

We have only grouped these two types of analysis together to make sure that you realize that they are NOT the same thing, and that you understand the difference.

Relative Strength Index

This oscillator indicator was developed by J. Welles Wilder, Jr. The Relative Strength Index (or RSI for short) is similar to stochastics in that it looks to identify points where a stock is either overbought or oversold, and a reversal is likely. The RSI is also plotted on a scale of 0 to 100; readings under 20 typically indicate an oversold (undervalued) condition, and readings above 80 usually indicate an overbought (overvalued) condition. RSI calculations are done a bit differently than stochastics, though. There are numerous variations, but here is the basic formula for RSI calculations:

$$RSI = 100 - \frac{100}{1 + (U/D)}$$

U = Total combined gain of all the up (gaining) / number of up days used
D = Total combined loss of all the down (losing) / number of down days used

(yes, the U and D figures end up being just simple averages)

Obviously you'll need to decide how many days to use in the calculation. If you choose 20 days, and 15 of them are "up", then the remaining 5 will obviously be "down". If the sum total of all the up days is 18.75, then your "U" figure would be 0.937 (or 18.75/20). If the total loss of all the down days is 7.25, then your "D" figure would be 0.362 (or 7.25/20). That would give you an RSI score of 72.1.

$$100 - \frac{100}{1 + (0.937/0.362)} = 100 - \frac{100}{3.59} = 100 - 27.9 = 72.1$$

Let's look at an example of RSI. Here we see shares of Abiomed Inc. (ABMD) falling sharply. If shares fall too quickly they often reverse with an equal amount of strength. To determine exactly when shares are likely to reverse, we used fourteen days worth of data to calculate RSI. Of those 14 days, 10 were down days, and the other 4 were up. Let's say the average gain was 0.10 (U = 1.40 total gain over the 14 days), while the average loss was 0.40 (D = 5.60 total loss over the 14 days). We now have enough data to calculate Abiomed's relative strength index number.

$$100 - \frac{100}{1 + (0.25/1.25)} = 100 - \frac{100}{1 + 0.2} = 100 - \frac{100}{1.2} = 100 - 83.33 = 16.67 \approx 17$$

And we can see in the circled areas that our RSI line hit 20 and accurately signaled a reversal. Like stochastics, the RSI is not perfect, but it can support other indications you may be getting.



Trader's Tip: As you study the Relative

Strength Index more in other educational sources, you will come across numerous variations of the RSI formula. All have both good and bad aspects, and you must determine for yourself which one works best for you. The formula above, though, is the calculation that most of the other formulas are based upon.

Relative Strength Not to be confused with the Relative Strength Index (or RSI), relative strength is the measure of how one investment instrument is doing in comparison to another. The application of this theory is simply to buy the strongest performers, and avoid the weaker ones. Obviously, to compare two items, you'll need to select two. The most common analytical comparisons are between an individual stock and its corresponding index, but you could also compare a stock to its sector, or a sector to the overall market. In all of these cases, you are simply trying to identify out-performers.

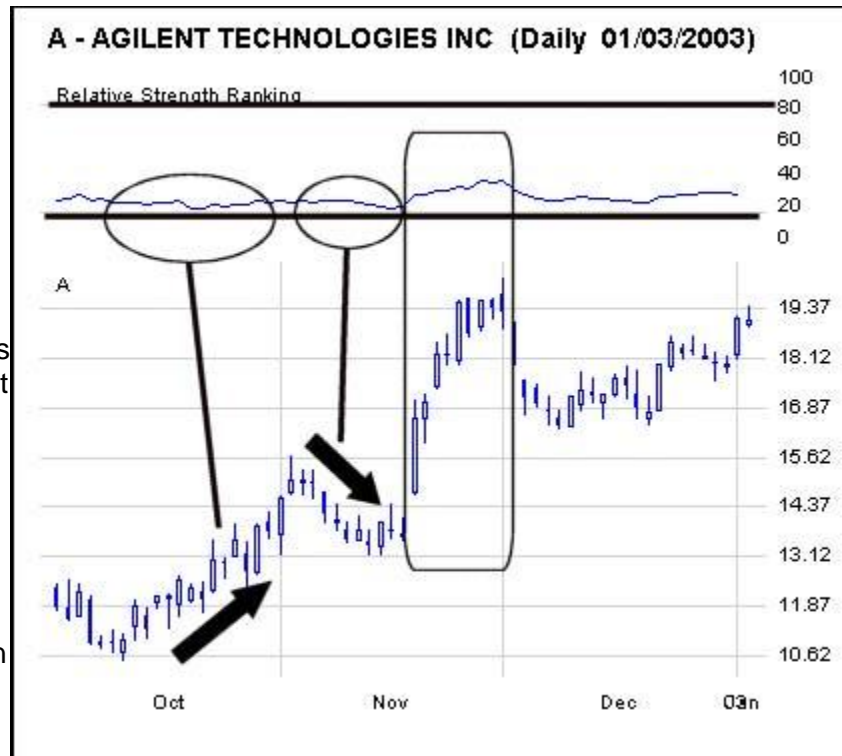
We won't show or explain any of the formulas used in relative strength analysis, as there are too many variants, all of which show the same principle. We only need to know two pieces of information. First, we'll need to determine what particular timeframe we wish to study. Second, we'll need to be able to calculate the percentage returns of each security (or index) used in our study over that selected period of time. That data is then ranked. Most charting or spreadsheet software does the ranking for you.

In a very basic example, let's say that we would like to know the strongest performing individual stock in the S&P 500 over the last five days, and compare that to the overall S&P 500 performance. Each of those 500 stocks has some sort of percentage return (whether it be positive or negative). That return is calculated, and then each of those 500 stocks is ranked in order of their percentage return. The one with the highest return has the highest relative strength, and therefore will have the highest relative strength score of 100%. Likewise, the one with the lowest percentage return (possibly a negative return) will have a relative strength score of 0.0%. The other 498 stocks will fall somewhere in between, according to how well they did over that five day period.

Trader's Tip: It's important to note here that there are many variations of relative strength. Some strength scores are plotted on a scale of 0 to 100, while others are plotted on a decimal scale of 0.0 to 1.0. Don't be overly concerned if your data appears vastly different than other examples, as all relative strength charts are showing essentially the same thing – a performance comparison. In this workbook we will be showing examples of Relative Strength on a scale of 0 to 100, and we will also show a decimal scale example.

Here's an example of a Relative Strength scale from 0 to 100. We can see that Agilent Technologies (A) had relatively low strength scores even though the share price was rising. How is that? Remember, even though Agilent may be on the rise, the rest of the market may be growing at an even faster rate. With scores around 30, Agilent was still only doing better than 30 percent of the rest of the market. Even with the jump you saw in late November, shares of this stock still didn't keep pace with most others.

Notice in early November that shares dropped from 15.40 to 13.30. While this was a major blow (about a 13 % loss), notice that relative strength really didn't change much. This is because the rest of the market experienced a similar setback. Keep in mind that relative strength is only a measure of how well one investment does in comparison to another, regardless of whether or not either are doing well. In other words, a stock may lose 10%, but if the rest of the market loses 20%, that stock will still have an outperforming relative strength score.

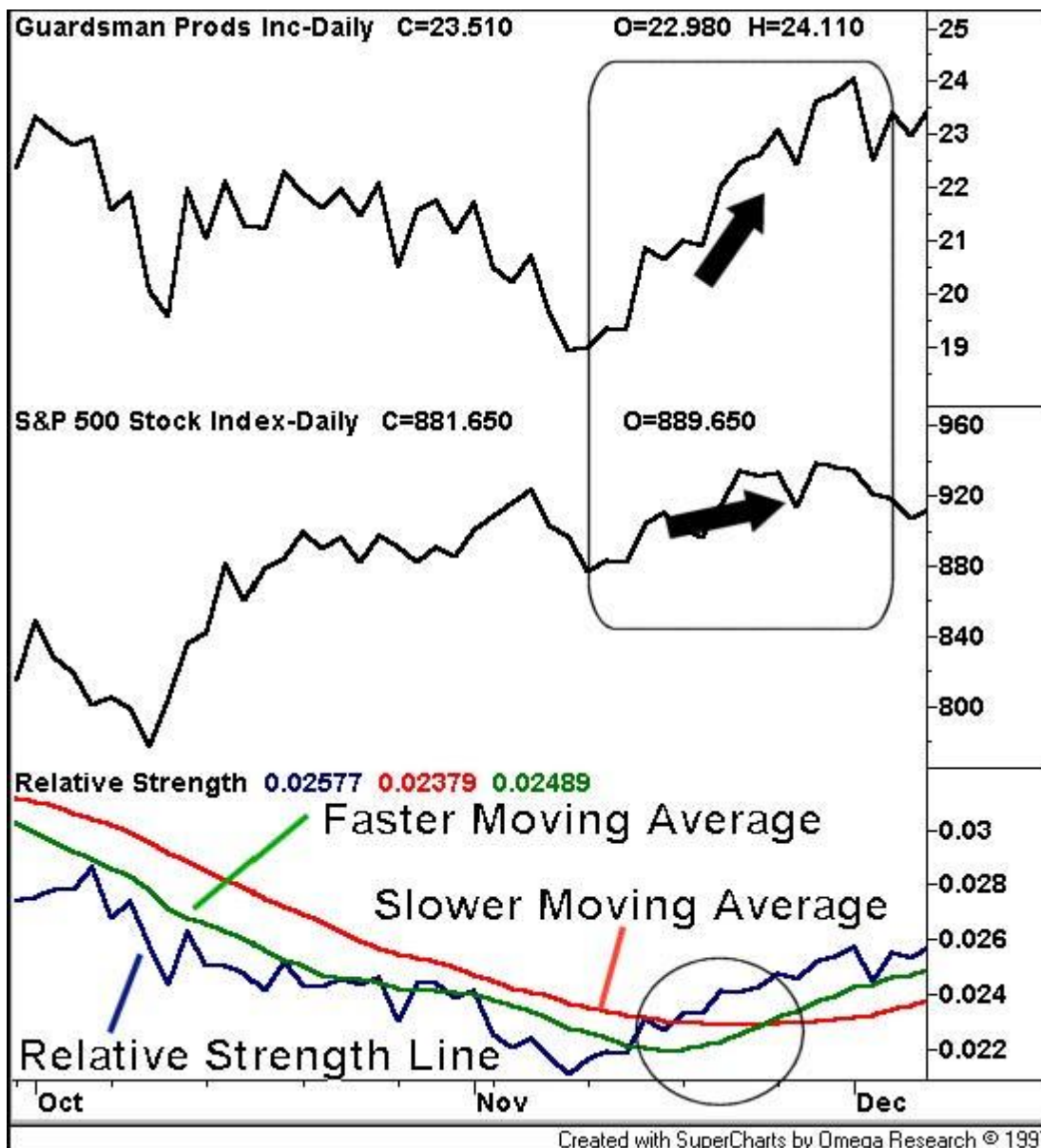


Trader's Tip: Remember, a high relative strength score does not necessarily mean "buy". Stocks can and do decline even with a score of 100. That's the shortcoming of Relative Strength analysis; it doesn't indicate stocks that are going up. It only indicates stocks that are doing better (or less worse) than the rest of the market. You still don't want to buy a losing stock, even if it is the best relative performer of a bear market.

Before we actually look at an example of Relative Strength on a decimal chart ranging from 0.0 to 1.0, let's review exactly what we're going to see. The two pieces of data we're comparing are the price of Guardsman Products shares, and the S&P 500. So, both are plotted on the top portion of our chart. The lower portion of our chart displays the relative strength line, along with two other lines.

The actual relative strength line charts the relative performance of the stock compared to the index on a day-by-day basis. As you can imagine, this line can be fairly erratic, especially when the stock and the index move in opposite directions. To combat that problem, we smooth out the relative strength line by creating two more moving average lines of it. One is a faster moving average, while the other is a slower moving average. It is these two moving average lines (not the actual relative strength line) that serve as our "signal" lines. There are a couple of interpretations of relative strength data. The first is a crossover of the relative strength lines, which confirms that the stock has either more or less strength than the index, and we buy or sell accordingly. The second interpretation is simply the direction that the relative strength line is pointed. If it's rising sharply, it can still serve as a buy signal even if it is below other relative strength moving average lines.

This is not to say that we ignore the actual relative strength line; it can provide important clues about a stock's strength. Many analysts also look for crossovers of all three lines, but at a minimum, you will want to notice if the relative strength line is rising or falling. A falling line indicates a weakening stock, while a rising line indicates a strengthening stock. Let's review what all these lines look like on a chart.



We can see the declining relative strength of Guardsman throughout October. While the S&P was growing at a moderate pace, the individual stock was falling. But look at the crossovers of the two moving average lines circled in mid-November. They correctly show that Guardsman was beginning to outperform the index, and would have been a good “buy” signal. Even though both were going up, the stock was going up at a faster rate than the index, or showing more strength. Some analysts would have bought when the relative strength line crossed the slow moving average line, although most wait for the fast moving average crossover. Like all analysis, you can interpret which crossovers to use as you gain experience.

Trader's Tip: On a decimal-based relative strength chart such as the one above, the absolute level of the relative strength (i.e. where it falls between 0.0 and 1.0) is not as important as actual trend in relative strength.

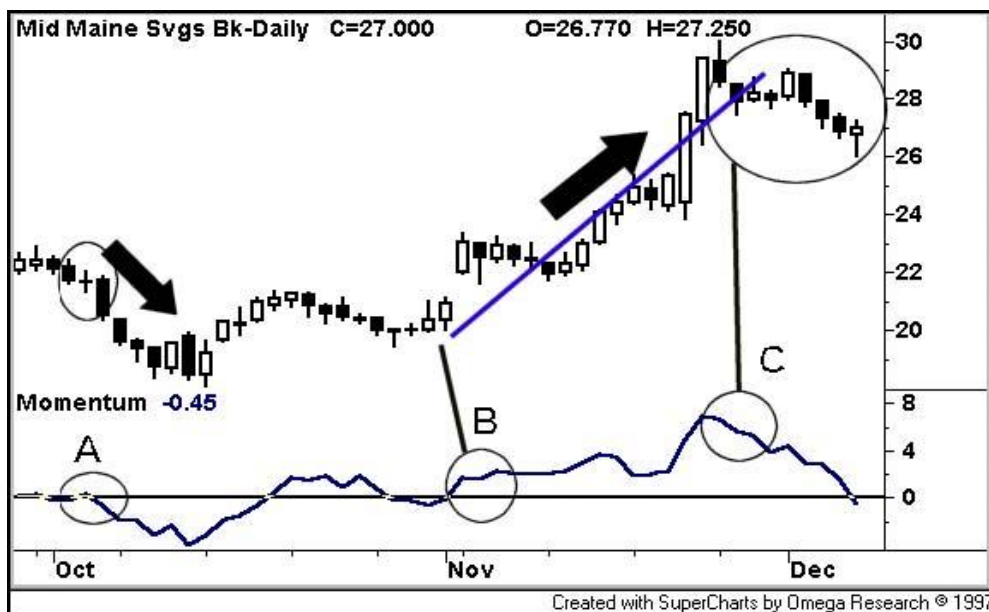
Momentum

One of the simplest indicators to use when looking for stocks that are accelerating is called momentum. When a stock is going higher, momentum is high and/or rising. When a stock falls, momentum falls. In other words, momentum can be thought of as a measure of rate-of-change (in fact, some analysts call this indicator 'ROC' as an acronym for rate-of-change).

The momentum line is plotted on a scale above and below zero, and just measures the price of today in comparison to the price of x days ago. Obviously you will need to determine what length of time you want to study. Most momentum indicators actually plot a moving average line of the momentum calculation, to help smooth out the day-to-day "noise", or volatility. As always, the more days you use, the smoother your lines will be, but at the expense of delayed signals.

In general, you would like for your momentum to be above the zero line and rising to buy, and for sells, a falling momentum line under zero is ideal. Let's take a look at an example.

In area A we can see the momentum line cross under right before the stock fell. This would have been a good shorting opportunity. It wasn't until November (in area B) that we saw the momentum line get above zero and stay there. This would have been an outstanding



buy signal as the stock moved from 21 to 28.

Finally in early December we saw the momentum line begin to turn down off of its high near 7. This was a good sign that the price run-up had exhausted the momentum, and it was time to take profits.

Acceleration Bands

We have seen how a moving average envelope or Bollinger bands can signal instances where a stock has broken out of its “normal” mode on its way to a major price change. A similar indicator developed at BigTrends.com is a set of Acceleration Bands. These are lines plotted equal distances above and below a simple moving average of a stock. They appear very similar to a moving average envelope, but they’re not quite the same.

The two acceleration bands expand and contract (much like Bollinger bands) around a moving average as the high-to-low range increases. The more a stock price moves within a day, the wider the trading range. And the wider the trading range becomes, the greater the Acceleration Bands expand. As you may guess, the more a stock begins to move (up or down), the more difficult it becomes to see trades outside of the bands, since they widen. But when you do start seeing trades outside of the Acceleration Bands, look out! That stock has plenty of momentum. When you see a close outside of the bands, that serves as the buy or sell signal.

To calculate the Acceleration Bands, you just need to know the net directional movement (or, the high minus the low) and divide that over the average price of the stock. To get that average, we simply add the high and low price together, and divide that by two. The formula varies slightly between the upper band and the lower band.

So exactly how does this work? Remember, we’re looking for two possibilities here. We want to see breakouts to the upside as well as the downside. To spot bullish acceleration to the upside, we want to plot a line above the moving average that shows that a stock is really taking off. To do that, we will incorporate the intra-day high trades into our upper band calculation, and draw that line accordingly above our moving average line.

$$\text{Upper band} = \frac{\text{high} \times (1 + 2 (\text{high} - \text{low}))}{(\text{high} + \text{low})/2}$$

To smooth this line out and make it useful, the calculation is averaged out over a period of several days. An average of 20 days tends to work well, but you may want to experiment with that number.

The lower band is calculated using the lows instead of the highs, since we’re trying to spot instances where a stock is making lows with increased acceleration. The formula for the lower acceleration band is:

$$\text{Lower band} = \frac{\text{low} \times (1 - 2 (\text{high} - \text{low}))}{(\text{high} + \text{low})/2}$$

Like the upper band, you would actually average out this calculation over a period of days to make it a smooth and useful line. It is best to use the same time period for the upper and lower band averages. So if you use 20 periods to draw your upper line, you should use 20 for your lower line. You may also want to plot a 20 period moving average of your closing price, which can serve as something of a center-line between your two Acceleration Bands.

As before, the concept of Acceleration Bands is best explained with a chart. In November we can see that we started getting weekly closes above the upper band, as the S&P 100 moved higher. The same scenario played out June a few months later. Notice that the Acceleration Bands widened in early May, following a week that saw drastic changes. The bands widened because the weeks leading up to that saw very large high-to-low ranges. It was important that this occurred, as it allows us to spot true acceleration and not be misled by short-lived volatility. The rate at which your bands contract and expand can be adjusted by the number of periods you use to calculate your average. In this example, we used a 20 period average.



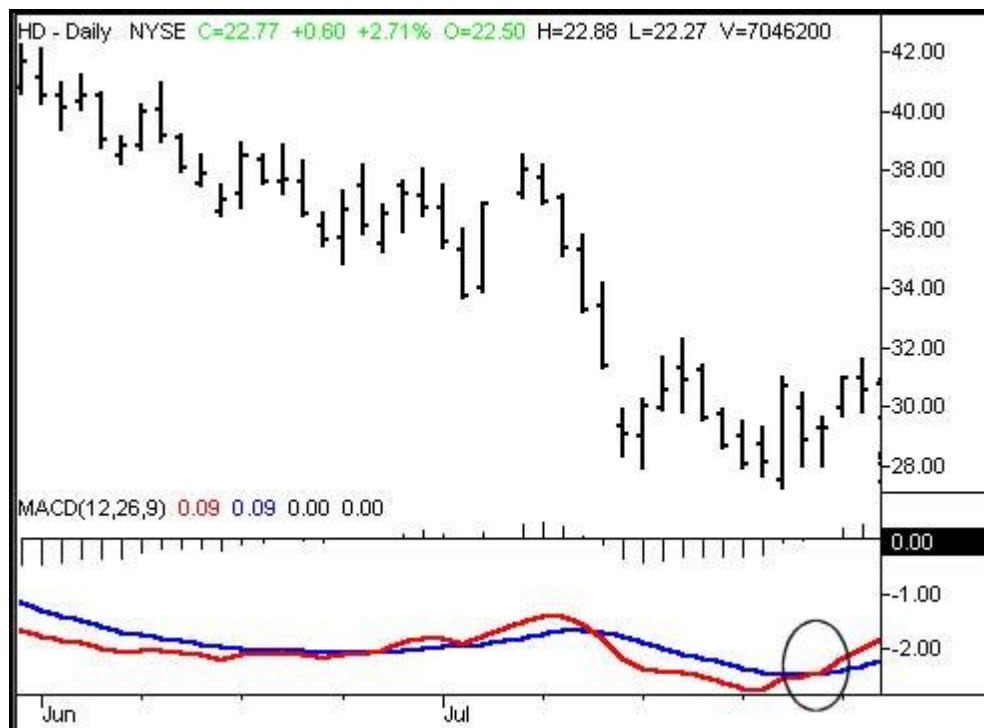
At this point you should be able to identify and interpret common technical indicators. It is recommended that you be able to answer all these questions correctly before proceeding to the next section "Sentiment Indicators".

1. Which of the following statements are true? A. _____ DMIminus lines will fall if we make lower lows
B. _____ DMIplus lines will fall if make lower highs C. _____ ADX lines will start to rise immediately before a DMI crossover D. _____ Falling ADX lines are sign of a downtrend
2. True/False. DMIplus lines can never move the same direction as DMIminus lines on the same day?
3. DMI lines are calculated with which of the following data (check all that apply): a. _____ Opening price b. _____ Closing price c. _____ High price d. _____ Low price
4. Match each the following parts of the DMI indicator on the chart below with it's appropriate letter: DMIplus, DMIminus, ADX
 - a. _____
 - b. _____
 - c. _____
5. On a MACD chart, what is the event that serves as a signal?
6. On a MACD chart, the slower moving line is (check all that apply)
 - a. _____ A moving average of the closing price
 - b. _____ Smoother than the faster moving line
 - c. _____ A moving average of the faster moving line
 - d. _____ The slower moving average of the two moving averages listed in the parameters of the MACD chart (i.e. the 26 bar average in a "12,26,9" MACD chart)
7. On a MACD chart, what do the vertical bars attached to the 'zero-line' indicate?
8. True/False. Stochastics is based on the assumption that a trend will reverse at a certain point.
9. True/False. The two stochastic lines are both moving averages of the closing price.
10. True/False. When the stochastic lines enter the "oversold" region on a stochastic charts, that's a 'buy' signal
11. If a stock increases on higher volume and decreases on lower volume, that stock is more apt to go higher/lower (choose one) _____.
12. The relative strength index is most like which one of the following:
 - a. _____ DMI/ADX
 - b. _____ MACD
 - c. _____ Stochastics
 - d. _____ Relative Strength
13. How does relative strength analysis differ from the relative strength index?

14. True/False. If used properly, relative strength analysis will always find you stocks that are going up, even in a bear market.
15. If you were looking to buy a particular stock, you would want to see its momentum indicator line in which of these two conditions?
- under the zero line and rising
 - above the zero line and rising
16. Acceleration bands have which of these characteristics of Bollinger bands: (check all that apply)
- _____ They are based on the closing price
 - _____ They adjust for volatility (high-to-low range)
 - _____ They are plotted a certain standard deviation above and below a moving average line
 - _____ Prices outside the bands may indicate new momentum
17. Based on DMI analysis, what is the next likely direction this stock will go? Up, down, or indeterminable? _____
18. Based on MACD analysis, what is the next likely direction this stock will go? Up, down, or indeterminable? _____
19. Why would this MACD crossover not be a very good 'buy' signal?
20. Based on stochastics, what is the next likely direction this stock will go? Up, down, or indeterminable? _____
21. True/False. This is not a good stochastic 'sell' signal. _____













22. Is this rising momentum line a good 'buy' signal? _____

23. Based on the momentum indicator, would you rather buy or sell here? _____ 24. Based on the Relative Strength Index, is this a 'buy' or 'sell' signal? _____

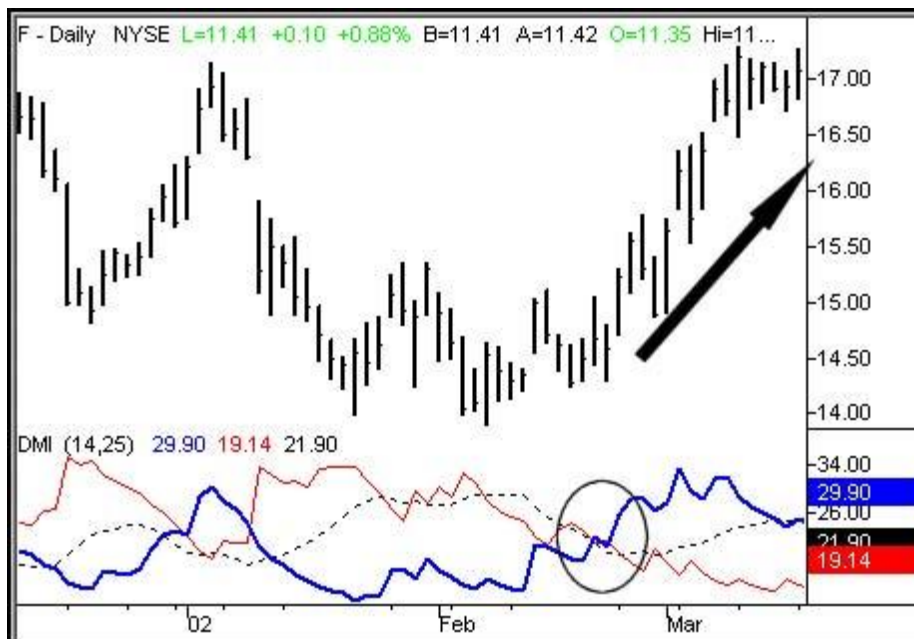


25. Concerning volume, what would be the exception to the rule of thumb that says you want to trade with crowd? In other words, why would you not want to take a position even though an increasing number of investors are suddenly forcing a stock in a certain direction?

Stop! You have completed section 3. You may check your answers with the answer key. We recommend that you be able to answer all questions correctly before proceeding to the next section.

Checkpoint 3 Answer Key

1. B is true. The rest are false
2. False. Remember, DMI lines are based on highs and lows. It is possible to make a higher high AND lower low on the same day
3. C and D only
4. a. DMIminus
- b. DMIplus
- c. ADX
5. Usually a crossover of the two moving average lines
6. B and C only
7. They represent the quantitative difference between the two moving lines on the MACD chart
8. True
9. False. The second moving average (%D) is a moving average of the faster moving average (%K)
10. False. The buy signal is when the stochastic lines leave the oversold region
11. Higher. Higher volume indicates what the majority of investors think of a stock
12. Stochastics. They are both oscillators
13. Relative Strength is an indication of how a stock or index is performing in comparison to something else (an index or another stock). The theory is to buy only the strongest stocks. The Relative Strength Index is an indication of how a stock or index has performed in comparison to its own recent performance, and attempts to spot points where it is likely to reverse.
14. False. Relative strength only points out stocks that are performing better than others. It is still possible for a stock to outperform others simply by losing less.
15. B
16. B and D
17. Up





18. Up

19. Because the crossover occurred well under the zero line, indicating overall weakness.



20. Down

21. True. Although it is stochastically 'overbought', the stochastic lines are still well above the threshold line. They need to fall back under that line to give the 'sell' signal.





22. No. Although it is rising, it is below zero, indicating general weakness.

23. Sell. 24. Sell



25. Sudden spikes in volume indicate panic, and trades based on panic too often and too quickly



reverse as soon as the panic subsides. While you do want to see increasing volume to indicate support and interest for a trend, you don't want to see huge volume spikes with major price moves. Those types of charts may be a sign that any buying or selling pressure has been exhausted, leaving the stock nowhere to go but the other direction.

Section 4: Sentiment Indicators

Not all analysis has to involve price charts. In fact, we've seen how non-price data is sometimes more predictive than price-related information, especially when spotting intermediate-term trends. As market analysts, it's important to understand that the market is driven up or down by what investors do. If they are buying, the market goes up. And if they are selling, then the market goes down. If you can correctly identify how investors feel at any given moment, you can reasonably predict their next move, whether it buying or selling. Sentiment indicators are designed to do just that.

Sentiment, however, is a tricky subject. At BigTrends, we are sentiment analysts, but we are also contrarian analysts. By that we mean that we take the opposite position of the majority of the crowd. The aim is to spot points in time when a reversal (bullish or bearish) is inevitable. And when does that happen? These reversals typically occur right when the vast majority of the investing public is in agreement with a bullish or bearish expectation. When everyone seems to be bullish, that's a sign that the market has topped out and we forecast a downturn. When everyone is bearish, that's the signal that the market is at a bottom, and we start buying.

For anyone who has studied sentiment and contrarian theories, you most likely have heard that "the majority of the crowd is usually wrong". That notion, though, is not exactly accurate. The 'crowd' has the right idea about a market, but they handle it improperly. The reality is that the majority of the crowd is either too slow or too quick to respond, or they over-react. As a result, we see a "pile-on" mentality when investors jump into an obvious rally, or a mass exit when everyone finally realizes that we are in a down-trending market. Ironically, just when everybody has finally taken their position, the market turns the other way.

Why is that? Essentially, it can be thought of as exhaustion of buying and selling. After a prolonged rally, more and more people see the market moving up. Investors are convinced at different times during the rise that the market will continue to move higher, and decide to buy. That buying, of course pushes the market higher, which again pulls more and more people into the market. Eventually, though, everyone who was going to buy has done so, and the market runs out of buyers. Who's left then? The sellers. When there are only sellers left, the cycle reverses and the market falls.

As selling starts and the market starts to fall, it takes different amounts of downturn to entice people to sell their positions. But as more selling occurs, the worse the market gets. And the worse it gets, the more likely is that investors will sell. Eventually, the market runs out of sellers, leaving behind only the buyers. When only buyers are left, the market is forced higher.

So how do you know when buying and selling has peaked or hit a bottom? Buying has been exhausted when greed peaks. Selling is exhausted when fear peaks. To measure these extreme levels of fear and greed, BigTrends uses three primary sentiment indicators: the VIX, the equity put/call ratio, and our Rydex Ratio. We'll look at all three in detail.

CBOE Volatility Index (VIX)

The CBOE Volatility Index (or VIX) is the Chicago Board of Options Exchange's measure of implied volatility of a basket of S&P 100 index options. Our real use of the VIX, though, is not a gauge of volatility. It's a great indication of investor fear or greed. To understand how it measures fear and greed, we need to first understand exactly how it's calculated.

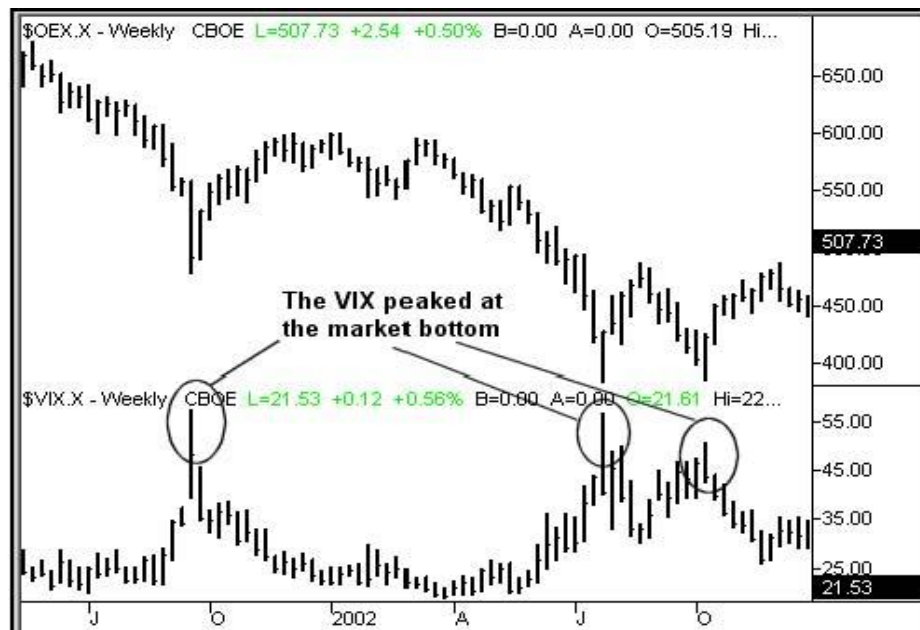
If you are not familiar with options, a quick review of option trading is needed. A put option buyer is bearish, since it gives someone the right to sell an index or a stock at a predetermined price. If you have a put option to sell Microsoft at \$60 per share, and Microsoft shares drop to \$50, then the put option is worth at least \$10 – the difference between what the put owner could sell it for versus the price at which they could buy it. A call option works in the opposite direction. A Microsoft \$50 call is the right to buy Microsoft share at \$50, regardless of what Microsoft is trading at in the open market. If Microsoft shares are currently trading at \$65, then the call option is inherently worth at least \$15. You can see how puts and calls can change in relation to the underlying stock or index. Put options and call options also change values when people only think a stock might move a certain direction. If the public thinks that Microsoft will move from \$50 to \$60, the price of the \$50 call option may go up, even if shares have not moved at all. This premium (difference between the inherent value and the actual price of the option) shows the speculative value of an option. Since options are sold through an auction process just like stocks, we can often see that the pricing of puts and calls indicates where investors think a stock or index will go in the future. If they pay a little more for a put than it's inherently worth, then they think it's headed down. If they pay a premium for a call, they think it's heading higher.

The VIX is a ratio of the price of S&P 100 index puts relative to the price of S&P 100 calls. When people are bearish the demand for puts increases, and therefore the price of puts rises. When this happens, the VIX goes up. Conversely, when people are bullish they demand calls, thus driving up the price of calls. When this happens, the VIX level usually drops. In general, the VIX moves around neutral readings, but usually peaks at market bottoms – just when fear is at its highest. When greed is at its highest, the VIX is very low, indicating a great deal of over-confidence in the market. It is these extreme levels that coincide with major reversals.

Although a high VIX signaled a market bottom on this chart, you can also see that a low VIX occurred as the market topped out. The VIX chart and the S&P 100 chart are nearly perfectly inversed with one another.

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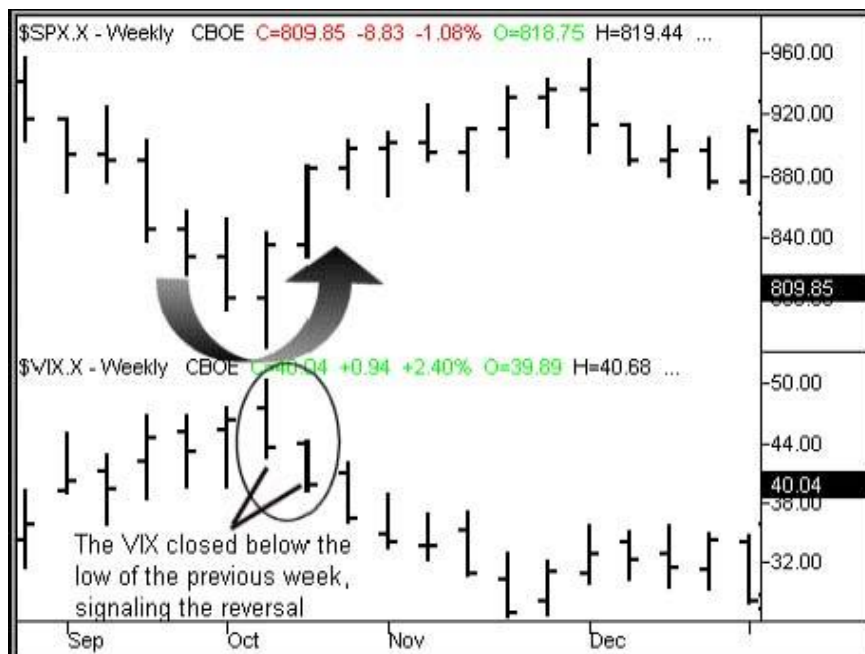
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The VIX can and should be reviewed on a daily and weekly basis. On a daily basis, whenever the VIX peaks above 40 yet closes below 40, that is a sign of high investor fear. It's important to get the close below 40 though. If you have a high above 40 and are still above 40 by the closing, then fear really hasn't peaked. The VIX may be on its way up to 50. The VIX should start to fall as an indication that selling has been exhausted. If the VIX does stay above 40, the next threshold is at 50. You would look for the same pattern of an intra-day high above 50, yet a close below 50. You should give the VIX at least one day to confirm that it truly has started to come down.

In area 1 we can see that the VIX spiked to 40, but also stayed above 40 to eventually move as high as 50. This is why it's important to be patient and see if the VIX actually starts to fall, and make a peak on the chart, as it did in area 2.



Since the VIX is an intermediate-term signal, we want to see VIX data on a weekly



basis too. For the same reason as we mentioned, we need to be sure that the VIX has truly peaked and is starting to fall before going bullish. To do that, we want to see a VIX weekly close below the low of the previous week. If we don't see a lower close, then there may be some more downturn left to play out.



It's wise to wait for the weekly VIX to close below the low of the previous week. While you may miss the exact entry at the beginning of the rally, you'll get fewer fake-outs.

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What about signals for market tops? The VIX doesn't drop as sharply as it spikes, but it can drop to alarmingly low levels that can serve as sell signals. In general, when ever the VIX approaches or falls under 20, that's a sign of over-confidence in the stock market. In other words, greed and over-confidence blind people to anything except continued bullishness, and the demand for puts decreases while the demand for call increases. The result is a very low VIX reading. But eventually, the buying is exhausted, and the sell-off begins.

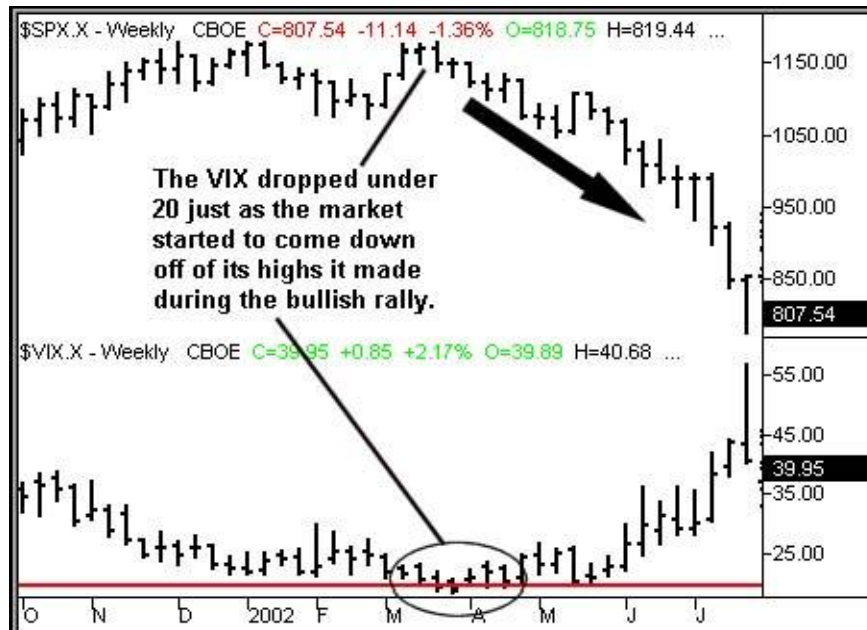
Unlike the spikes you see when the VIX moves higher, the index simply moves lower over a period of time as bullishness and complacency increase. High VIX readings are shaped like upside down "V's", while extreme lows in the VIX are usually rounded off.

Sometimes the market reverses when the VIX doesn't reach the extreme thresholds of 20 or

40. This may occur when the VIX hasn't had enough time to work itself from one end of the spectrum to another. Or it may be due to seasonal disinterest on option trading. An alternative way to spot extreme peaks in fear or greed using the VIX is to plot Bollinger bands around the VIX. Remember, Bollinger bands adjust for volatility, but they also adjust to a lack of volatility by contracting towards the index or stock on a chart. When the VIX pierces a Bollinger band, you know you're seeing extreme fear

or greed relative to that time period. As before, you want to wait for the VIX to reverse from that extreme before actually interpreting it as a signal.

Here we can see that the VIX signaled a market top as it started to come back inside the lower Bollinger bands, suggesting that the all the bulls had exhausted their buying power. In turn, the bears took over and the sell-off began.



Equity Put/Call Ratio

While we saw how price changes of put and call options can make the VIX a good gauge of sentiment, we can also measure investor sentiment by measuring the number of puts and calls traded on a daily basis. Remembering that put buyers are bearish and that call buyers are bullish, if we see a lot of puts being bought (relative to calls) we know that investors are generally pessimistic about the markets. Likewise, a lot of call buying shows that investors are optimistic about the market. To measure the amount of pessimism relative to the amount of optimism, we divide the total volume of puts traded on any given day by the total volume of calls traded on any given day.

$$\text{Put/call ratio} = (\text{Volume of puts} / \text{Volume of calls})$$

We get signals when the put/call ratio is at extreme ranges. Like the VIX, the put/call ratio gives bullish signals when investors are highly bearish and the ratio is high. The put/call ratio gives a sell signal whenever investors are highly bullish and the ratio is low.

The Chicago Board of Options Exchange creates the commonly known and used put/call ratio, but BigTrends uses slightly different version of that data. The put/call ratio that most people are familiar with tracks all of the puts and calls traded for all individual equities, as well as all indices that have options. At BigTrends, we use an “equity-only” put/call ratio that only utilizes the put and call information for individual stocks. We avoid incorporating the index option data since it can create a misleading picture of investor sentiment. Mutual fund managers, hedge fund managers, and large institutions often hedge (protect) large portfolios by buying huge option positions on a major index. This may cause the put/call ratio to move much higher or lower than it otherwise would be. These institutions may even buy index options with an understanding that they could lose their entire investment (they’re willing to accept that loss if their goal is only to protect or hedge the large portfolio). However, we’re more interested in the amount of fear and greed of the individual investor. To measure their optimism or pessimism, we look at the puts and calls they are more likely to buy – options on individual stocks. By using this “equity-only” put/call ratio, we get a better idea of true sentiment.

Here we see that fear was building and the put/call was rising throughout May. It wasn’t until the ratio hit 0.80 that all the investors who were going to sell had actually done so. The bulls stepped in and pushed the market higher. With all of the sellers already out of the market, the bullish rally had very little resistance.

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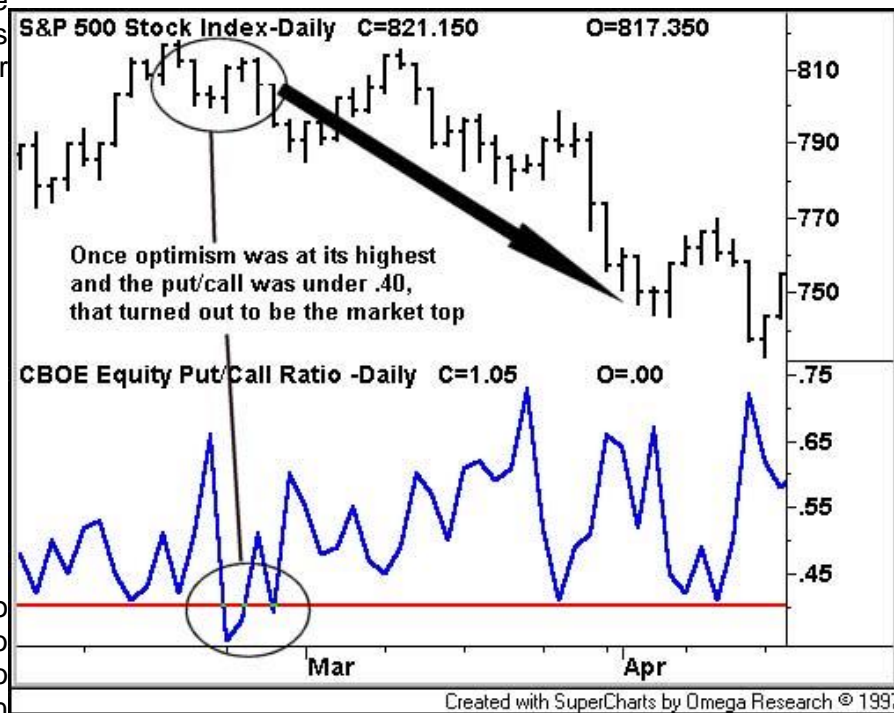
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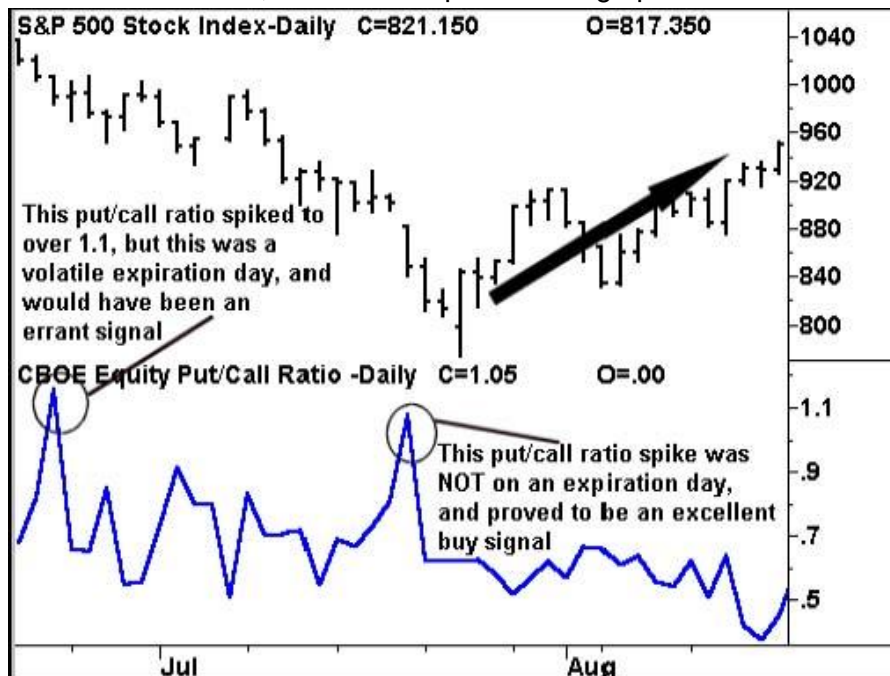
In general, fear is said to have peaked when the put/call ratio moves above 0.80. Bullishness has peaked when the ratio falls under .40. Although these levels are not necessarily written in stone, these two thresholds are surprisingly consistent as absolute levels of fear and greed.

When the put/call ratio drops to under 0.40, we know there's a little too much complacency, which is typical as a bullish rally starts to exhaust. We got two sell signals here when the put/call ratio fell under .40, immediately before a major sell-off.

Like the VIX, it's best to wait until the put/call ratio has peaked and begun to move the other direction before interpreting it as a signal. Waiting for that confirmation will prevent you from getting into a position a little too early.



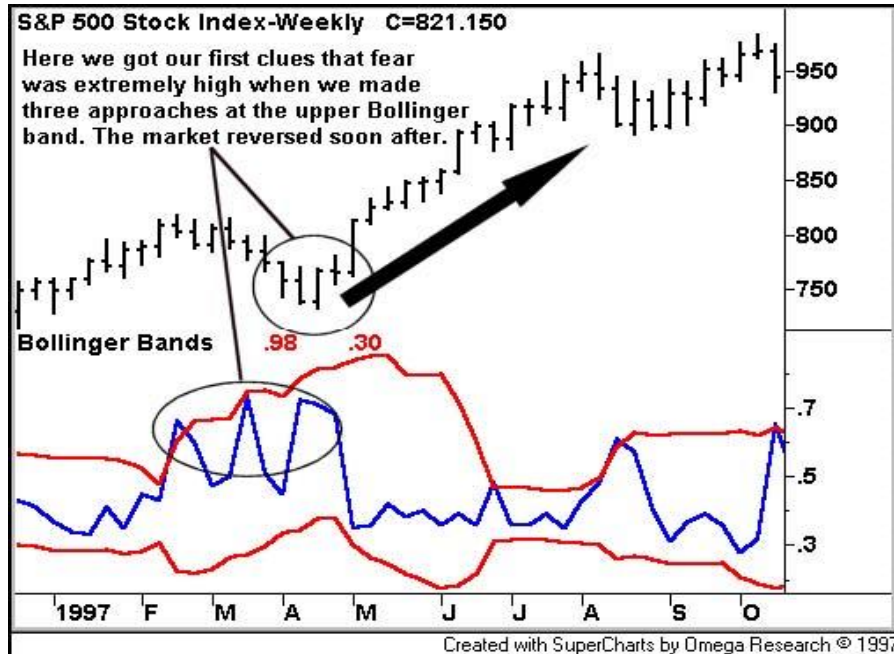
As we had mentioned, the one exception to a high put/call ratio as a buy signal is when the ratio spikes



on or immediately prior to an option expiration day. After expiration, options become worthless, so many option investors sell them before they expire. This causes very high trade volume, but may not actually indicate sentiment.

What if the put/call ratio changes only mildly during a particular period, and you don't see readings outside of the 0.40 to 0.80 range? We again can apply Bollinger bands to spot relative extremes. Whenever the put/call ratio falls back inside its Bollinger bands after being outside of them, that too is a sign that fear or greed has peaked. These reversals may not be as intense or as long, but they are still

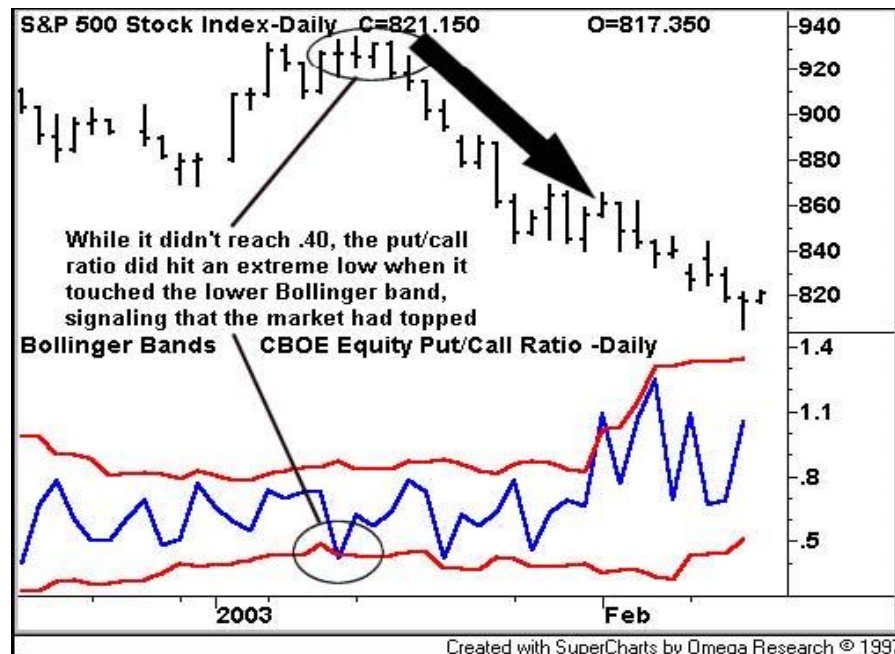
substantial enough to be profitable.



Remember, Bollinger bands adjust for volatility and also lack of volatility. If the put/call ratio slows its rate of change, Bollinger bands will contract to narrow that trading range window. That way, you can still spot significant movements in the ratio.

Bollinger bands also spot points where the ratio is significantly low, even if it hasn't fallen under

0.40. While this was only a minor touch of the lower band, it does prove to be an effective marker of a market downturn.



Rydex Ratio

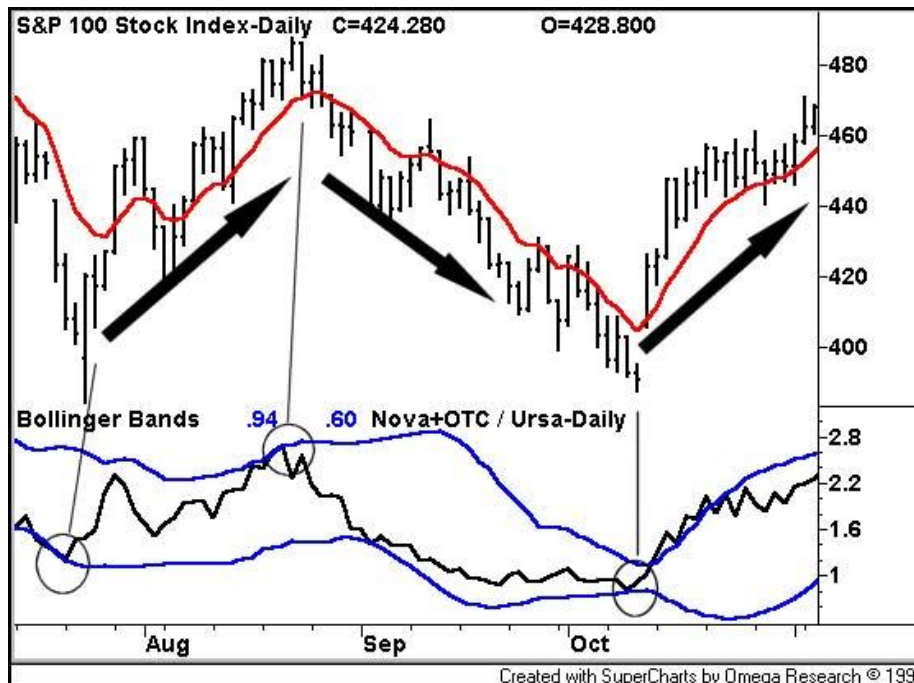
BigTrends has developed a sentiment indicator using certain Rydex mutual funds. Like the VIX and the put/call ratio, the Rydex ratio measures bullishness relative to bearishness by comparing the combined fund assets of a bearish mutual fund to the combined fund assets of a couple of bullish mutual funds. (A bear fund is designed to increase in value when the market moves lower – sometimes called a contra fund).

If investors are adding funds to a bear fund, that will be indicated by an increase in the total assets of that fund. Likewise, if investors are bullish and add money to a traditional mutual fund, the total assets of that fund will rise. By measuring the change of the assets of the bear fund relative to the change in the assets of the bull fund, we can gauge investor sentiment.

The formula is simple: $\text{Rydex} = \frac{(\text{Nova} + \text{OTC})}{\text{Ursa}}$

Nova and OTC are bullish funds, while Ursa is a bearish fund. You can see how an increase in the assets of the bearish funds will cause the ratio to drop. An increase of the bullish fund assets will push the ratio higher.

We heavily rely on Bollinger bands to spot extremes in the Rydex Ratio. While there are a few historical benchmarks, using Bollinger bands or some sort of envelope allows us to measure exactly when relative fear or greed has peaked. As before, when you see the Rydex Ratio at extreme ranges, the market is ready to reverse.



Here we can see that each time the Rydex Ratio touched a Bollinger band and started to reverse, it occurred simultaneously with a market reversal. The speed at which the ratio changes will affect the time required to intercept either of the Bollinger bands, and at what level it intercepts it.

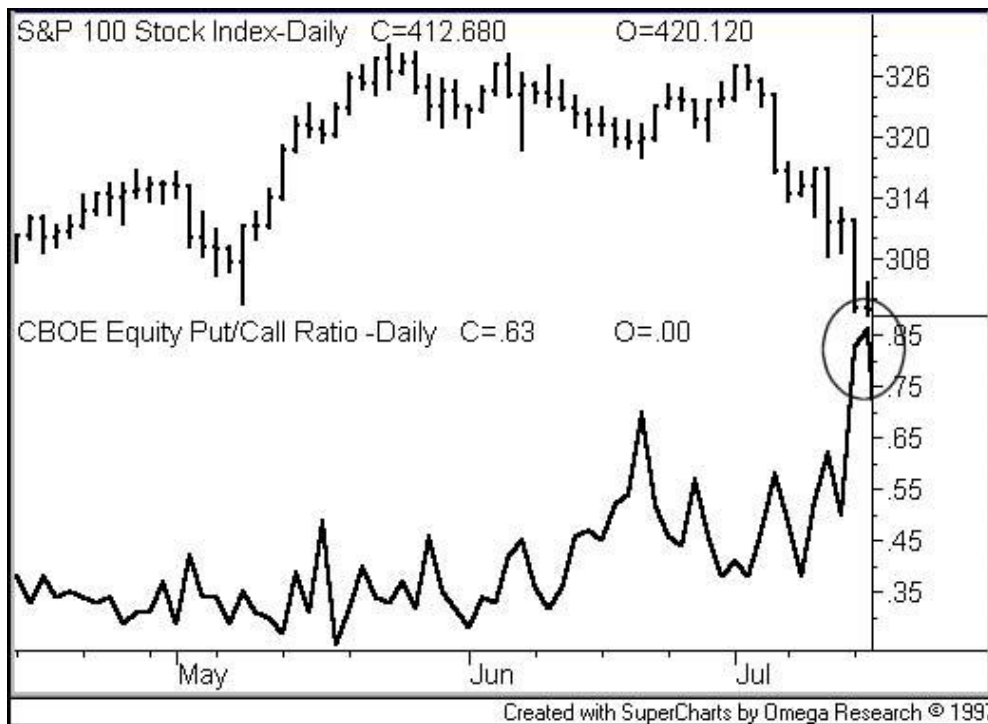
Checkpoint 4

At this point you should be able to identify and interpret sentiment indicators. It is recommended that you be able to answer all these questions correctly before proceeding to the next section “Putting It All Together”.

1 Based on the chart of the Rydex ratio in the bottom portion of the chart, would you say this is a buy signal, a sell signal, or neither? _____

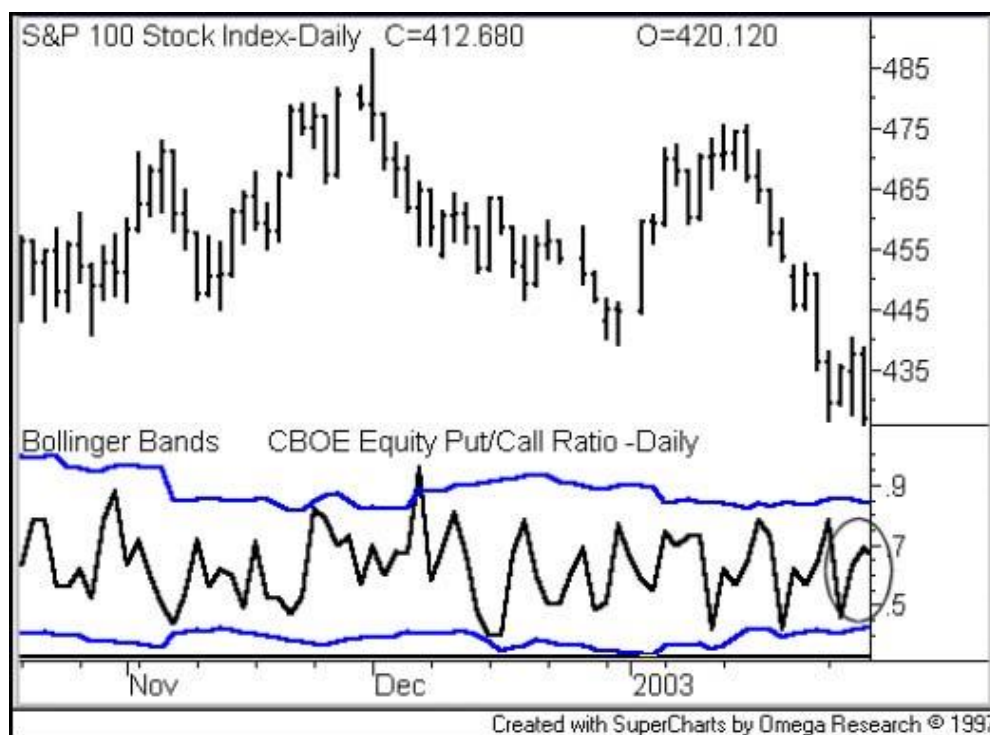
2 Regarding the previous question, why would you answer that way?

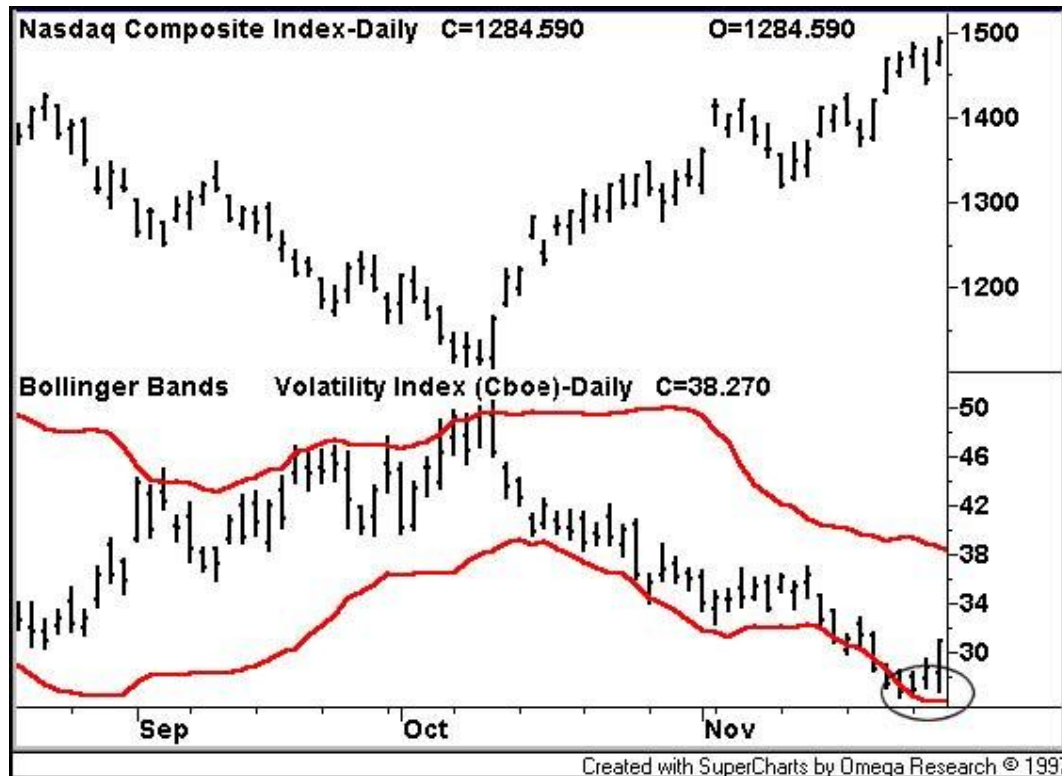




3. True/False. Based on the put/call ratio, this is a 'sell' signal. _____

4. Based on the put/call ratio, the next likely move for the market is up/down/indeterminable?





5. Based on the VIX reading, would you consider this a 'buy' signal or a 'sell' signal?

6. Besides Bollinger bands, what is other way to spot extremes in sentiment measure such as the VIX and put/call ratios?



Stop! You have completed section 4. You may check your answers with the answer key. We recommend that you be able to answer all questions correctly before proceeding to the next section.

Checkpoint 4 Answer Key

1 Sell

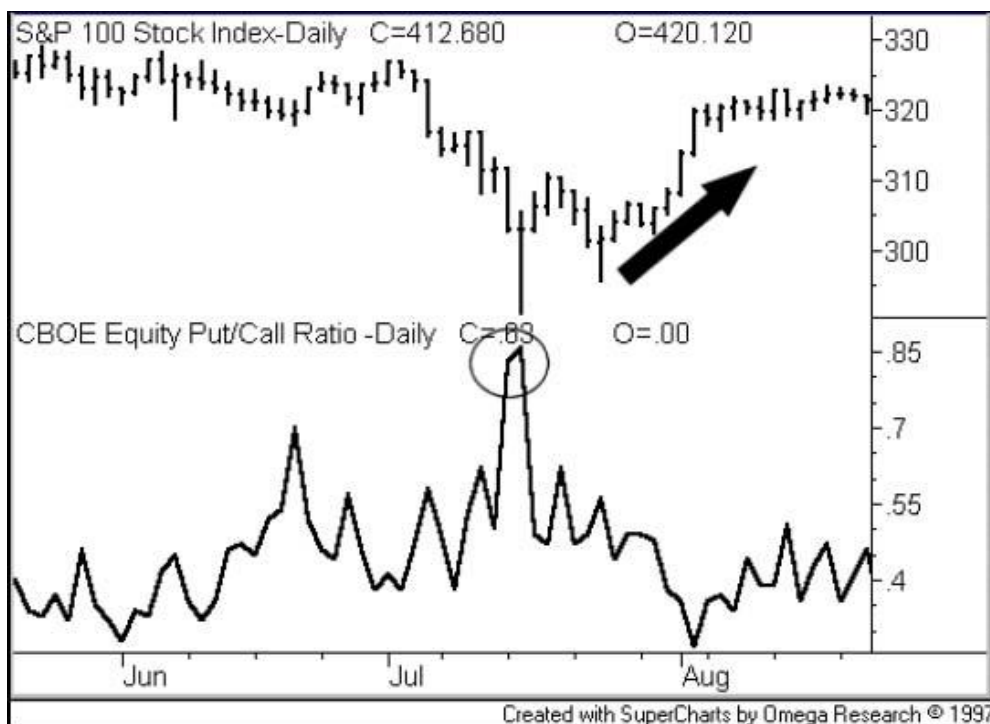
2 Because the Rydex ratio had hit the upper Bollinger band and started to fall off of it, indicating that the optimism/greed had peaked, and the buying was exhausted.

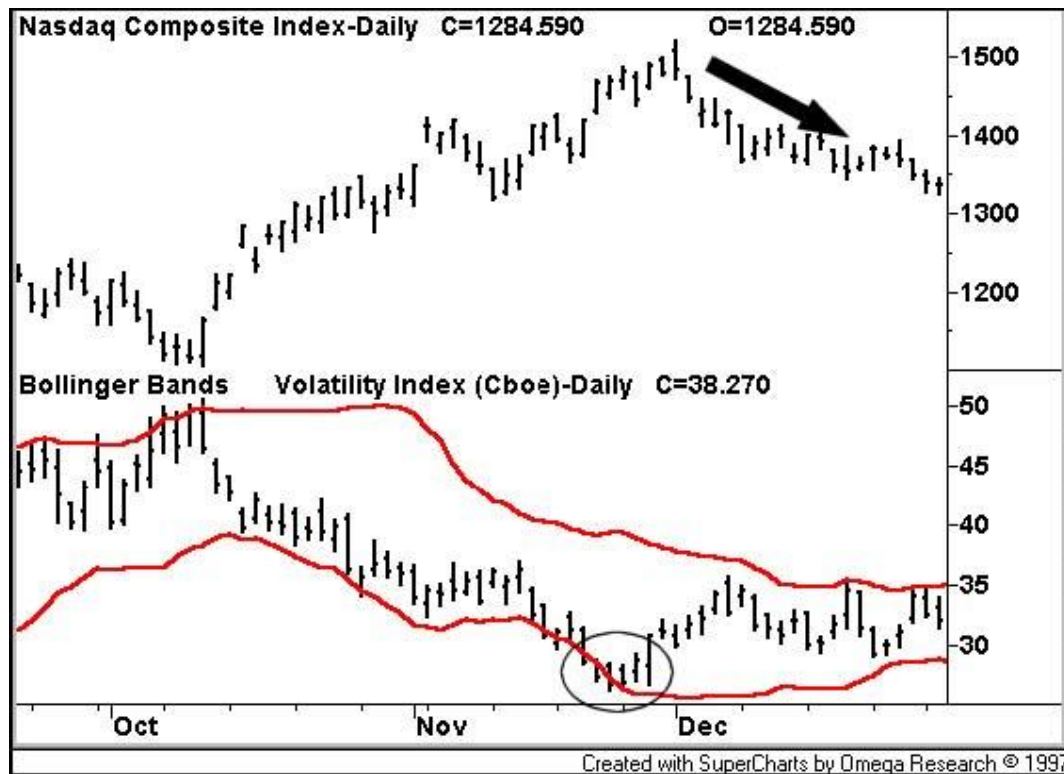
3 False. The put/call peak above 0.80 is a sign that fear/bearishness has peaked and that it was time to buy.

4 Indeterminable. Moving well inside the Bollinger bands indicates that there were no extremes in fear or greed, so there is no signal given at all.

5 Sell. The low VIX indicated that there was unsustainable optimism.

6 There are also absolute (static) levels for the VIX and equity put/call ratios that can serve as indications of extreme pessimism or optimism. When the equity put/call ratio peaks above .80 that is a buy signal, while hitting lows under .40 is a sell signal. For the VIX, peaks above 40 and 50 are buy signals, while readings under 20 are a sell signal.





Section 5: Putting It All Together

We've seen a myriad of tools that can help us find trends. In fact, you may now have too much information to use effectively. In our next and final section, we're going to look at streamlining your use of these indicators and patterns. Our goal is to fully understand the advantages and drawbacks of each tool, so you'll be able to determine which ones work for you and your plan – and which ones don't. Some of this discussion moves into theory rather than application, and we'll also lay out some of the common parameters used in technical analysis.

Let's discuss some concepts first. There are two types of indications or chart patterns; leading, and lagging. A leading indicator gives a buy signal before the new trend or reversal occurs. A lagging indicator, as you may guess, gives a signal after the trend has been initiated, and trend momentum is established.

Your first thought may be that leading indicators are more profitable, since you would be able to capitalize on a new trend right at the onset. This is correct – you would “catch” all of the trend. However, you would also experience more fake-outs, since many leading indications are quite subject to erroneous signals.

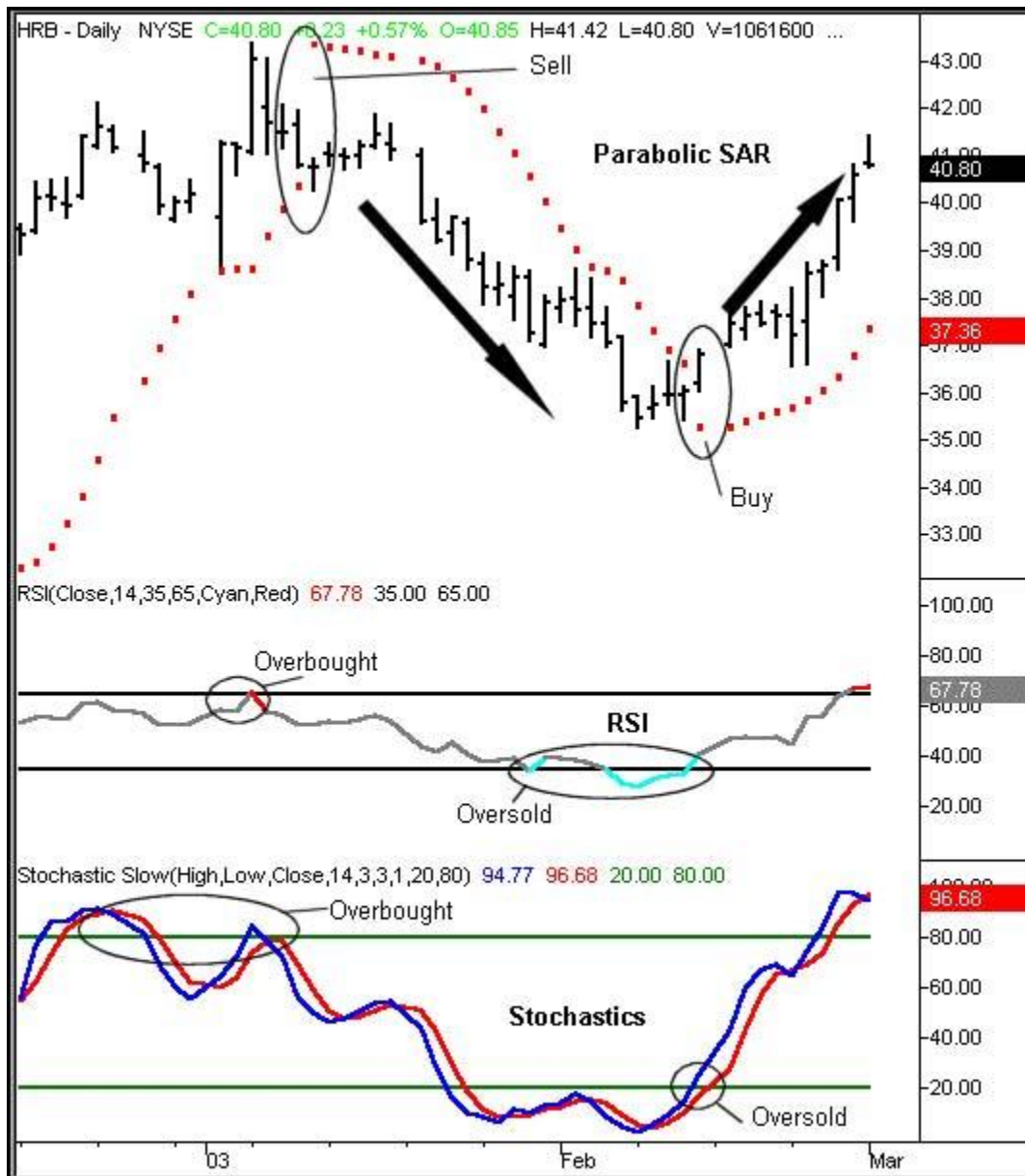
The alternative is to use lagging indicators, which aren't as prone to errors. Lagging indicators only give signals after the price change is clearly forming a trend, but in doing so, you experience a delay in entering a position. Often the biggest gains of a trend occur in the first few days, so by using a lagging indicator you would miss out on much of the potential profit.

This concept is critical to understand, if only to allow us to logically organize our technical analysis tools. For the purpose of this book, let's broadly categorize all of our technical indicators into one of two categories: oscillators, and momentum indicators. Oscillators are leading indicators, and momentum indicators are lagging indicators. While the two can be supportive of each other, they can frequently conflict. This is not to say that one or the other should be used exclusively, but you must understand the potential pitfalls of each.

Oscillators/Leading Indicators

An oscillator is any object or data that moves back and forth between two points. In other words, it's an item that is going to always fall somewhere between point A and point B. For the purposes of this discussion, think of our technical indicators as either being “on” or “off”. More specifically, an oscillator will usually signal “buy” or “sell”, with the only exception being instances when the oscillator is not clearly at either end of the buy/sell range. Does this sound familiar? It should. Stochastics, parabolic SAR, and the Relative Strength Index (NOT Relative Strength) are all oscillators. Our sentiment indicators (Rydex ratio, put/call ratio, and the VIX) are also oscillators. Each of these indicators is designed to signal a likely reversal, where the previous trend has run its course and the price is ready to change direction. Let's take a look at a few examples.

On our chart of H&R Block below, we have added a parabolic SAR indicator, as well as an RSI and stochastic oscillator. As we have already learned, when the stochastic and RSI charts begin to leave their “oversold” region, that is a buy signal. Here we got sell signals in early January. The parabolic SAR marker also indicated that the uptrend had been exhausted when it moved below the price bars. All three of these sell signals occurred within three days of each other, and this would have been an excellent trade. Notice how we actually got a stochastic sell signal in late December as well. That is

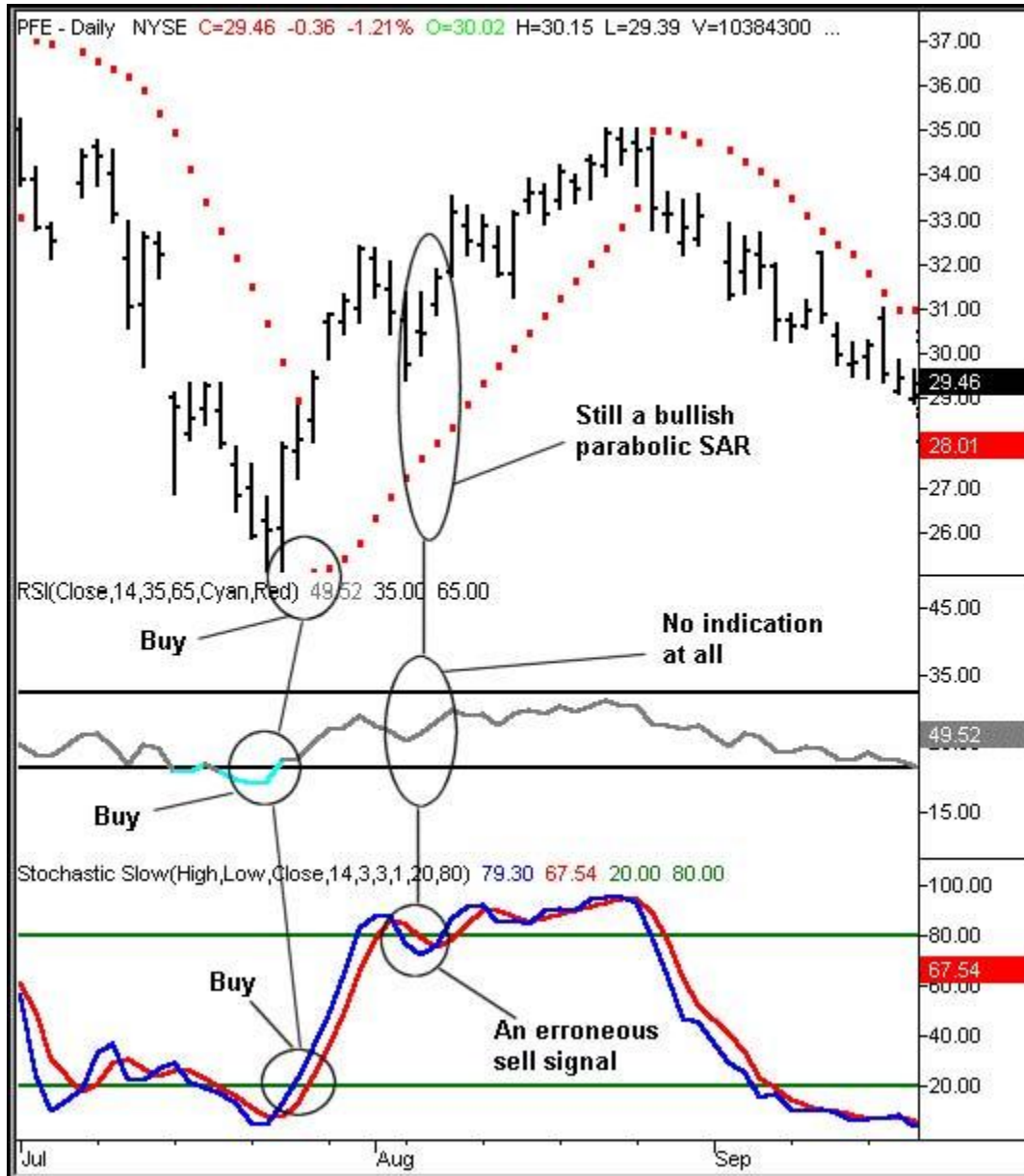


why we want to confirm reversals with other indications.

We also got a buy signal from all three indicators in mid-February. As before, one of the indicators (the RSI indicator) gave a buy signal a little too soon. It then gave an accurate signal a bit later, which coincided with signals from the stochastics and parabolic SAR signal.

Notice how these signals occurred before the new trend started. That is the advantage of leading oscillators.

Let's take a look at the same leading oscillators going awry, just to realize that these signals are not infallible. Our buy signal was accurate, getting us in very near the bottom (around \$28.00) for Pfizer (PFE). Within nine days of the original signal, stochastics was giving as a sell signal, RSI was not



giving a new signal at all, and the parabolic SAR was still giving bullish indications.

What happened to such a good set of indicators? The answer lies in the method of calculation for each one. Stochastics is based on the high-to-low range on a daily basis, yet doesn't account for changes from one day to the next. The Relative Strength Index (RSI) uses changes from one closing price to

the next. Parabolics has its own unique calculations that can further create conflict. In this particular example, stochastics went to the “overbought” area too soon because it was affected by a lot of price change within a short amount of time. RSI was not. That’s the nature of oscillators – they assume that a particular chart pattern always results in the same reversal. Of course, that’s not the case.

While being aware of why a leading indicator may be in error, there is no particular way to avoid them. More often than not, if you're getting mixed signals on a particular stock or index, you're better off doing nothing than taking a 'best guess'. In other words, if a chart doesn't meet all your criteria, don't force the trade – move on to the next one that does meet your criteria.

That said, there are 'optimal' settings that are commonly used for these indicators that we just looked at. They are as follows:

Parabolic SAR:

Step: 0.02 Limit: 0.2 Don't worry about these in detail; just understand that they are sensitivity adjustments

RSI:

Length: 14 bars (try 10 bars as an alternative) Oversold: 30-35 Overbought: 65-70 More often than not, you're better off adjusting the oversold and overbought settings rather than trying to make the RSI line move in greater distances. To make the RSI line move faster into or out of the oversold or overbought areas, some traders will shorten the length (or reduce the number of bars in the calculation). This is not advisable, as it creates an erratic line.

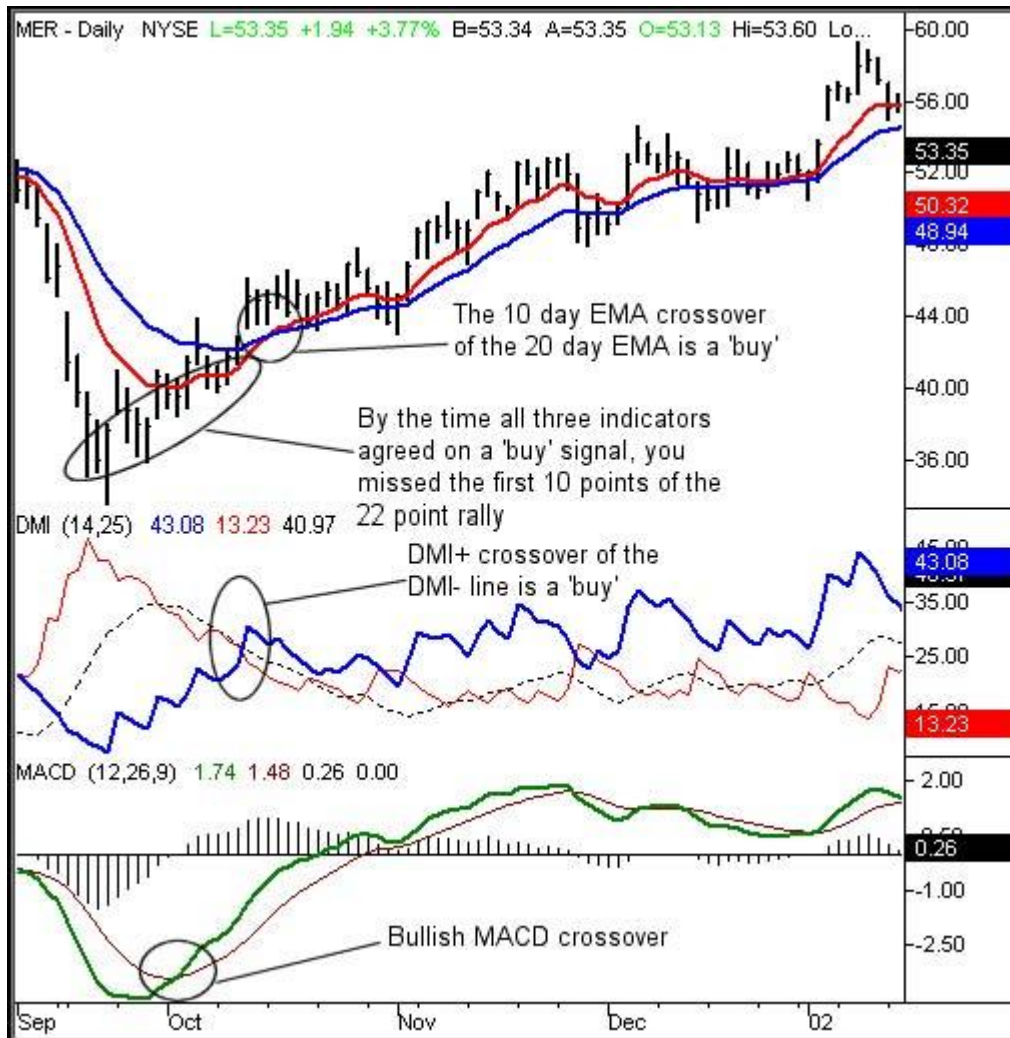
Stochastics:

Length: 14 bars (as an alternative, you may try between 9 and 21) Smoothing Length: 3 Oversold: 20 Overbought: 80 The smoothing length is simply a calculation that allows you to draw a smoother slowK or slowD line, without causing a lag. If you wish to make your stochastic lines move at a different pace, adjust the length or the %K and %D (or length). Unlike RSI, with stochastics you can adjust your oversold and overbought setting without sacrificing accuracy. Some traders use 30 and 70 as their thresholds.

Lagging/Momentum Indicators

So how do we spot momentum? Our indicators that can do so have already been identified as MACD, ADX/DMI, momentum, relative strength (not RSI), and moving averages. These indicators will spot trends once they have been established, at the expense of delayed entry. The advantage is a lowered likelihood for errors.

Merrill Lynch (MER) shares rallied from a low 34 to 56 over a three month period. MACD, DMI/ADX, and an EMA crossover all gave a signal at some point during the upturn, although none occurred at the same time. The signals were all accurate, despite getting you into the stock after a large portion of the



growth had already happened.

Ideally we would have like a MACD crossover above the zero line, but this was still a good signal considering the EMA crossover and the DMI line crossover. Notice how the DMI chart and the MACD chart both gave potentially false sell signals throughout November and December. These signals didn't follow through, though. The 10 day EMA staying above the 20 day EMA was an indication that the trend was still strong.

Let's take a look at the downside of those same three lagging indicators on a chart of Tri-Continental (TY). By the time all three indicators were in agreement, the stock had nearly topped out at 16.00. Not only would you have missed the majority of your profit potential, you'd be setting yourself up for a loss – the stock pulled back to less than 13.00.

This is not to say that you have to wait for all three signals before taking action. But it is more comfortable to have a few indicators in agreement, rather than just one.

There is one important note about DMI lines that we touched on briefly earlier in this workbook. The official DMI signal is a crossover of the DMI lines. However, we can see above

that when the ADX line (dashed) and DMI- (thin line) started diverging in late July that it occurred at the beginning of the upturn. The ADX was still on the rise, but the DMI- line was falling. While this is an unconventional use of the ADX line, here it would have been an effective one, if only to confirm the MACD crossover.



As with all indicators, you have the choice of parameters you can use to fine tune your momentum indicators. Optimal settings for momentum indicators are as follows:

Moving Averages:

Short term line 1: 10 day exponential moving average
line 2: 20 day exponential moving average
Long term line 1: 50 day simple moving average
line 2: 200 day simple moving average

ADX/DMI:

DMI+: 14 bars DMI-: 14 bars ADX: 14 bars or 25 bars

MACD:

Fast MA: 12 bars Slow MA: 26 bars MACD MA: 9 bars (Remember, the fast and slow moving averages don't appear on the chart – only the difference between the two appears on the chart. The MACD MA will be the slower moving average)

Momentum:

10 or 20 bars. (10 for short term, 20 for intermediate term)

You should experiment with these settings, but if you find yourself micro-adjusting these parameters, then you may need to rethink how you're using the tools. They should be widely effective, but will not be 100% accurate. That's ok. Frequent fine tuning may improve results for one stock or one timeframe, only to hamper results with other stocks and other timeframes. You want your indicators to be simple to use, so once you've found settings that work, you really shouldn't need to adjust them.

Now that we understand the advantages and disadvantages of oscillators and trend indicators, we have one more piece of the puzzle to add. Fortunately, we've already explained the last part of the puzzle. Now it's time to apply it.

How does one effectively know whether to use oscillators, or momentum indicators, or both? After all, we know they don't always work in tandem. When do we favor one over the other? The answer lies in Bollinger bands, Acceleration Bands, moving average envelopes, and support and resistance lines.

Reading The Market

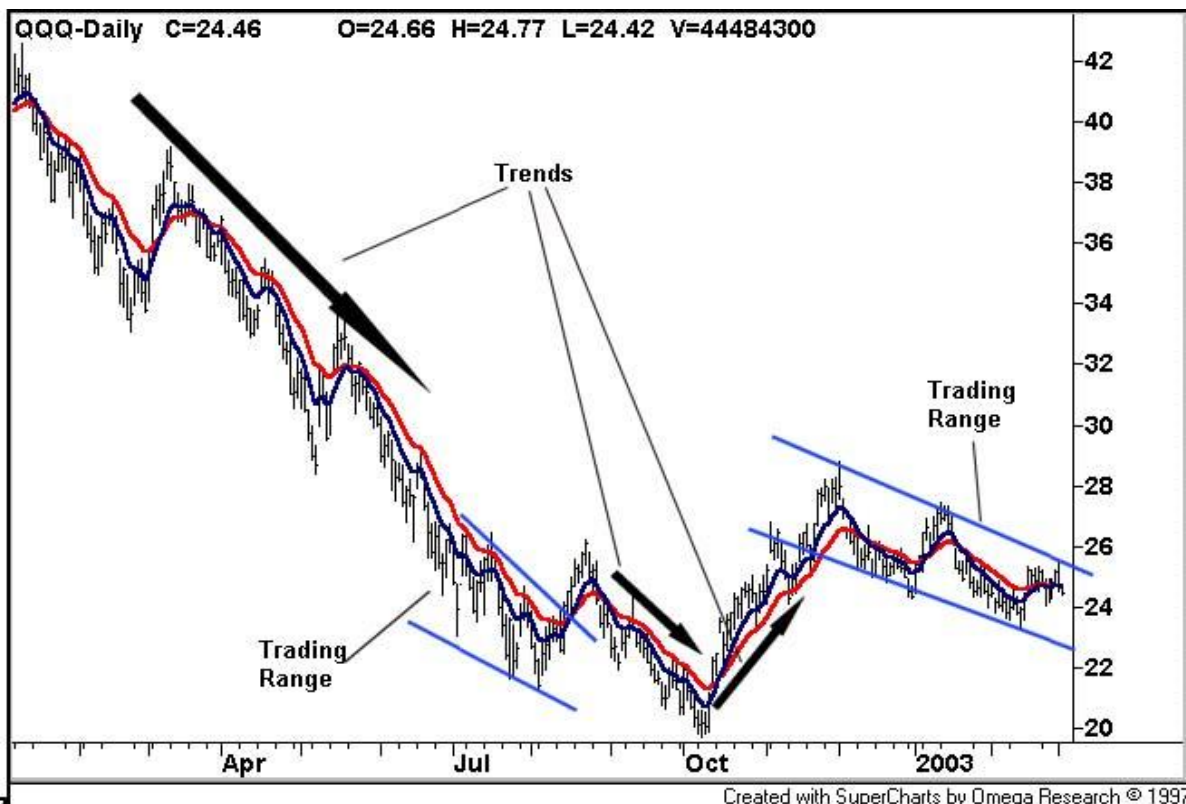
Let's revisit some concepts from section 3. We have seen that support and resistance lines are barriers to stock prices. While a stock may move back and forth between these lines, the most common occurrence is to reverse when prices hit those levels. But as we have seen, when a price breaks out of that range, it usually does so in a big way. Likewise, Bollinger bands usually contain the price of a stock inside them. But when you do start seeing prices outside of the Bollinger bands, it's quite likely that shares will continue to move in that direction. This concept is true for all sorts of bands, envelopes, and support and resistance lines. The most critical moment for a stock or index is when it approaches these lines. It will either cross them, or it will touch them and reverse the other direction.

Let's define these ideas in real terms. Crossing **over** bands or support/resistance lines can be considered a continuation of a trend. This continuation of a trend is a sign of momentum. This type of environment is called trending market. It is here you would want to use trend or momentum indicators.

On the other hand, if a stock or index fails to cross these lines, and reverses instead, you may be in a reversal oriented market. This type of environment is called a range-trading market, because prices will only move between two levels. This is where oscillators are most effective.

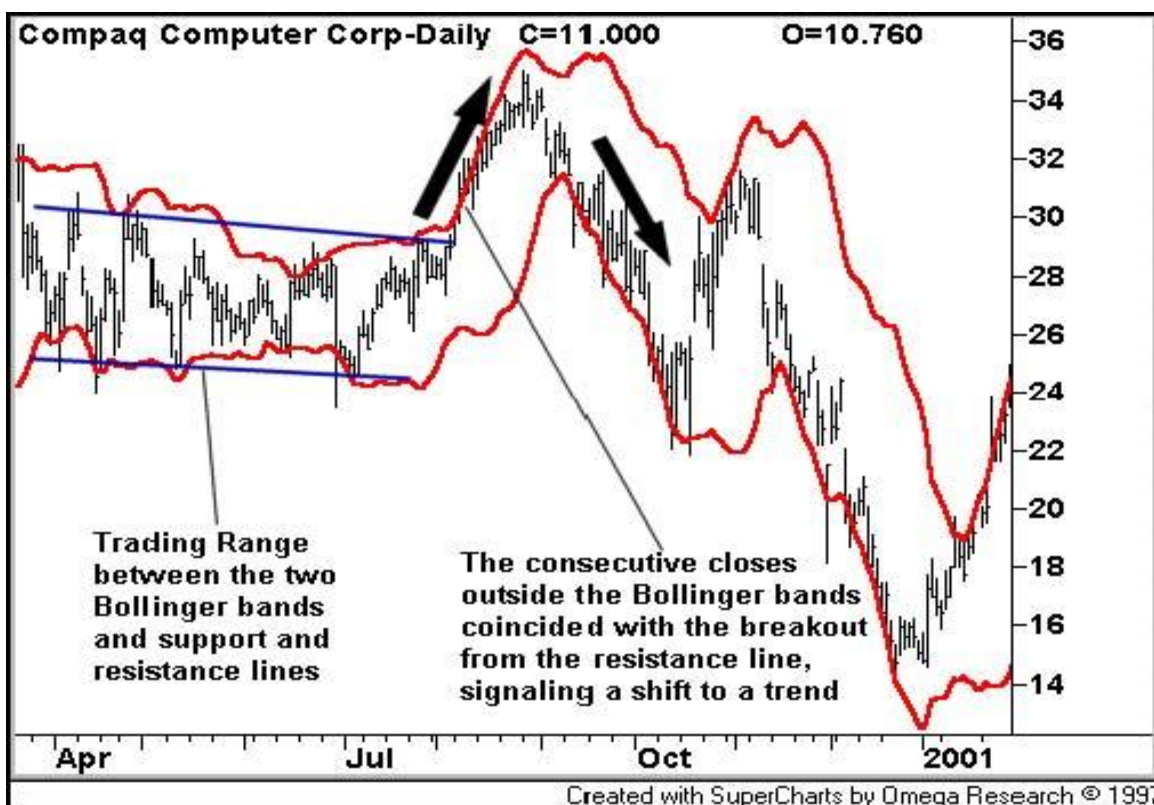
Once you are able to identify the type of market you are trading in, you will then know which indicators to place the most weight in, and which ones have less meaning at that time. This is no easy task. In fact, this may be the most challenging part about technical analysis. While we will explain it as a science, it truly is an art that can only be self-learned. But if you learn it, the use of the technical analysis tools will be easy.

As before, let's explain the concepts of trending versus range trading with a few graphic examples. In the image below, we have a one year chart, showing both a trending and range-trading market.



As you can tell from the previous graphic, the QQQ's bounced around inside support and resistance. In July and again in early 2003. When they weren't oscillating between support and resistance, they were moving either up or down with very little variance. Obviously the gift of hindsight is valuable, but we were able to discern the trending environments and the trading-range markets while they were happening. Let's take a look at similar scenarios with other technical analysis tools.

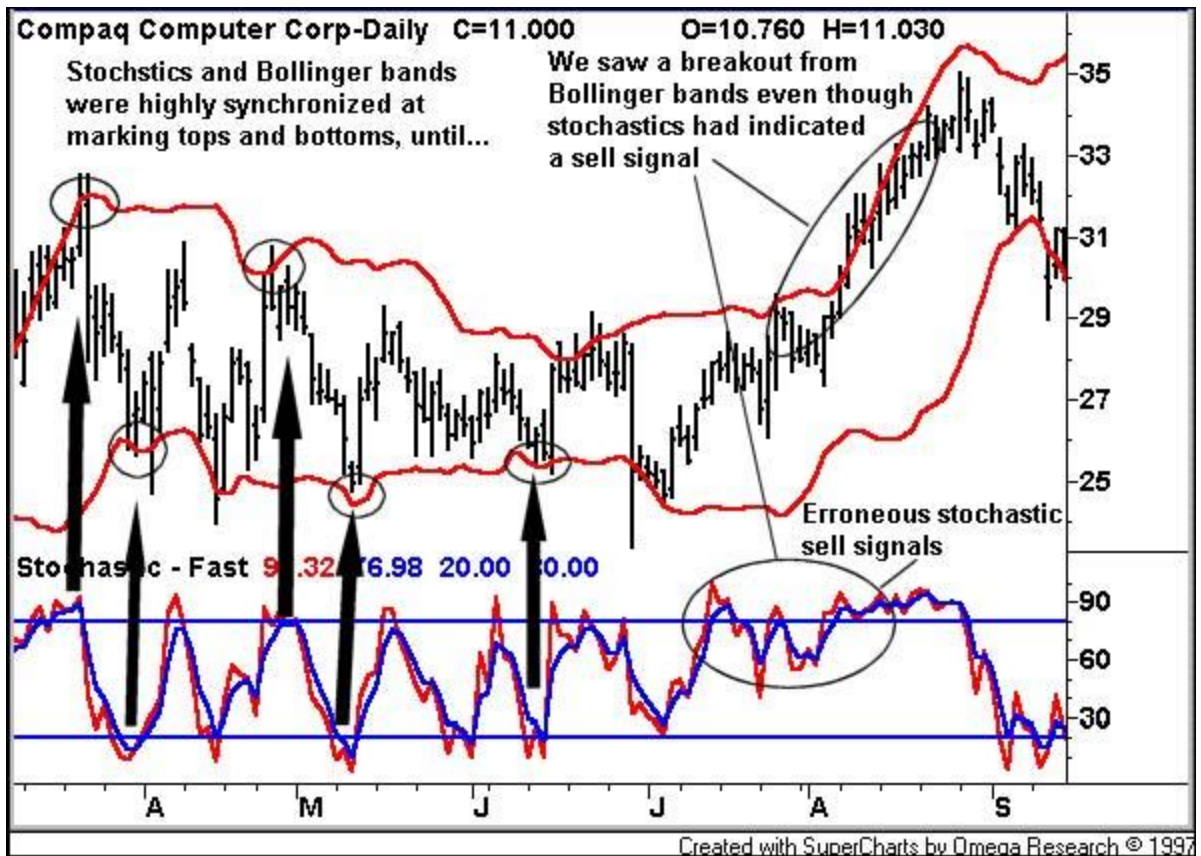
Remember we had mentioned that Bollinger bands have characteristics of momentum indicators as well as oscillators? In fact they can be used as support and resistance levels, with the key exception being that they are not straight lines. Rather, they adjust for volatility. All the same, as the price approaches a Bollinger band, the stock either crosses above it (indicating momentum) or it touches it and reverses (indicating a reversal). Take a look in the example below. Here we can see how Bollinger bands actually gave more accurate indications of support and resistance levels than our



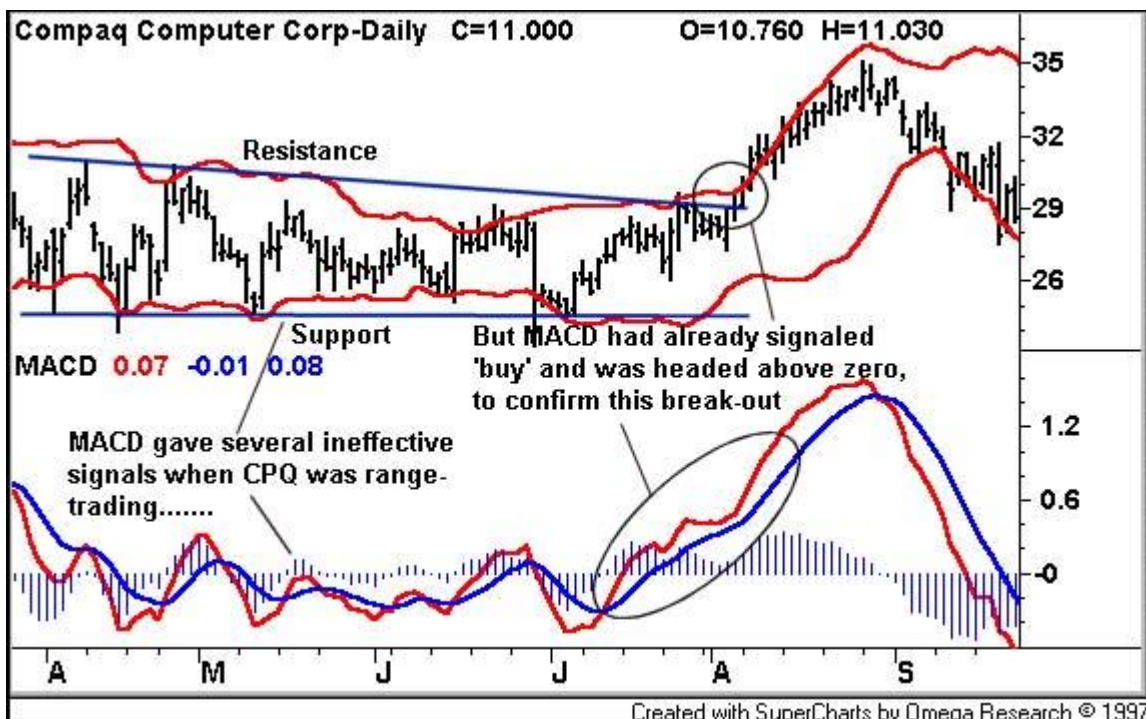
actual support and resistance lines.

Compaq moved back and forth between 25 and 29 between April and June. It was contained within support and resistance lines, but held even tighter within the Bollinger bands. The breakout from resistance and the upper Bollinger band were nearly simultaneous. At that point, oscillators became less effective and momentum indicators became important. Bollinger bands served as both types of indicators.

Let's take a look at the same scenario in detail, this time applying a stochastics oscillator as well. Compaq was touching the upper Bollinger band right as Stochastics was saying "overbought/sold". These both proved to be great indicators during the entire time that CPQ was trading in that range. However, stochastics gave a few errant signals in late July, just as Compaq shares were rallying. At that point the oscillators became ineffective. However, the Bollinger band was still an effective tool as spotting the switch from range-trading price movement to bullish momentum in August.



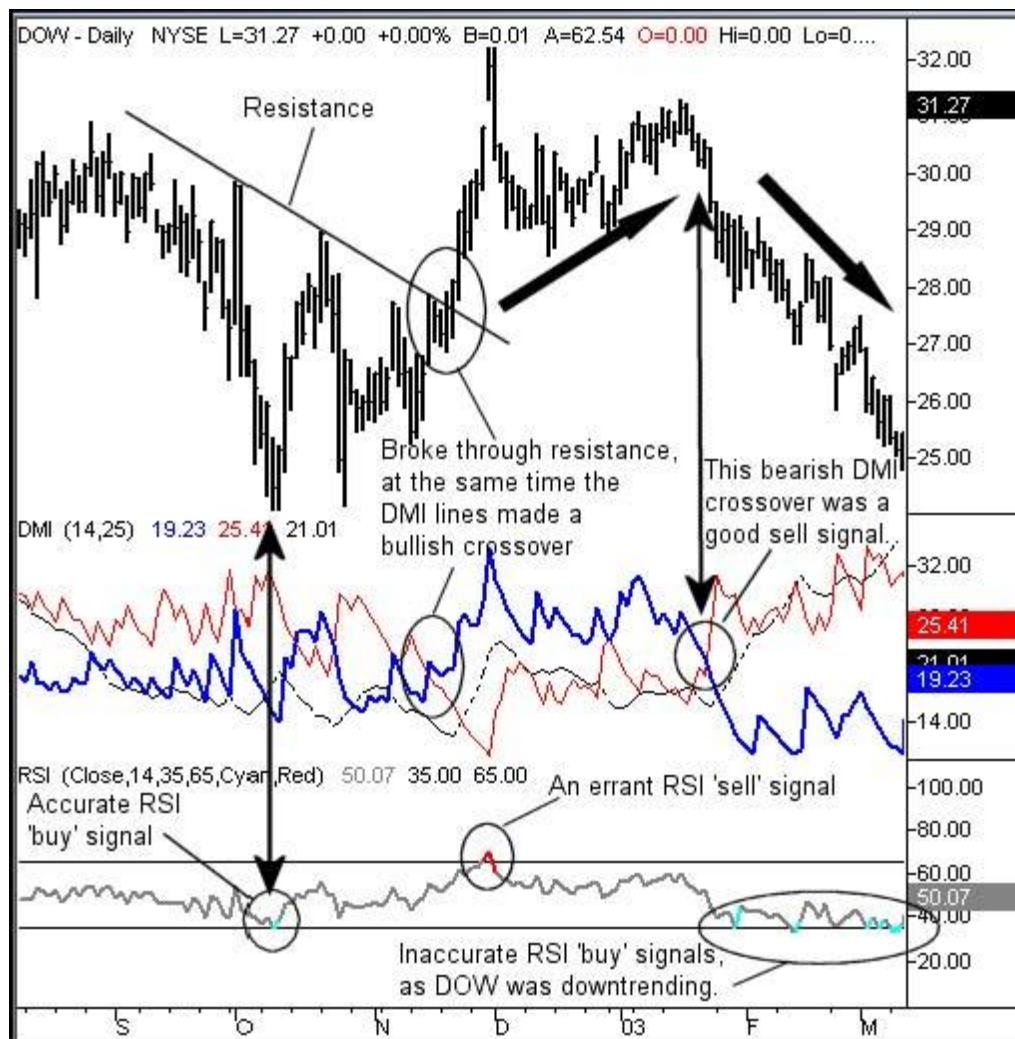
How would a momentum indicator look for the same situation? Let's see. We actually got the bullish MACD crossover before the breakout. However, we also got errant MACD crossovers many times prior to that (since there really wasn't any momentum). Although the actual breakout from resistance and the upper Bollinger band came well after the MACD signal, that doesn't make that momentum signal any less valid; it supported the other data you were seeing. Besides, we'd rather see the MACD lines above the zero line to confirm the strength of the momentum. This is a fine example of using all three types of indicators. The oscillator worked for a while, and when it failed, the momentum indicator was effectively applied. The third indicator (the Bollinger band) was able to act as both an oscillator as well as a momentum indicator. That versatility is why Bollinger bands are so popular.



The lesson to be learned here is being adaptive. An indicator's failure is not bad – it just means that something significant is happening with the stock, and you should be aware of it. The potential frustration that many trader's experience is the insistence on using range-trading techniques even after you get trending indications (or vice versa). Once price actions creates an errant signal, at least reassess your techniques. Change them only if you need to. Obviously this is not easy, but it will become easier with experience.

Let's continue on with other examples.

In September and October of 2002, Dow Chemical (DOW) was establishing a strong, downward sloping, resistance line. It was approaching this line every few days and bouncing off of it to move lower than it was previously. While it was in this back and forth pattern, an oscillator was an effective tool. Here we plotted the relative strength index (RSI), which did indeed signal a short term bottom in early October – the stock shot back up to 28 from 25 shortly after the signal. However, our DMI indicator would have failed to give that signal. The DMI lines didn't create a bullish crossover until the

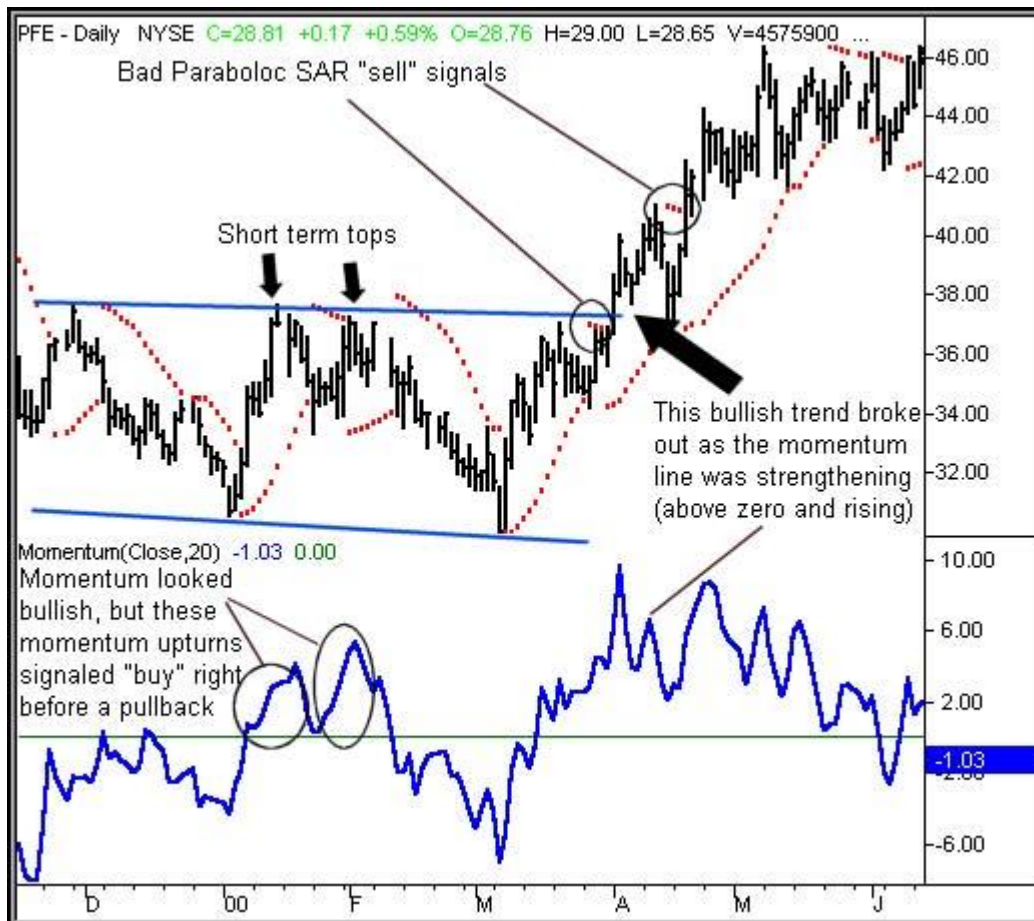


stock had already hit the resistance line.

In late November DOW finally broke through its resistance line, breaking out of its range. The break above the resistance line was a bullish signal, and was confirmed by a bullish DMI cross. Although DMI+ (thicker line) crossed over DMI- (thin line) prior to the breakout, the signal is still a valid indication

of momentum. The rising ADX (dashed) is even further evidence of a strong trend in development. It is at this point that the RSI oscillator becomes ineffective, as it gave an erroneous sell signal in early December, and an erroneous buy signal throughout February.

Let's take a look at the parabolic SAR oscillator and the momentum indicator called 'momentum'. In late 1999 and early 2000 we can see that Pfizer was bouncing around between 31 and 37. The parabolic SAR marker accurately identified two tops as well as two minor bottoms, giving the signal right at the time of reversal (which was right at the time PFE met support or resistance). Had you been following the momentum indicator, you would have gone long right as the stock turned down. The



parabolic SAR was better suited to spot the trading range.

Conversely, in April when Pfizer shares broke out of resistance, we already had a buy signal from the momentum indicator. Remember, a full 'buy' from the momentum line comes when the line is rising and above zero. You also had a bullish parabolic SAR indication the day before the breakout, but once shares got out of the trading range, the momentum was obvious. In this case the parabolic SAR and the momentum line agreed with each other for most of the uptrend. However, the parabolic SAR would have given you a couple of sell signals during that uptrend that would have best been ignored. The momentum line was still well above zero and rising – just like the stock.

This is why it's important to understand what kind of market you're in. Ignoring the wrong kind of signal is as much of a skill as acting on the right signal.

Checkpoint 5 – Final Exam

You should have reviewed all of the book material and passed the previous checkpoint tests before continuing on to the final exam “Putting It All Together”. If not, it is recommended that you go back and do that first.

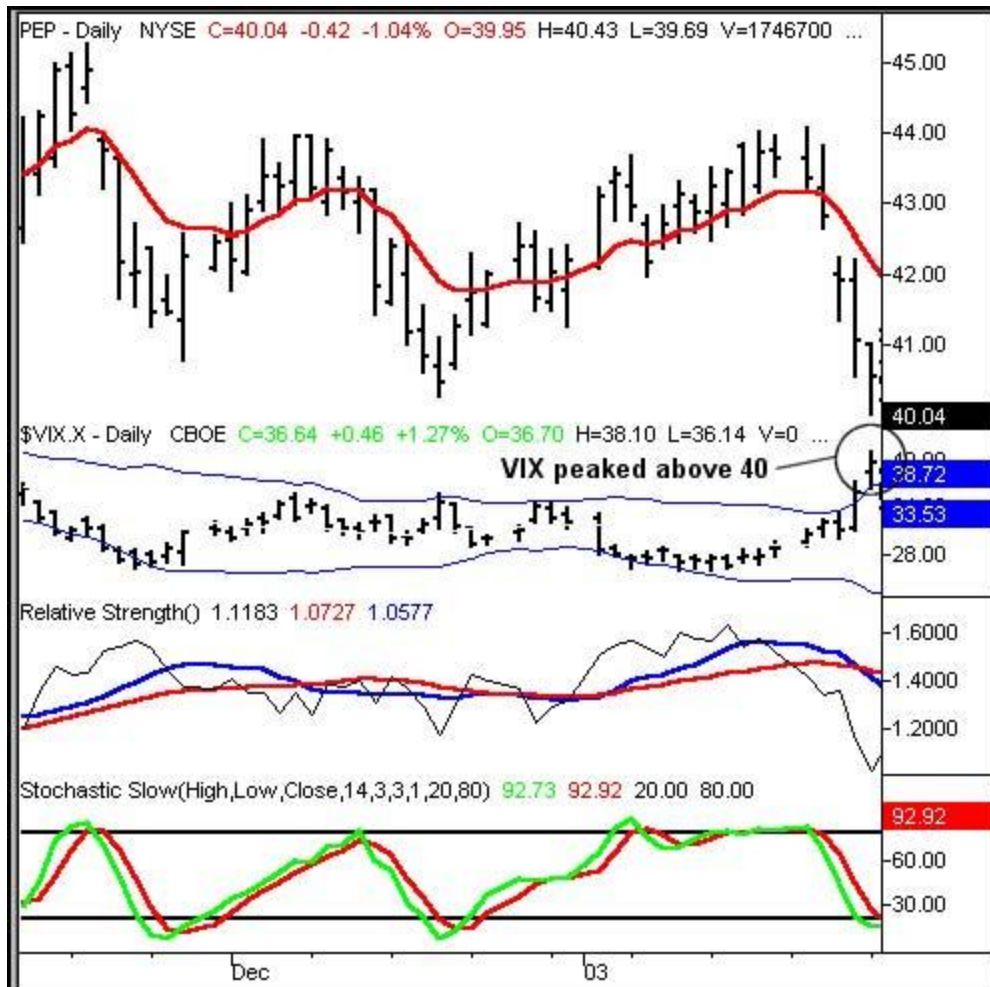
On the following pages you will be presented with three charts, each of which will have a different set of technical indicators and chart patterns. Although there are only a few questions, this IS a difficult test. You will be asked to write your opinions of indicators in the three scenarios. There are no multiple-choice questions, and there are no fill-in-the-blank questions. You will then compare your answers with our analysis of the same scenario. There are no specific right or wrong answers, but your analysis should closely match ours.

Scenario 1. In the chart of IBM below, we have plotted 10 and 20 day EMA, an RSI chart, trade volume, and MACD. With an explanation of your rationale for each indicator, what is your assessment



of this chart? Would you buy, sell, or do nothing?

Scenario 2. In the chart of PepsiCo below, we have plotted a 10 day EMA, the VIX (with Bollinger bands), a relative strength chart (comparing PEP to the S&P 500) and stochastics. With an explanation of your rationale for each indicator, what is your assessment of this chart? Would you buy, sell, or do



nothing?

Scenario 3. In the chart of Coca-Cola below, we have plotted Bollinger bands around the price chart, as well as a 10 day EMA. We also have plotted stochastics and a DMI chart. With an explanation of your rationale for each indicator, what is your assessment of this chart? Would you buy, sell, or do



nothing?



Stop! You have completed section 5. You may check your answers with the answer key. This is the end of this workbook.

Checkpoint 5 Answer Key

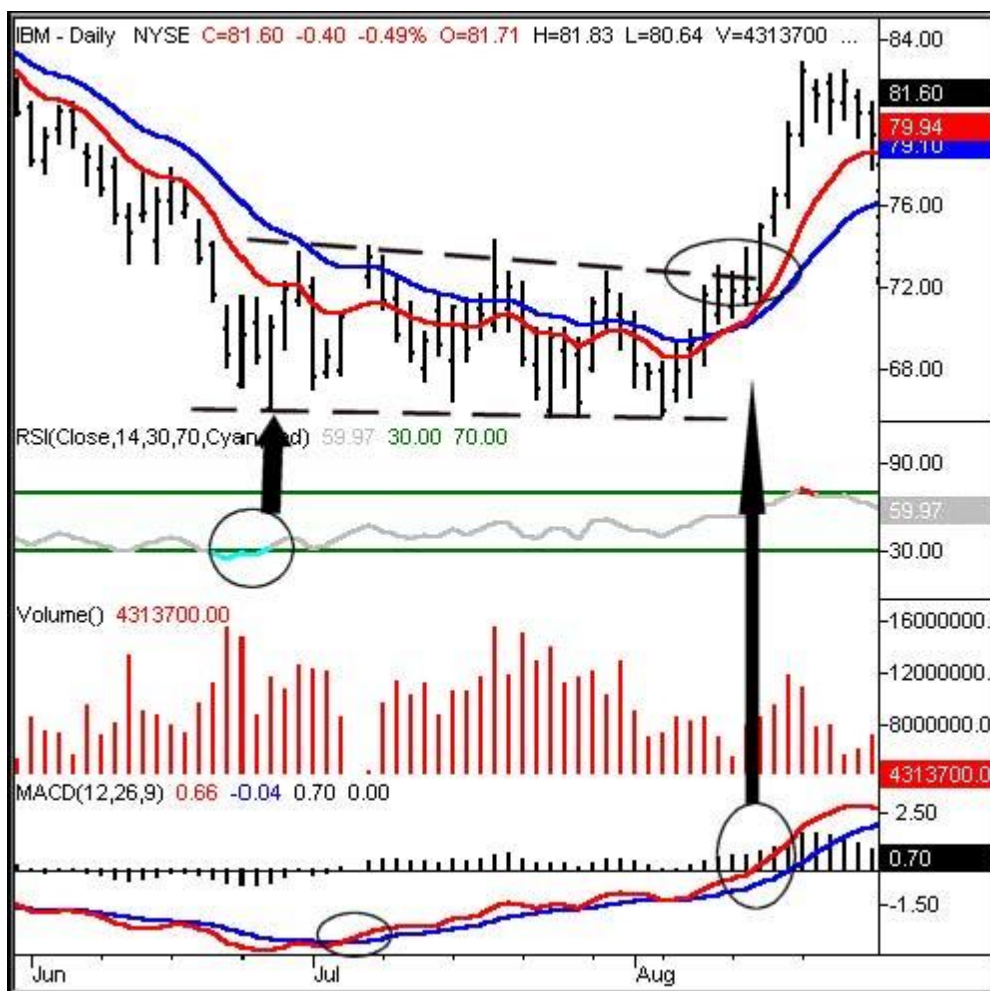
Scenario 1.

Based on the chart, IBM would have been a good purchase. It had made a trading range between 66 and 73 after from June through August. In August it broke past its upper resistance line, which would have been an important buy signal.

RSI actually did give a buy signal when it hit the 'oversold' threshold in June. As you can see, it did start rising after it hit the oversold line. That in itself would not have been enough of a signal to actually merit making a purchase, but it did confirm what other indicators eventually said.

MACD was similar to RSI in that it gave a buy signal very early. Bullish MACD crossovers that occur beneath the zero line aren't really the strongest buy signals. But when those MACD lines stayed bullish AND crossed over the zero line, that proved to be a great buy signal. The fact that this occurred at the same time as the break through the resistance line is even that much more bullish.

Volume wasn't very helpful in this particular chart.



Scenario 2.

Based on this chart, we would have avoided taking any position, long or short.

When the share price fell under the 10 day exponential moving average, that was a sell signal. But at the same time, the VIX was rising, and starting to form a peak. This would have been a sign that a market rally was soon approaching, and that could potentially lift shares of PEP back out of their slump. The relative strength analysis was making a sell signal when shares of Pepsico started underperforming compared to the rest of the market (signaled by the cross under), but stochastics had indicated that shares were already oversold and could reverse soon.

While stochastics was bullish in the sense that shares were oversold, it was also a bearish indication. The stochastic lines had not crossed back above the 'oversold' threshold yet, and as we have seen, stocks can decline greatly while the stochastic lines stay in 'oversold' territory.

Considering the mixed data and volatility, this trade would have been best left alone.



Scenario 3.

This was a pretty straightforward sell signal. The upper Bollinger band had acted as resistance, and when shares fell under the 10 day EMA, that was enough of a signal to sell or short Coca-Cola.

That opinion was supported by stochastics, when slowK crossed under slowD and then the both fell back under the 'overbought' line.

ADX/DMI further confirmed the sell when the DMIminus line crossed over the DMIplus line, and ADX



started rising.

This is the end of the BigTrends technical analysis guide. We hope it proves beneficial to you and your trading. While we have given you a thorough understanding of the primary indicators and chart patterns, nothing teaches like experience. For that reason, we encourage you to “paper-trade” for a while, to get a good feel for how these indicators work, including their shortcomings, before committing any money to them. It’s also important to note that while these techniques are effective, there are always exceptions. It is the net result you are interested, and not necessarily every trade. There will also be conflicting signals given at any point in time. That’s the interesting part about technical trading. It is not a science – it’s an art. The best way to learn an art is to simply do it.

Don’t try and use all of the indicators and signals at the same time. You will never see all of them in agreement, and you will get far more information than you can process. Instead, find the ones that work best for you and your strategic style, and become a master of them. In our experience, the best trading systems are the simplest ones.

Inquiries about this workbook and other BigTrends services can be made through our website BigTrends.com, or by calling 1-800-BIGTRENDS/1-800-244-8736.