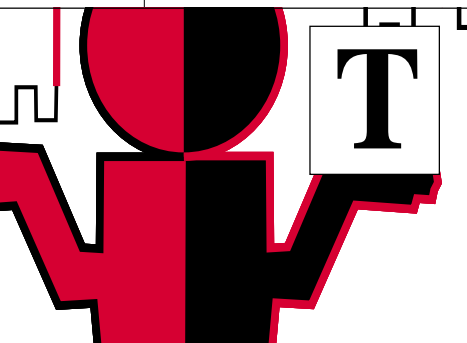


TRADING TECHNIQUES

Kagi Charts

If you've ever seen a reference to this particular form of candlestick charting and wondered what they were, you can find out here.

by Jayanthi Gopalakrishnan

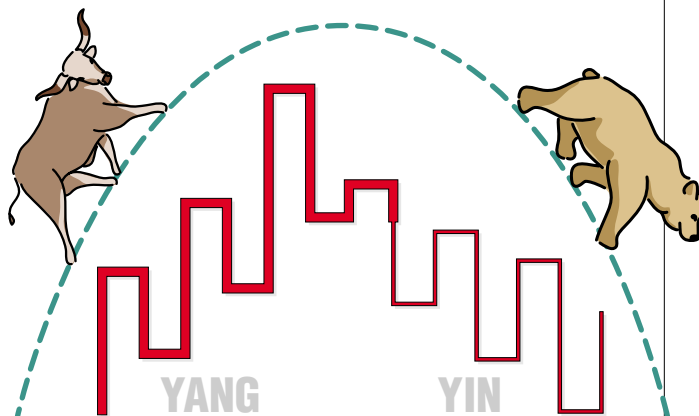


he financial markets exist because of the complimentary relationship between bulls and bears — one cannot exist without the other. The key is to recognize which has control of the markets and identify when that control changes. One way to do this is through kagi charts.

Kagi charts, which have also been known as *key charts*, *price range charts*, *hook charts*, *delta charts*, and *string charts*, originated in Japan in the 1870s about the same time as the more popular candlestick charts. The only variable that is considered in kagi charts is the closing price, and the indication of bullish/bearish markets is determined by the thickness of the lines.

Initially, when I first began to work with it, I found the kagi chart's unfamiliar display confusing. I found it difficult to determine what the closing prices were and whether the specific security was trending or in a trading range. But the ambiguity intrigued me, encouraging me to explore this type of chart further. That led me to discover that kagi charts were an interesting method by which to identify trends, support/resistance levels, and reversals.

Although there are software packages that will automatically display kagi charts, I will explain the process of creating these charts so that it is easier to understand them and to make trading decisions using them. One thing to keep in mind is that kagi charts are effective in trending markets; this is because they do not identify peaks and troughs.



YANG AND YIN. Kagi charts reveal whether bulls or bears are in control of the market. A change in force is indicated when a thick yang line changes to a thin yin line or vice versa.

They are *not* effective in trading ranges. Instead, you can use kagi charts to enter trends when they have already begun and exit before they end, letting you take advantage of the heart of the trend.

CREATING KAGI CHARTS

In creating a kagi chart, the first step is to select a reversal amount. This is the amount the price must move in order to reverse direction. The reversal amount will vary depending on such factors as volatility, trading time frame, price of the security, and the amount of risk you are willing to tolerate. For example, a position trader would choose a smaller reversal amount than a long-term investor.

I will use the data in Figure 1 to show how a kagi chart is created. Although I prefer to use a percentage for the reversal amount, for illustration purposes I will use the number “3.” To draw the first line of a kagi chart, you must compare the closing price of the second session to the closing price of the first session, which is referred to as the *base price*.

Before going any further, it is important to know the specific rules involved in drawing the lines of a kagi chart.

SESSION	CLOSING PRICE
1	52
2	55
3	53
4	50
5	49
6	55
7	54
8	58
9	53
10	54
11	50
12	51
13	45
14	48
15	47
16	40
17	41
18	45
19	46
20	50

Base price

FIGURE 1: CLOSING PRICES. To draw the first line of a kagi chart, you must compare the closing price of the second session to the closing price of the first session, which is referred to as the “base price.”

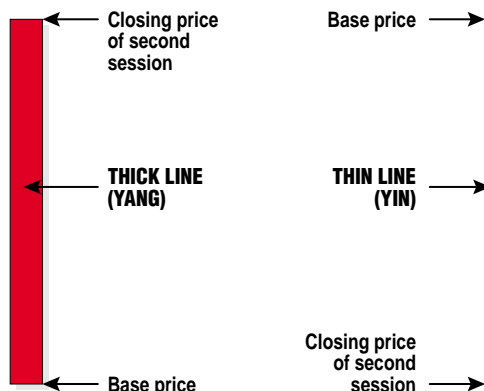
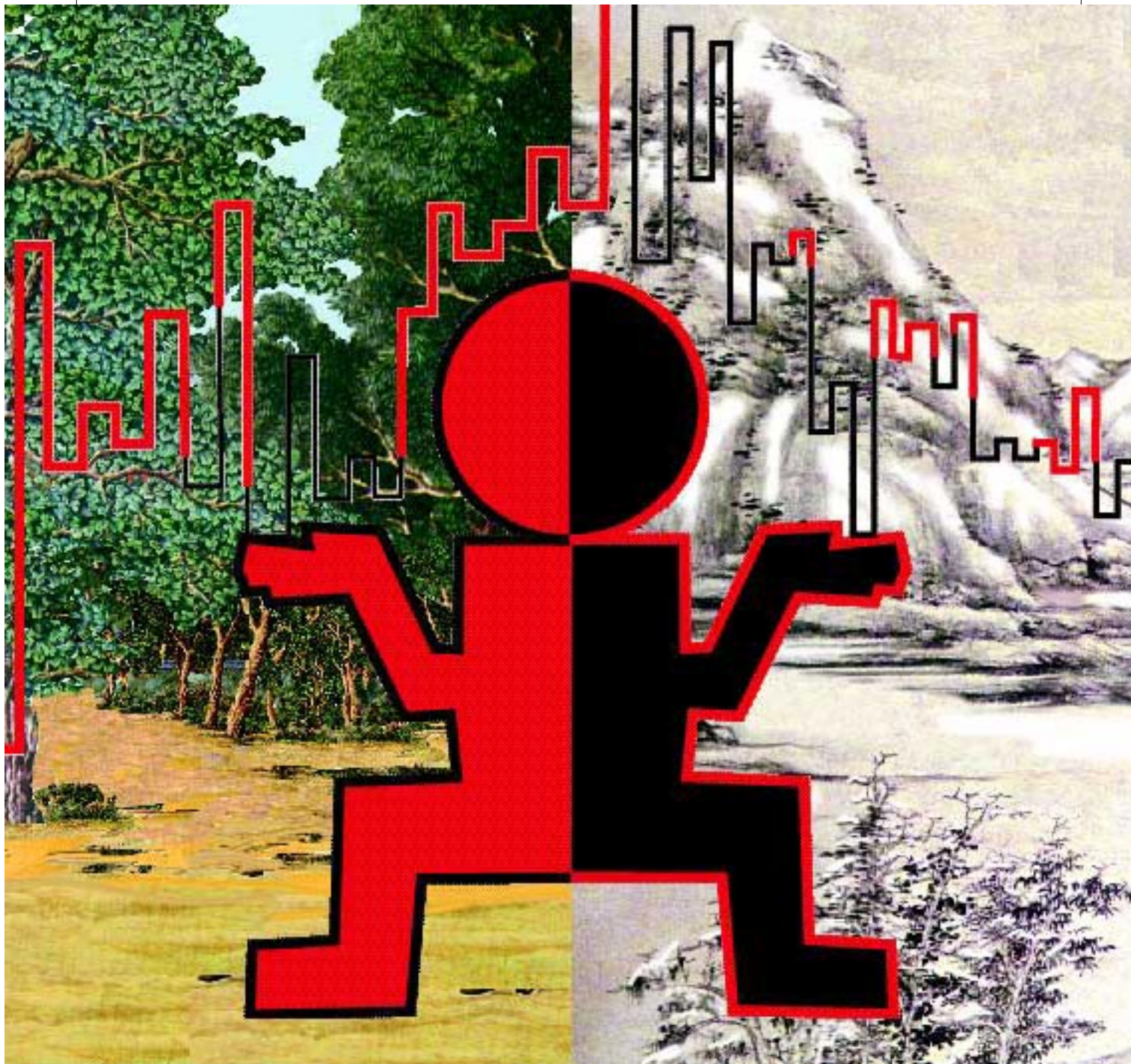


FIGURE 2: THICKNESS OF LINES. Line thickness indicates the activity of base price to the second session closing price.



CHRISTINE MORRISON

The first line can only be drawn if the difference between the base price and closing price of the second session is equal to or greater than the reversal amount. Next, you must determine whether the price is higher or lower than the base price. If it is higher than the reversal amount, draw a thick vertical line from the base price to the closing price of the second session. If the closing price is lower than the base price, draw a thin vertical line from the base price down to the closing price (Figure 2).

If the difference between the two is less than the reversal amount, do not draw a line. Continue to the third session and compare that closing price to the base price.

In Figure 1, you can see that the closing price of session 2 is higher than the base price by \$3.00. Since this is equal to

the reversal amount, I will draw a thick line from the base price to the closing price of the second session. You can see this in Figure 3 in the line marked 1 to 2.

After drawing the first line, you must look at the closing price of the subsequent session (in this case, session 3). If this closing price continues its move in the same direction as the previous kagi line, extend the line to the closing price. The amount of the price move does not matter. If it moves in the opposite direction, then the move must be greater than or equal to the reversal amount to be drawn. If it is less, do not draw the line.

The closing price of the third session moves in the opposite direction by less than the reversal amount, so I did not draw a line. Next, look at session 4. The price continued down to

50, which is five points less than the prior kagi, a difference greater than the reversal amount; so, I draw a short horizontal line known as an *inflection line* and a vertical line from 55 to 50. An inflection line should be drawn whenever there is a move in the opposite direction that is greater than or equal to the reversal amount.

This new line goes below the previous low of 52. Since the line does this, it changes from a thick (*yang*) line to a thin (*yin*) line from the previous low point to the end of the line. The change from yang to yin or vice versa plays an important role in the decision-making process. I will cover this in more detail later, after I explain how the charts are created.

The closing price of session 5 is \$1.00 below that of the closing price of session 4, so I extend the line down to 49, since it is continuing in the same direction. But the next closing price is 55, which is a move in the opposite direction by an amount greater than the reversal amount. I draw an inflection line and a vertical line from 49 to 55, the previous high. If the line extends beyond 55, it will change from a yin line to yang line, which, as you can see from Figure 3, takes place in session 6. A yang line will change to a yin when it goes below the previous low; a yin line will change to a yang when it goes above the previous high. By continuing to draw these lines in this way, you will end up with a chart similar to that in Figure 3.

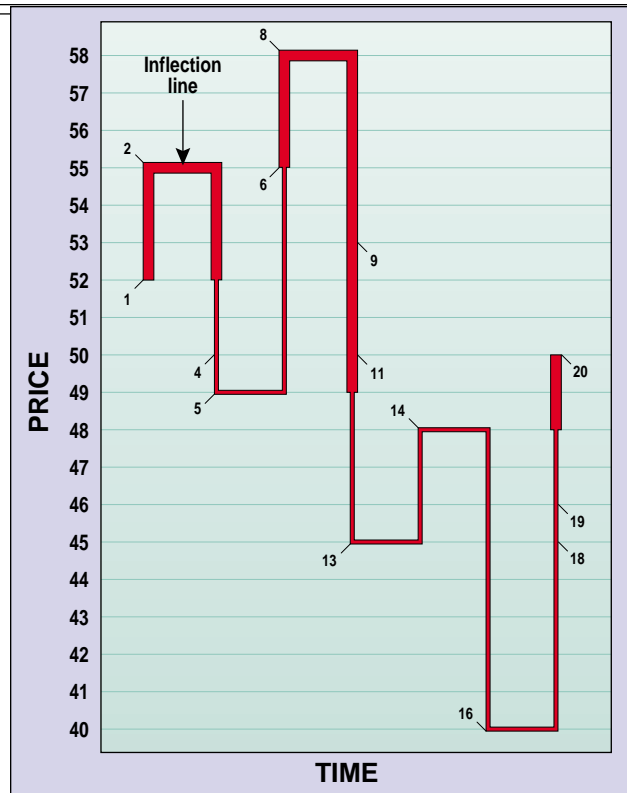


FIGURE 3: CREATING A KAGI CHART. Here's an example of how a kagi chart is created. Note how the yang line turns into the yin, and vice versa.

INTERPRETING KAGI CHARTS

Now that you know how to build kagi charts, here's how to apply them to your trading. Buy/sell decisions using kagi charts are based on the following principle:

*Buy on the yang,
Sell on the yin.*

The thick yang line indicates that the bulls are in control. When the yang line changes to a thin yin line, it indicates there has been a change in force; the bulls have lost control and the bears have taken over. Figure 4 displays a kagi chart of At Home Corp. [ATHM]. Areas labeled as "buy" are those where the thin line changes to a thick line and those labeled as "sell" are where the thick line changes to thin. It is evident that if you used only this basic technique, there would be instances that would not provide very favorable results. In addition to simply looking at the change in the thickness of the lines, you can also look at additional factors that will add strength to your decision-making process.

Various patterns emerge from kagi charts that you should be able to identify. The first is the *shoulder and waist* patterns. A shoulder is a previous high, and a waist a previous low. So if you identify a series of higher highs (Figure

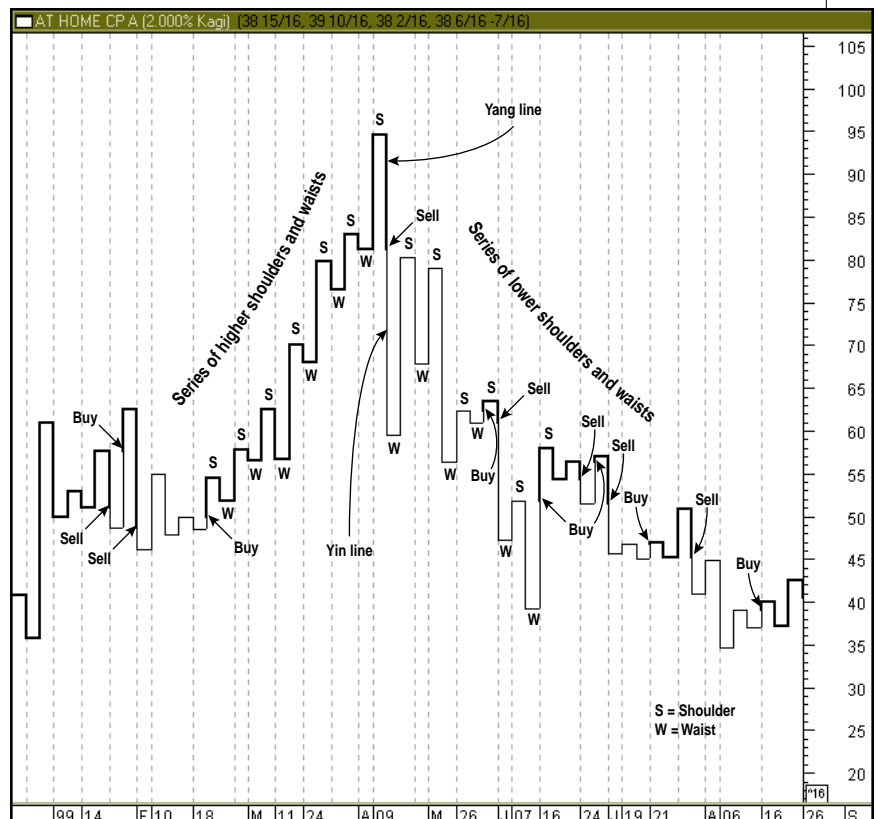


FIGURE 4: KAGI CHARTS AND TRENDS. Here's a kagi chart displaying buy and sell signals and trends. A buy signal is generated when the yin line changes to a yang line; a sell signal is generated when a yang line changes to a yin line. A series of higher shoulders and waists indicates an upward trend, whereas a series of declining shoulders and waists indicates a declining trend.

4) and higher waists, it implies a strong upward trend. Conversely, a series of declining shoulders and waists implies a bearish trend.

As previously stated, kagi charts are effective only in trending markets. Figure 5 displays an example of why kagi charts do not work well when markets are in a trading range; you cannot make any meaningful analysis with them. A strong trend is necessary for the shoulders and waists to reveal significant patterns. In late March 1999, note where the yin line changes to a yang line. You want to determine the strength of a trend before buying. One way to do this is to wait for a multilevel break to confirm that a trend is beginning. A multilevel break is when you wait for more than one previous waist or shoulder formation to be broken before entering or exiting a trade.

Shoulders and waists can be used as support and resistance levels. You can also use the center of a previous long kagi line as a support/resistance level. For our purposes here, I will use the lowest shoulder level as the support level (support 1) in Figure 5. Now it is a matter of waiting for three shoulders to be broken before getting a signal that an upward trend is under way. This is known as a *three-level break*. You may also use two shoulders, but I find the three-shoulder method to be better confirmation. In this case, a succession of three higher shoulders (S1, S2, S3) did take place, but a higher one did not follow the third shoulder. Because of this, I would not enter a long position here.

As long as prices do not fall below the first support level, it suggests that the market may continue the rally, even though it may have slowed down. I drew another horizontal line at the high of S3 (the highest of the three shoulders), which acts as the first resistance level. At that point, I need to wait for a thick (yang) line to break the resistance line. This took place at a point I could have entered the trade or waited for another higher shoulder to form for additional confirmation. If I had entered after prices broke above the first resistance line, I would have entered at around \$50. If I had waited for the formation of a higher shoulder, I would have entered the trade at around \$57. I used this point as a second resistance level.

To determine my exit point, I keep an eye on the waists. As long as there is a succession of higher waists, I know the trend is still strong. I use the previous waist as a support level, and if the kagi line falls below it, it would indicate the bulls are losing control to the bears.

This scenario took place in January 2000. In this case, since the return was satisfactory, I might have sold my position

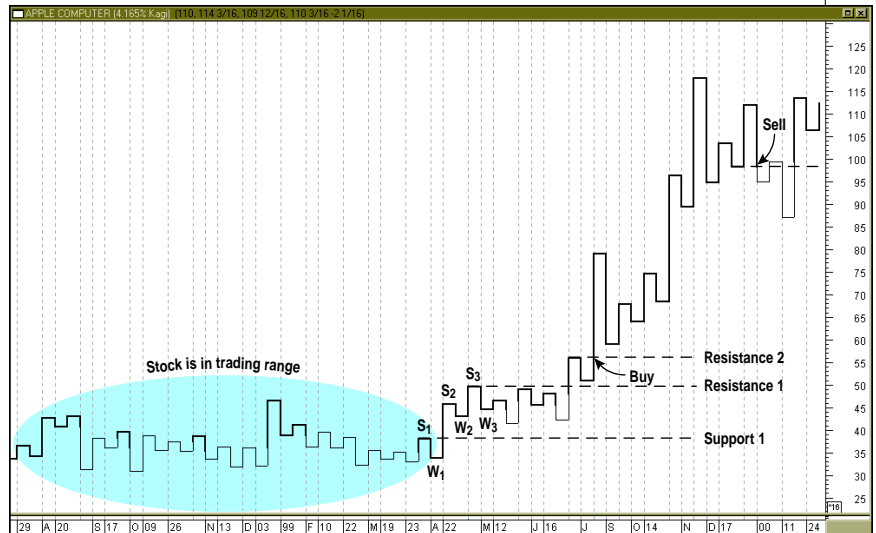


FIGURE 5: TRADING RANGES AND TRENDS. Kagi charts are not effective during trading ranges. They work well during trending markets, letting you take advantage of the heart of the trend.

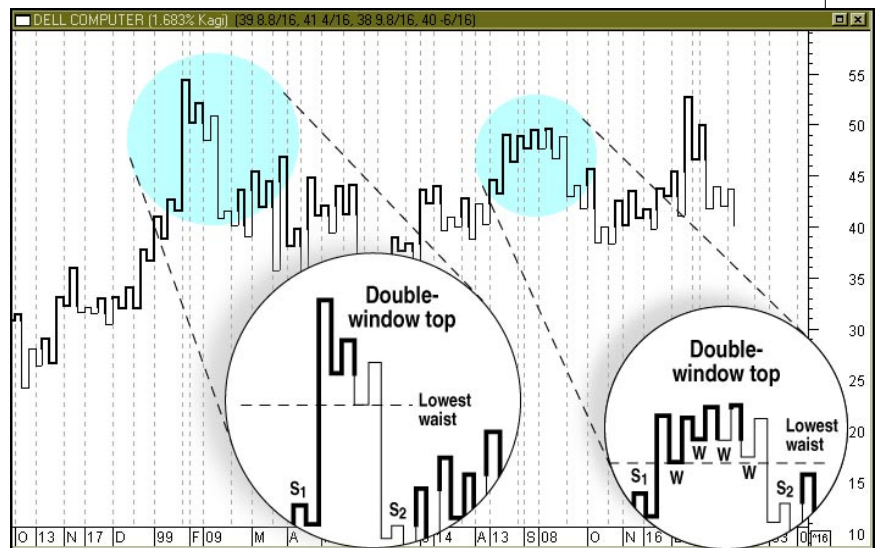


FIGURE 6: DOUBLE-WINDOW TOPS. These are common reversal patterns that appear in kagi charts. Note the two shoulders are below the lowest waist.

when the yang line was transformed into a yin line. You could, however, still wait for a multilevel break, in which case you would still have your positions open. You could also wait for the formation of a reversal pattern before closing out your position.

REVERSAL PATTERNS

Various patterns can be identified in kagi charts; Figure 6 displays the double-window top reversal patterns. These, along with their converse, double-window bottoms, are common reversal patterns. If the market is in an upward trend, you may see a double-window top form. The left and right shoulders will be below the lowest waist. Sometimes, you may come across a situation where you have several waists forming above the two shoulders, as can be seen in the example in Figure 6.

If the market is in a downtrend, you may see the formation of a double-window bottom; you will see the formation of a shoulder that is lower than the prior waist. The next waist that forms will also be above the shoulder. Here also, there may be more than one shoulder forming between the waists. Take a look at Figure 7.

Another reversal formation is the three-Buddha and reverse three-Buddha. This pattern is similar in appearance to the head-and-shoulders and inverted head-and-shoulders. You can use multilevel breaks in conjunction

Kagi charts help you take advantage of the heart of a trend. Identifying patterns such as successive highs or lows, and support and resistance levels help determine when to enter and exit.

with these patterns, as can be seen in Figure 8. The second-level breaks can be used as benchmarks for generating buy and sell signals. You can see the formation of the three-Buddha pattern in Figure 9.

One method I find effective with which to detect trend reversals is the use of trendlines. Take a look at the chart of MCI Worldcom [WCOM] in Figure 9. In a trending market, a break in the trendline usually indicates that the trend is reversing. The same theory can be used in kagi charts. The point where both a change in force from bulls to bears or vice versa and where the trendline breaks can be a point at which to exit and enter your positions.

A common pattern that traders look for is a series of shoulders and waists. For example, a sequence of six higher shoulders will be referred to as six *record session highs*. Generally, if you see a series of nine record sessions, you can anticipate a countertrend move. The series does not have to be consecutive. I rarely came across a chart that displayed nine record sessions, so I cannot verify the significance of this pattern.

Although the examples used here have been based on the daily close, kagi charts can be used effectively for intraday charting as well. Figure 10 displays a one-minute chart for Ciena Corp. [CIEN]. The reversal amount of 0.294% is much smaller than those used in daily charts. The point labeled “buy” is where I entered a long trade.

In Figure 10, the yin line was transformed into the yang at approximately 9:08 am. I used the third shoulder as my support line and entered the trade after the shoulder was broken at \$71.00. Once the trade was executed, I had to work out my exit strategy. The exit would be at the yin line, which didn’t emerge till 11:16 am. I waited for a confirmation signal using previous waists and shoulders as my alert levels.

By this time we had a series of three declining waists

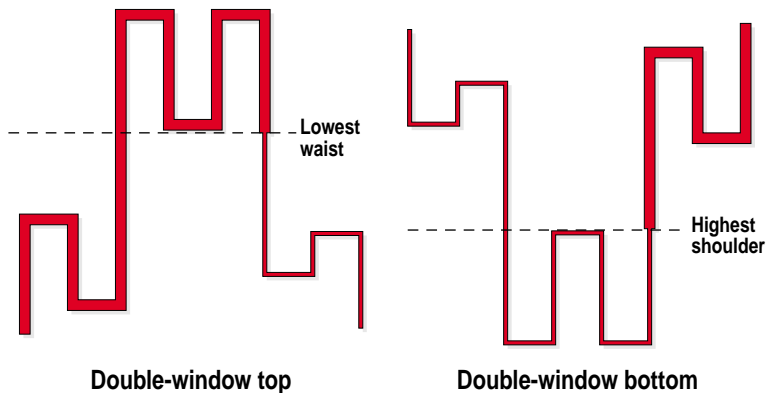


FIGURE 7: DOUBLE-WINDOW TOPS AND BOTTOMS. These are common reversal patterns you can find in kagi charts. A double-window top is formed when the lowest waist between the high shoulders is higher than the two shoulders that form prior and after the high shoulders. A double-window bottom is formed when the highest shoulder is below the two waists.

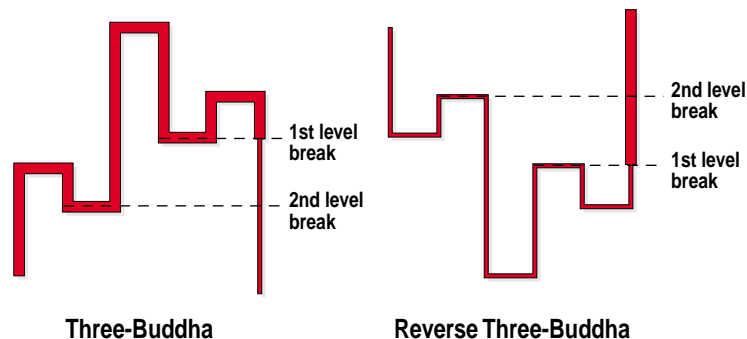


FIGURE 8: THREE-BUDDHA AND REVERSE THREE-BUDDHA. These are reversal patterns similar to head-and-shoulders and inverted head-and-shoulder patterns. They can be used together with multilevel breaks to generate buy and sell signals.

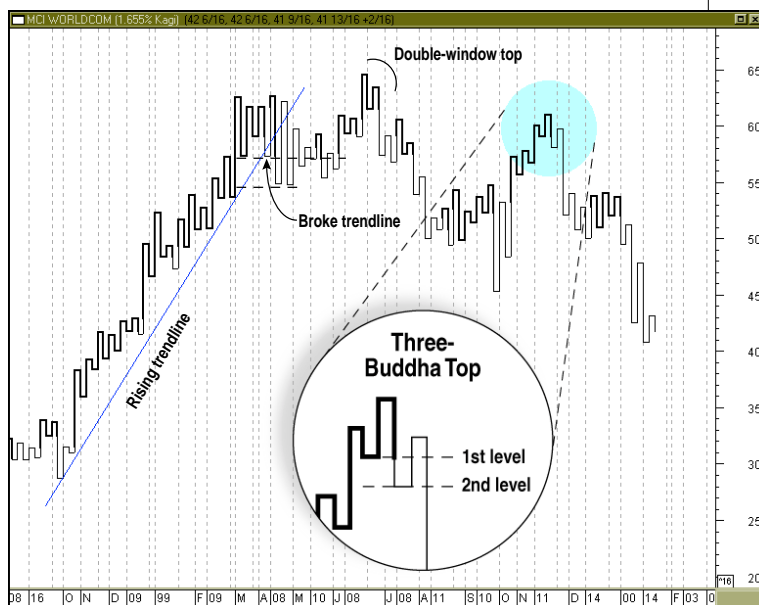


FIGURE 9: TRENDLINES AND KAGI CHARTS. Trendlines can be effectively utilized in kagi charts. They can be used as an added indicator to determine when the trend changes direction.

and two declining shoulders. The price had reached the level of my entry price and I didn't place any stops. I wanted to wait for a fourth waist to form before placing my sell order. The third waist was not broken and the next shoulder did not go below the previous shoulder. I held onto my open position and was fortunate to have the trade run in my favor.

The yin line changed to a yang line at approximately 11:55 am, and prices actually shot up. I used the center of the long kagi line (point A, Figure 10) as my support level and placed a sell order at $73\frac{1}{4}$. I was able to close out my position before the end of the day and make a profit of $2\frac{1}{4}$ per share.

Figure 11 contains a display of the same chart using open/high/low/close (OHLC) bars with an overlay of five- and 10-day moving averages. If I had used the moving average crossover system to generate buy and sell signals, I would have entered and exited many more trades, as can be seen by the buy and sell arrows.

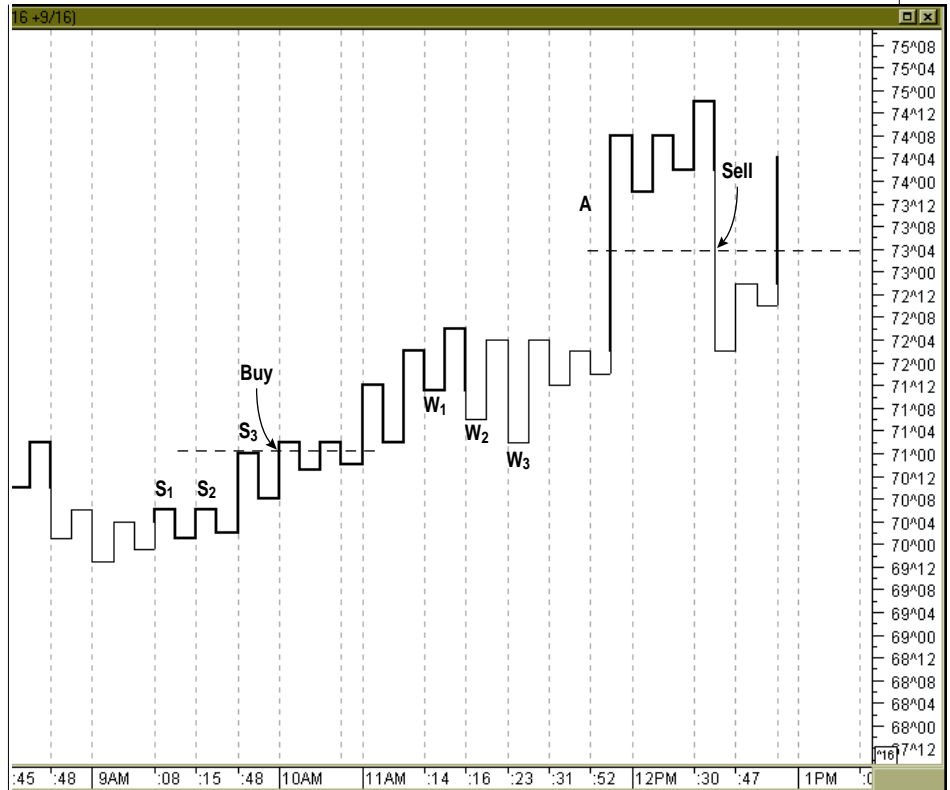


FIGURE 10: ONE-MINUTE KAGI CHART. Kagi charts eliminate the whipsaws that can be found in typical bar charts, generating fewer trades.

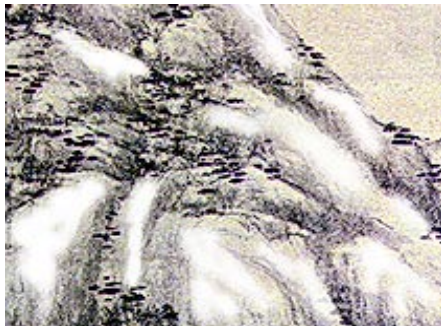


FIGURE 11: ONE-MINUTE BAR CHART. A one-minute bar chart using a simple moving average crossover system generates more trades than the kagi chart.

CONCLUSION

Kagi charts help you take advantage of the heart of a trend. Identifying patterns such as successive highs or lows, and support and resistance levels help determine when to enter and exit trades. The formations of reversal patterns indicate the possibility of the end of a trend and shift in control from the bulls to the bears or vice versa.

One aspect you need to keep in mind when using kagi charts is that to use them, you will need more discipline and patience than you do with most other indicators. This is because it is a lagging indicator, and although



other indicators might have already generated their buy and sell signals, you will find yourself waiting for a longer period before they are generated on a kagi chart.

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Nison, Steve [1994]. *Beyond Candlesticks: New Japanese Charting Techniques Revealed*, John Wiley & Sons.

†See Traders' Glossary for definition

