

*The Mountain Man Is Back,
This Time In Computerized
Trading Rooms*

Ichimoku Charts

A Japanese charting technique developed early in the 20th century is enjoying renewed popularity.

Invented before World War II by a Tokyo newspaper writer who called himself “Ichimoku Sanjin” (a pen name meaning “a glance of a mountain man”), *ichimoku* charts are becoming a popular tool for Japanese traders once more, not only in equities but also in currencies, bonds, indices, commodities, and options. Literally, *ichimoku* means “one look”; a chart of this style is referred to as *ichimoku kinkou-hyou* — the table of equilibrium prices at a glance.

Ichimoku’s guidebook on the charts finally appeared in 1968, long after the newspaper writer, whose real name was Goichi Hosoda, developed the technique. All the computations involved no more than taking midpoints of historical highs and lows in various ways. Nevertheless, the completed chart presents a panoramic



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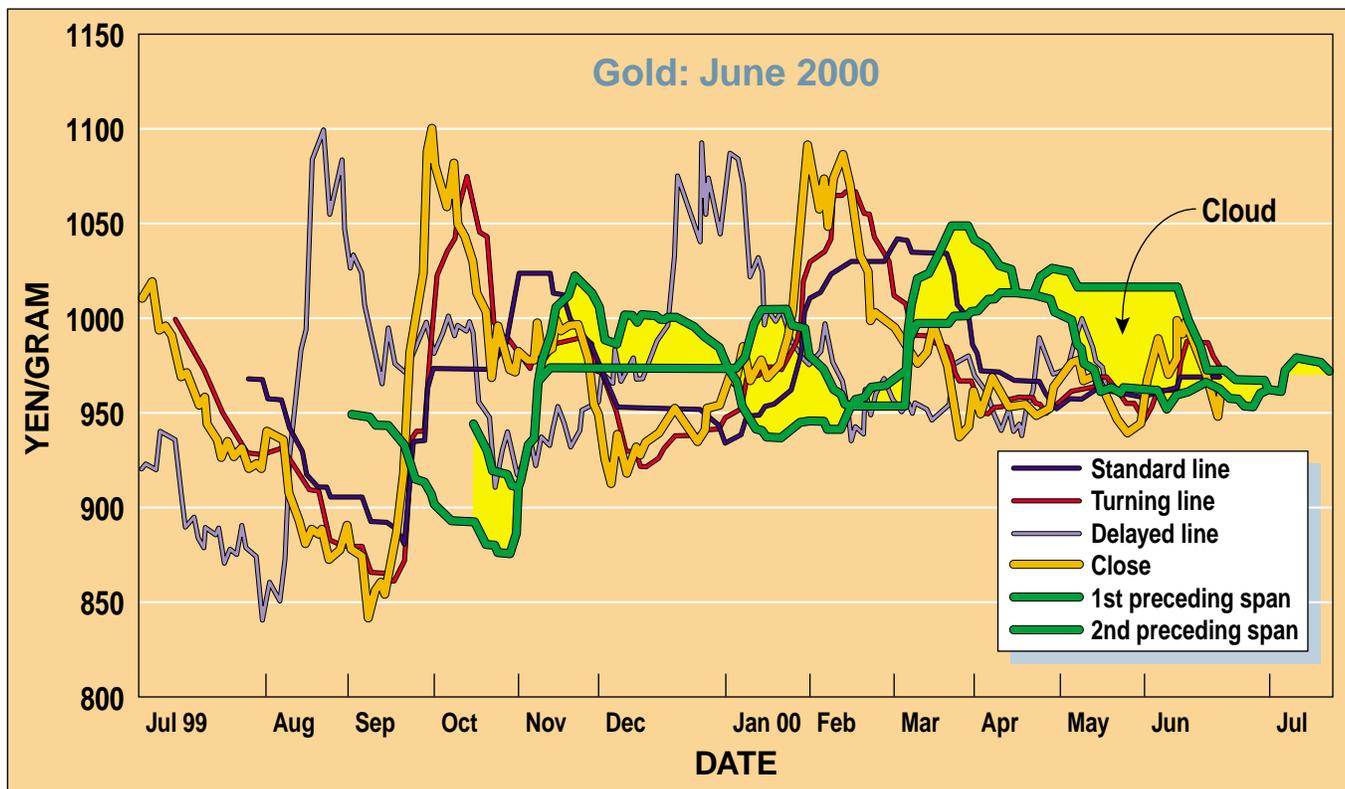


FIGURE 1: ICHIMOKU CHART. June gold 2000 jockeys within the confines of lines generated by its own movement. Ichimoku charts are meant to portray the tradable's position within its expected trading range. The most recent prices are in the cloud, indicating a lack of direction.

view of price movement. For years, Hosoda hired students to do numerous calculations (or simulations) to come up with the optimum formulas, long before personal computers or even pocket calculators were the norm. He died in 1983, but the spirit of his work is in computerized trading rooms in the form of ichimoku charts. Although he also developed some wave theories, I'll only cover the chart style here.

CONSTRUCTING AN ICHIMOKU CHART

An ichimoku chart consists of:

- 1 The standard line,
- 2 The turning line,
- 3 The delayed line,
- 4 The first preceding span, and
- 5 The second preceding span.

Today's point in the *standard line* is computed by the formula

$$\text{Standard line} = \frac{\text{Highest high} + \text{lowest low}}{2}$$

for the past 26 days, including today.

In a similar way, the *turning line* is computed by the formula

$$\text{Turning line} = \frac{\text{Highest high} + \text{Lowest low}}{2}$$

for the past nine days, including today.

Now write down these computed values in a table or spreadsheet, which in Japanese is called *kinkou-hyou* (the table of equilibrium prices). Next, in this table record today's closing price 26 days *prior* to today. This becomes a point in the *delayed line*. (See sidebar "Computing ichimoku lines" for details in a spreadsheet.)

The *first preceding span* is computed using the standard and turning lines by the formula

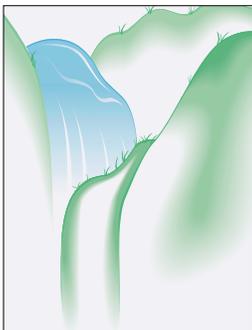
$$\text{1st preceding span} = \frac{\text{Standard line} + \text{Turning line}}{2}$$

and the computed value is entered in the same table 26 days *ahead* of today, counting today.

Finally, the *second preceding span* is computed from the historical prices as

$$\text{2nd preceding span} = \frac{\text{Highest high} + \text{Lowest low}}{2}$$

for the past 52 days, including today, and this value is again recorded in the table 26 days *ahead* of today, counting today. Using a spreadsheet or analytical program, chart these lines along with your pricing (Figure 1).



COMPUTING ICHIMOKU LINES

You should be able to display ichimoku charts in your spreadsheets using formulas similar to these Excel formulas.

First, prepare the data in column format using date, high, low, and close. The open is not used. Then enter the formulas shown in sidebar Figure 1 for columns E, F, G, K, and L. Copy them all down to the end of the data.

Column G, the delayed line, will end in a series of zeroes because it looks ahead in the data to see what the values are in the future. This formulation, while unusual to Western eyes, is correct.

Because columns I and J start so far into the data, they aren't shown on sidebar Figure 1. Instead, enter in cell I52 the following formula for the first preceding span:

$$=(E27+F27)/2$$

Copy cell I52 down to the end of the data. Then, in cell J78, enter the following formula for the second preceding span:

$$=(MAX(B2:B53)+MIN(C2:C53))/2$$

and copy it down to the end of your data.

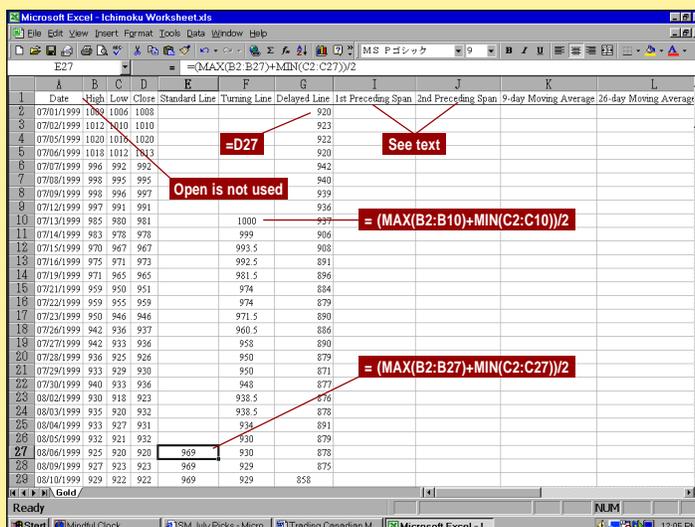
Using the charting facility for your spreadsheet, create a multiple data series chart. In Excel, the specifications for the lines (using our gold example with 268 rows of data) are:

Standard line

$$=SERIES(Gold!\$E\$1,Gold!\$A\$2:\$A\$268,Gold!\$E\$2:\$E\$268,1)$$

Turning line

$$=SERIES(Gold!\$F\$1,Gold!\$A\$2:\$A\$268,Gold!\$F\$2:\$F\$268,2)$$



SIDEBAR FIGURE 1: COMPUTING ICHIMOKU. Here's how to compute ichimoku using an Excel spreadsheet.

Delayed line

$$=SERIES(Gold!\$G\$1,Gold!\$A\$2:\$A\$268,Gold!\$G\$2:\$G\$268,3)$$

Close

$$=SERIES(Gold!\$D\$1,Gold!\$A\$2:\$A\$268,Gold!\$D\$2:\$D\$268,4)$$

First preceding span

$$=SERIES(Gold!\$I\$1,Gold!\$A\$2:\$A\$268,Gold!\$I\$2:\$I\$268,5)$$

Second preceding span

$$=SERIES(Gold!\$J\$1,Gold!\$A\$2:\$A\$268,Gold!\$J\$2:\$J\$268,6)$$

This model is available for download to STOCKS & COMMODITIES subscribers on the S&C Website at <http://technical.traders.com/sub/sublogin.asp>. —K.M.

SIMILAR BUT DIFFERENT

By and large, the calculations for ichimoku charts are similar to moving average techniques but use the historical highs and lows rather than a series of closing prices. Hosoda believed that midpoints within a time span reflect price characteristics much better than means.

Note the key time spans of nine, 26, and 52 days in his formulas. The time span of 26 days would correspond to the number of business days (Saturdays included) in one month when this charting method was devised and tested. So the time horizons of nine, 26, and 52 days represent a week and half; a month; and two months, respectively.

Some other values of these time spans may be more predictive when the chart is used in today's markets. As an illustrative example, I've followed the original ichimoku formulas to present Figure 1, a chart of the gold futures listed at the Tokyo Commodity Exchange. The historical data was downloaded

from the exchange's Website. Figure 1 shows the June 2000 contract of gold futures prices (July 1, 1999, to June 27, 2000).

AN ICHIMOKU CHART EXPLAINED

Figure 2 is the same series with moving averages that have been computed using the same time spans (nine and 26 days) as the ichimoku's *standard* and *turning lines*. The lines of the moving averages are more smoothed than the lines of the standard and turning lines that are created by taking midpoints of the historical high and low prices. Other than this difference, the traditional moving average technique and the ichimoku standard/turning lines would give a similar result. As in the moving averages, a buy signal is initiated when the turning line shoots above the standard line, whereas the sell signal is the opposite.

Moving averages reflect the consensus of investor expectations over a specified period in terms of the average of closing prices. Gold prices would not rise much without the market



FIGURE 2: AVERAGES. Averages also track the gold prices shown in Figure 1. Compare the two charts by considering the averages as the standard and turning lines that you'd find in an ichimoku chart. This shows that an ichimoku chart is a form of trend-following system.

price rising above the average price seen in the past. That argument also applies to the ichimoku method of quantifying the market expectation over a specified time span.

Prices would not rise much without the market price going above the midpoint of highs and lows. The ichimoku chart is a trend-following indicator and so would lead to successful trading when gold prices move in relatively long trends. However, it would not perform that well in sideways markets. (As I mentioned previously, ichimoku charts were devised before the age of computers or pocket calculators; it is likely that taking midpoints were computationally less of a burden than taking averages.)

FURTHER

In looking at the delayed line, first note that, because it is delayed, it ends before the current close. Thus, you go back to where it ends and check whether it is above or below the close of that date. For example, the gold market has strengthened when the delayed line is above the closing prices at that past date; otherwise, the market would have declined. This is simply a comparison of the current prices with the prices as of a month ago, and the quick comparison is the only use of the delayed line.

The ichimoku technique's ingenuity lies in the preceding lines to define support and resistance levels. The standard and turning lines indicate the consensus of the market participants over the specified time horizons, so a rising trend will be

revealed by successively higher lows, while a declining trend will be given by successively lower highs.

An old Japanese saying states, "Ask the market about the market." With that in mind, the current market price of gold

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should contain all the information that is known to investors. Therefore, the average value of the standard and turning lines must be the best predictor of future price. These become ichimoku's first preceding span.

A trend defined by computing the midpoints of highs and lows in the past 52 days (that is, two months) should contain such factors as supply and demand along with expectations in the past. This trend is then time-shifted one month down the road to represent the second preceding span.

The region between the two preceding spans is referred to as *kumo*, meaning "cloud," and defines support or resistance. A breakout above the *kumo* indicates the breakout above the resistance level. Again, this concept is similar to moving

averages. It is possible that market expectations on gold prices quickly change and the prices return to the cloud (support/resistance), defining the support/resistance level after a price breakout has been observed. However, the risk of such traps or false breakouts should be much less for the ichimoku chart than the comparable moving average chart, as the ichimoku's two preceding spans are deliberately shifted (exactly one month in Hosoda's formulas) to the future. When gold prices are loitering in or near the cloud, it would be better to wait for the market price to go above or below the cloud. If the prices are above the cloud, the sun is shining and it would be a time to buy. If the prices are below the cloud, it's raining and it would be a time to sell.

When all of the delayed lines, the standard/turning lines, and the cloud indicate the same signal to buy or sell, the chart should be showing a trend. But in sideways markets, an ichimoku trend-following system can be risky, and oscillators should be monitored.

REMARKS

An ichimoku chart is a trend-following system with an indica-

tor similar to moving averages. What makes it unique, however, is found in the strategy to time-shift the trendlines to the past for the delayed line and to the future for the preceding lines. By doing so, we can look at market timing, resistance/support, and possibly false breakout, all in one chart, in one panoramic view (*ichimoku*).

The time spans of nine, 26, and 52 may be changed for the current markets, as securities are not currently traded on Saturday. Ichimoku charts can easily be constructed using spreadsheet software such as Excel or Lotus. Optimized values for the time spans can be found without years of calculations by using spreadsheets.

There are some difficulties applying them today, since markets such as foreign currencies trade 24 hours a day around the globe; we must devise a way to define opening and closing prices. In addition, derivatives are relatively short-lived. However, analysts familiar with these problems will be able to apply ichimoku charts to virtually any market.

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†See Traders' Glossary for definition

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