Playing the opening range breakout

Part 1

by Toby Crabel

Opening range breakout is one of the most important indicators of daily market direction that a trader can utilize.

An opening range breakout (ORB) is a trade taken at a predetermined amount above or below the opening range. When the predetermined amount (the "stretch") is computed, a buy stop is placed that amount above the high of the opening range and a sell stop is placed the same amount below the low of the opening range. The first stop that is traded is the position and the other stop is a protective stop.

The stretch is determined by looking at the previous 10 days and averaging the differences between the open for each day and the closest extreme to the open on each day.

In a market with a strong bias in one direction or just after a clear supply or demand indication, a trade in only one direction is taken. This is called an Opening Range Breakout Preference (ORBP). The only order entered is the stop in the direction of the entry. The protective stop is entered only after the trade has been entered.

If the market trades to the stretch in the *opposite* direction first, the preference is nullified and the resting order is cancelled. This requires you to monitor the market during the session. Intraday market monitoring is not a sacrifice by any means and enhances the system.

ORB vs. ORBP

Opening range breakout is effective after an inside day that has a smaller daily range than the previous four days (IDnr4 in Figure 1) and after *any* day that has a daily range less than the previous six days (NR7) whether an inside day or not.

"Hook" days also tend to precede big moves in one direction. A hook day is any day that opens above/below the previous days' high/low then proceeds to reverse the previous day's close but does so

with a daily range less than the previous day.

March copper in Figure 1 displays examples of all these patterns. Inside days with the narrowest range in four days (IDnr4) occur at points c, e, g, i, n, o and t. Days with ranges smaller than those of the previous six days (NR7) occur at points a, d, f, g, h, j, m, n, p and s. Hook days occur at points b, q and r. Notice the proximity of some of the next day's openings to one of the extremes for that day and the general tendency of the close of the same day to be at the opposite extreme.

The earlier in the session the entry is taken the better chances for success.

The ORBP provides an effective trade entry at times of a clear bias in one direction. In particular, a running market provides a very clear bias. On any inside day, the ORBP should be taken. Inside days act as springboards for an immediate continuation in the direction of the run. In Figure 2, the July soybean oil chart displays a running market between numbers 1 and 2. Within that run, inside days at points a thru e all resulted in successful opening range breakout trades with the open on or near the low of the session in each case. Direction is not as predictable at inside days f, g and h, but the opening range breakout the following day in each case provides an excellent entry.

A gap in the direction of the run is a strong indication of continuation and an ORBP can be taken in the direction of the gap with an overnight position held if a big day follows. October sugar in Figure 3 shows three gaps (points a, b, c) within a very defined upward run. Note the tendency for the open to act as the low of the day in each case. If a breakout to the downside had occurred in these cases no trades would have been taken. Logically, any of the patterns mentioned for use with the ORB can be utilized in an ORBP when the bias is clear.

Upthrusts/springs, reversal gaps or any sharp reversal should be followed up with an ORBP in the direction of the reversal for at least two days afterward if it confirms the intermediate trend. The November soybean chart (Figure 4) displays upthrusts at points 1, 3 and 5 and springs at points 2, 4, and 6. Note the openings the days after the springs and the marked tendency for them to occur near one extreme of the day. The upthrusts were not as successful since a clear upward bias did exist. Again, ORB is most effective after an inside day or a day whose range is less than any of the previous six days (NR7).

Early entry

In general, the earlier in the session the entry is taken the better the chances for success. In fact, the ideal is an entry within the first 10 minutes of the session. In that case, an immediate continuation in the direction of the breakout is likely. When you get a large price movement in one direction within the first 15 minutes of the session (early entry), the protective stop can be moved to break-even very quickly and the trade is free.

The more time that passes between the open and trade entry, the lower the probability of success. Adjust the size of your position downward as the day goes on. The worst entry is just before the close when time is running out and it is difficult to realize a profit. The objective of these entry techniques is to establish a position for a two- to three-day run, but this is successful only if a substantial profit is realized by the end of the first session.
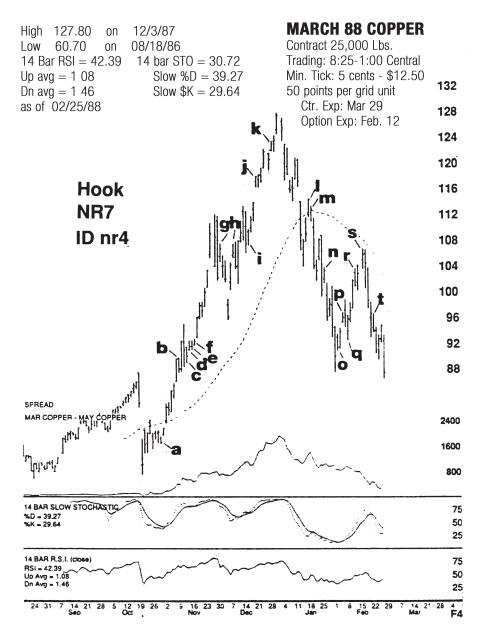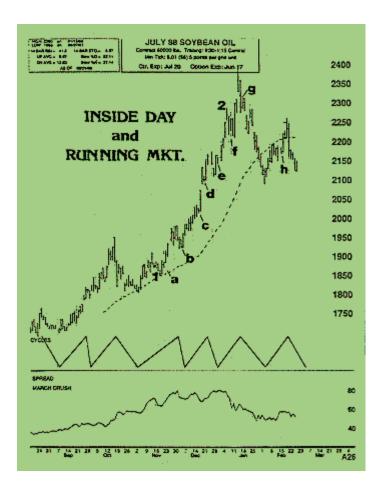
High   127.80   on   12/3/87
Low   60.70   on   08/18/86
14 Bar RSI = 42.39   14 bar STO = 30.72
Up avg = 1 08   Slow %D = 39.27
Dn avg = 1 46   Slow $K = 29.64
as of 02/25/88

MARCH 88 COPPER
Contract 25,000 Lbs.
Trading: 8:25-1:00 Central
Min. Tick: 5 cents - $12.50
50 points per grid unit
   Ctr. Exp: Mar 29
   Option Exp: Feb. 12

**Hook
NR7
ID nr4**

SPREAD
MAR COPPER - MAY COPPER

14 BAR SLOW STOCHASTIC
%D = 39.27
%K = 29.64

14 BAR R.S.I. (close)
RSI = 42.39
Up Avg = 1.08
Dn Avg = 1.46
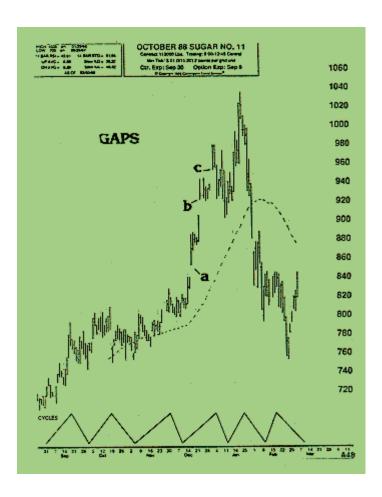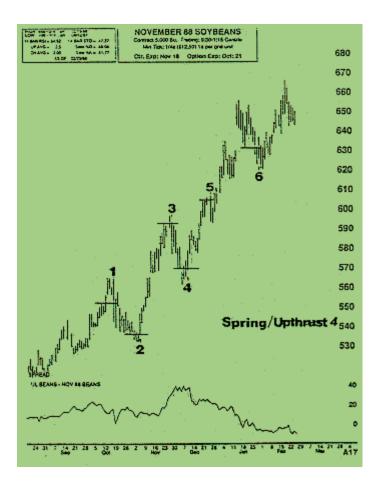
FIGURE 1:

FIGURE 2:

FIGURE 3:

FIGURE 4:

After the trade is entered the clock starts ticking. The ideal trade will show a profit almost instantaneously. The longer it takes to move away from the point of entry, the more vulnerable the position. In general, stops should be moved to a break-even within one hour after entry. A market that displays greater tendency to trend should be given less time than an hour.

For example, the S&P usually takes no more than five to 10 minutes before a clear getaway occurs. When judging the market action after entry, compare it to examples of ideal, early entries with immediate profit and persistent followthrough thereafter. Action that varies from the ideal is suspect.

Bias

The ORB can be utilized as a *general indicator of bias* every day. Whichever side of the stretch is traded first will indicate bias in that direction for the next two to three hours of the session. This information alone will keep you out of trouble, if nothing else.

Multiple contracts can be used when entering on an ORB or ORBP. This allows for some profit taking as the move continues to guarantee at least some profit in the case of a pullback to the break-even stop. A trailing stop is also very effective.

If you miss the ORB and early entry occurred, any 3/8 to 1/2 retracement of the established range can be used as an entry point with stops beyond the 5/8 level. This technique can be utilized twice, but becomes treacherous on the third retracement.

In summary, the open is a primary market indicator. Without an understanding of its importance and the market action around it, it is difficult to come to correct conclusions about market direction. On certain days the open acts as an ideal point of entry upon breakout. On any day that such a breakout occurs within the first 10 minutes of trade, the information is overwhelmingly in favor of a continuation of that move. It a trade does not use these entry techniques systematically they should at least be utilized as a general indicator of bias.

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Opening range breakout: early entry

Part 2

by Toby Crabel

Early entry is defined as a large price movement in one direction within the first five minutes after the open of the daily session. A study of early entry is essentially a study of price action, and the type of price action that takes place on early entry shows that participants are urgent about entering the market. It is a distinct recognition of either a profitable or dangerous situation.

It should be noted that directional moves of this nature are relatively rare and may occur only 10% of the time. Most days (70% to 80%), prices exhibit rotation or choppy action and the first five to 10 minutes of trading are sluggish and directionless without a clear movement away from the opening range

The early entry price action is ideal when using an opening range breakout for entry. An opening range breakout is a trade taken at a predetermined amount above or below the opening range. The open should act as one extreme of this range.

Two versions

I have observed two types of early entry. The characteristics of Type 1 (Figures 1 and 2) are as follows: The first five minute time period has a larger range than normal. ("Normal" is roughly defined as the average of the preceding 10 days' first five-minute ranges.)

The opening of the day is on one extreme of the five-minute bar and the close of the five-minute bar is on the opposite extreme. The second five minutes shows an equal thrust in the direction of the first five-minute period.

The Type 2 early. entry is extremely powerful and is characterized by an excessively large range in the first five minutes, quite possibly bigger than the previous 20 days ' first five-minute periods (Figures 3
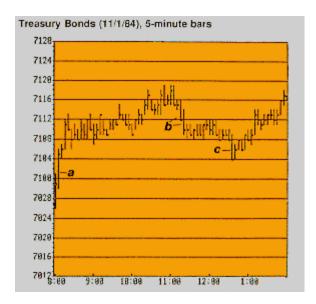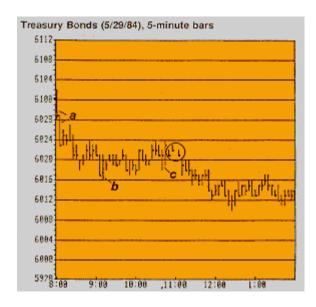
FIGURE 1:

FIGURE 2:

Treasury Bonds (11/1/82), 5-minute bars

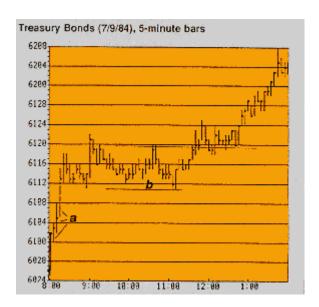**FIGURE 3:**

Treasury Bonds (7/9/84), 5-minute bars

FIGURE 4:

and 4).

An equal thrust in the next time period is difficult to manage, but a general drift in the direction of the first five minutes is likely with an acceleration after further accumulation has occurred.

Absence of early entry and no clear getaway on an opening range breakout calls for trading range action with a market generally unable to trend.

Trading early entry

One possible trading scheme is to use an opening range breakout entry technique each day, anticipating early entry. If ideal action does not occur within the first five to 10 minutes, cancel orders. In a defined trend or running market, use early entry to verify the existing trend and then use any pullbacks of 3/8 to 1/2 of the existing daily range for another entry.

An open that occurs outside the previous day's high or low, in most cases, sets up an intraday upthrust or spring. These are top and bottom reversal patterns and tests show that on a move back into the previous day's range by two ticks, the market has a 67% chance of continuing into yesterday's range and closing beyond that point. This is excellent advance information and, when it moves as far as the early entry extreme price, it shifts the momentum for the entire day's trade and, quite possibly, several days' trading if a reversal pattern forms on the daily chart.

Early entry failure

Of course, there are times when, even with a defined thrust, the market will not follow through and, in fact, will sometimes reverse completely. This is defined as early entry failure (Figures 5 and 6) and is associated with a momentum increase in the opposite direction of early entry.

Momentum can be assessed by the range of the time unit (i.e., a 5-, 15-, 30-minute bar chart). An increased range relative to the previous time unit(s) shows an increase in momentum. Ideally, this should not happen and when it does, it usually indicates an early entry failure is occurring.

As a rule, no countermove 5-minute bar should have a range larger than the first 5-minute bar. All such larger bars should confirm early entry. In fact, any 5-minute bar against early entry that is relatively large compared to previous bars which confirmed early entry will imply a shift in momentum and possibly early entry failure.

Neutral or confirming price action is crucial just after the early entry indication. When entry is taken on a pullback, narrow range bars should have been present on the retracement. A countermove with a momentum increase (i.e., larger bars) is a warning that failure is occurring.

Type 1

Figure 1 displays a Type 1 early entry with a reasonably sized first 5-minute bar. Expansion occurred in the second 5-minute period, showing a momentum confirmation at point a. A counter momentum increase came later in the session at point b and again at c. Profits should be taken after an opening range breakout entry when recognizable shifts in momentum occur like that at point b.
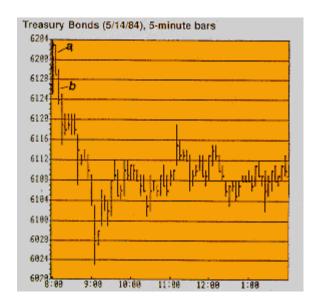
FIGURE 5:

FIGURE 6:

Figure 2's action is similar to Figure 1, but to the downside. Momentum shifts occurred at points b and c, but ranges were not nearly as expansive as the first 10 minutes at point a. Note the action immediately following point c: drifting prices with narrow range and a resulting move to new lows showed no following for the long side.

Type 2

Figure 3 shows a Type 2 early entry in T-bonds with good follow-through in the second five-minute period at points a. An approximate 50% retracement of the established range then followed to 7623 without any visible momentum shift.

Accumulation began at that point, evidenced by the successively higher pivot lows on line b. At point c, an expanding 5-minute bar to the upside was the first indication of an upcoming price advance. Bars continued to expand on the run without counterdirectional bar expansion for the day.

Figure 4 shows similar action, but thrust occurred persistently in the 15 minutes following early entry at point a. Accumulation occurred at higher levels, line b. The lows in the accumulation area approximately retraced 3/8 of the established range and momentum dropped on the countermove.

Early entry failure

Figures 5 and 6 demonstrate early entry failure. Figure 5 shows a slight loss of momentum in the second 5-minute period, but still is a valid Type 1 early entry. The wide range countermove at point b showed trouble and the resulting inability of the market to rally with further shows of momentum at points c and d shifted daily bias to down.

In Figure 6, a Type 2 early entry occurred with immediate reversal in the second 5-minute period. Price action should not fall back into the first 5-minute bar as quickly as it did here. The penetration of the early entry extreme price in the first 5-minute bar at point b with an increased range actually set up a good sale with a risk of one tick over point b's high. Momentum increased again after b.

Understanding the general nature of the market allows the trader to define a strategy in accordance with the early action. A clear early entry and opening range breakout should not be faded. They suggest a one-directional move is coming up.

Absence of early entry and no clear getaway on an opening range breakout calls for trading range action with a market generally unable to trend. When trading is defined, one can anticipate reversals throughout the session.

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Opening Range Breakout

Part 3

by Toby Crabel

In the opening range breakout technique, the heralds of an upcoming trend day are often inside days, narrow range days and hook days (see *Stocks & Commodities*, September and October 1988). I also have run across a new concept that categorizes price action and generally produces trending activity the next day.

I call it Doji Lines. Doji is a Japanese word describing a comparison between the open and the close of the daily session. It is described in a book, *The Japanese Chart of Charts* by Seiki Shimizu.

A Doji Line is a day that shows a very small difference between the open and closing prices (Figure 1). "Very small" is a relative term but, through observation, I have attached quantities to this open-to-close difference to meet the need for definition.
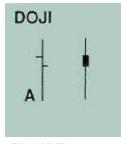
In Figure 1, the left-hand bar is what a Doji Line looks like on a vertical bar chart; the right-hand bar is how it is displayed by Shimizu. In this case, the close was less than the open, so the open-to-close range is displayed in black. If the close had been above the open, the box would have been clear.

Figure 2 displays the Doji with a hypothetically defined narrow range day at point "a." We'll define narrow range day in a moment, but for now suffice it to say that the action following point "a" represents a trend day.

Market tests

The Doji Line is said to indicate market indecision. It is said that these lines precede market turning points. A trader should look closely at the movements that follow the Doji Line and be ready to enter the market aggressively once subsequent price action gives a clear indication of the market's direction.

Logically, the opening range breakout technique discussed in the September issue of *S&C* would seem a valid means of determining the direction of price action after a Doji. A Doji also is similar to a neutral or non-trend day in the Market Logic principles. In fact, Peter Steidlmayer, formulator of the Market Logic school of thought, suggests after a non-trend day to go with initiating activity much like the suggestion for strategies after a Doji Line. I suggest taking opening range breakout trades after various congestion
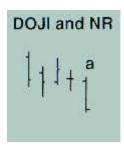
FIGURE 1

FIGURE 2

Bonds 1978-1986

	#Trades	% Profit	Avg. Win	Avg. Loss	Win/Loss Ratio	Gross Profits
8 TICK DOJI; Open Minus 16 Ticks; Sell	203	71%	$343	$289	1.18:1	$32,985
7 TICK DOJI; Open Minus 13 Ticks; Sell	220	65	366	277	1.37:1	31,836
5 TICK DOJI; Open minus 8 Ticks; Sell	240	62	362	243	1.48:1	31,253
5 TICK DOJI; R1 Less Than 20; Open Minus 8; Sell	154	64	285	203	1.40:1	16,534
8 TICK DOJI; Open Plus 16 Ticks; Buy	195	66	328	356	0.92:1	18,911
5 TICK DOJI; Open Plus 8 Ticks; Buy	240	60	311	289	1.07:1	16,464
7 TIC DOJI; Open Plus 13 Tics; Buy	230	54	354	345	1.02:1	7,346

FIGURE 3

Soybeans-1970-1988

	#Trades	% Profit	Avg. Win	Avg. Loss	Win/Loss Ratio	Gross Profits
3 Cent DOJI; Open Minus 5 Cents; Sell	444	65%	$311	$284	1.09:1	$45,251
5 Cent DOJI; Open Minus 10; Sell	269	67	335	309	1.08:1	32,850
R1 Less Than 10; Open Minus 5; Sell	573	68	265	216	1.22:1	64,500
R1 Less Than 10; Open Minus 10; Sell	179	73	339	265	1.27:1	31,125
DOJI 5; R1 Less Than 10; Open Minus 10; Sell	147	76	346	322	1.07:1	27,575
DOJI 3; R1 Less Than 10; Open Minus 5; Sell	316	69	294	247	1.19:1	40,019
DOJI 3; Open Plus 5; Buy	513	63	263	275	0.95:1	32,261
DOJI 5; Open Plus 10; Buy	274	64	320	323	1.00:1	23,505
DOJI 3; R1 Less Than 10; Open Plus 5; Buy	376	61	224	253	0.88:1	15,011
DOJI 5; R1 Less Than 10; Open Plus 10; Buy	157	62	272	312	0.87:1	8,305
R1 Less Than 10; Open Plus 5; Buy	657	59	222	234	0.94:1	23,449
R1 Less Than 10; Open Plus 10; Buy	198	62	264	309	0.85:1	9,293

FIGURE 4

patterns.

I have tested T-bonds, S&P and soybean markets using a definition for the Doji Line and a subsequent trade taken a given amount off the open. Figures 3, 4 and 5 show these results along with a comparison of price moves off the open on days when a Doji may or may not be present.

I also have defined the narrow range day by the particular open-to-close point values (R1) listed in Figures 3, 4 and 5 rather than a relationship to the previous day's range. This allows a comparison between the results of a Doji Line and the results of narrow range day.

Results were impressive and confirmed the conclusion that a Doji Line precedes reversal action or trend-type action. In some cases, percentages increase by 20%-30% in favor of a trade after a Doji Line.

The tests of narrow range day defined by a particular point value also were conclusive. I chose the point value for the narrow range day by observation, which is different than categorizing congestion by identifying a day in which the range is narrower than any of the previous six days — an NR7 day in my terminology. Defining a narrow range by point value allows for entry on a day that is not necessarily narrower than the preceding day.

The abbreviations used in Figures 3, 4 and 5 follow a common format. For example, in Figure 3 the left-hand column reads: 8 tick Doji; Open minus 16 ticks; Sell. This means the difference between the open and close of yesterday is less than 8 ticks (8 tick Doji); today the market dropped 16 ticks below the open (Open minus 16 ticks) where a sale was taken (Sell) with an assumed exit on the close of the same day.

The results in this particular case show 203 trades, 71% of which were profitable. The average winning trade was $343 and the average losing trade was $289. The ratio between the average winner and the average loser was 1.18-to-1, with gross profits before commissions and slippage at $32,985.

Note that in the fourth pattern in Figure 3 the definition for the narrow range reads as "R1 less than 20." This means yesterday's range was less than 20 points. Throughout the figures, I also designate a Doji with a point value such as "7 Doji" or "50 Doji."

As you look through the figures you will see many very profitable trading systems. Remember that slippage and commission were *not* calculated in the results, so an immediate systematic implementation of these techniques could be disappointing. As in any breakout system, the slippage will be greater than other techniques because the order is executed with the momentum of the market. Other stops could be present at the time of entry and cause bad fills.

My premise is that one's judgment has to enter into the trade and the way to do this effectively is through practice and logical integration of market knowledge.

Implementation

I am attempting to define the market's nature so as to trade effectively. I am not a system trader. My premise is that one's judgment has to enter into the trade and the only way to do this effectively is through practice and a logical integration of the market knowledge at hand. The Doji Line tests provide objective

S&P 500 1982-1988

	# Trades	% Profit	Avg. Win	Avg. Loss	Win/Loss Ratio	Gross Profits
50 Point DOJI; Open Plus 100 points; Buy	162	58%	$671	$551	1.21:1	$25,625
50 Point DOJI; R1 Less Than 200 Pts.; Open + 100 Pts.; Buy	88	63	507	346	1.46:1	16,470
50 Point DOJI; R1 Less Than 200; Open + 160; Buy	55	60	453	430	1.05:1	5,474
50 Point DOJI; R1 Less Than 200; Open - 100; Sell	100	64	479	294	1.62:1	18,550
50 Point DOJI; R1 Less Than 200; Open - 160; Sell	57	67	419	351	1.19:1	9,249
R1 Less Than 200; Open - 100; Sell	198	59	470	409	1.14:1	21,925
R1 Less Than 200; Open - 160; Sell	104	63	418	414	1.01:1	11,849
R1 Less Than 200; Open + 160; Buy	106	58	534	352	1.51:1	16,724
R1 Less Than 200; Open Plus 100; Buy	178	63	504	320	1.57:1	36,199

FIGURE 5

September 88 S&P 500
Contract $500 X Index Trading 8:30-3:15 Central
1 pt. = $5.00 Min. tick = 5 pts. 50 pts. per gride unit
CTR exp: Sept. 15   Option exp: Sept. 16

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High 343.50 on 10/02/87
Low 193.00 on 10/20/87

14 Bar RSI = 41.35   14 Bar STO = 22.94
Up Avg = 0.83   Slow %D = 17.95
Down Avg = 1.18   Slow %K = 19.49

As of 6/28/88

14 Bar Slow Stochastic
%D = 17.95
%K = 19.49

14 Bar RSI (close)
RSI = 41.35
Up Avg = 0.83
Down Avg + 1.18

290
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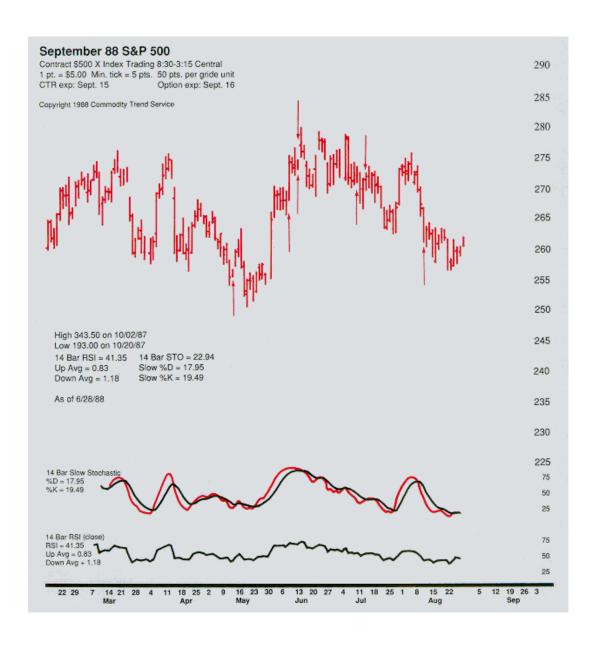
FIGURE 6

information over long time spans.

In Figure 6, points 1 thru 7 illustrate seven, 50-point Doji Lines followed by 100-point moves above the open the following day. It is apparent from the chart that some days are more successful than others. Profit-taking techniques and an excellent understanding of intraday market action are necessary to get the best the results.

Comparing percentage profits for days preceded by a Doji and narrow range with that of a normal day without a Doji and narrow range proves interesting. A complete study of T-bond moves away from the open on every day during ten 28-year test periods showed that on a normal day, a sale 16 ticks below the open was 56% profitable; with Doji 8 it was 71% profitable. On a normal day, a buy 16 ticks above the open was 60% profitable; with a Doji 8 it was 66% profitable.

On any day in the S&P that a buy was taken 160 points above the open, the trade was 58% profitable; with a Doji 50 and open-to-close range (R1) less than 200 it was 63%. On any day, a sale 160 points below the open was only 49% profitable; with a 50 Doji and RI less than 200 points a sale was 67% profitable Ñ quite an improvement.
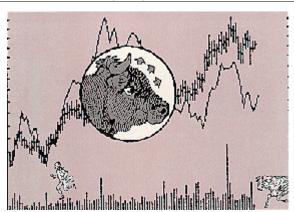
The soybean market provided some of the most startling results. On any day that a buy was taken 10 cents above the open it was 60% profitable. With a Doji 5 it was 64% profitable. On a sale any day 10 cents below the open it was 63% profitable; with a Doji 5 it was 67%. A Doji 5 with the daily range less than 10 cents improved the success rate to 76%.

In an effort to adequately define trend days, I always look for other ways to define price action. The Doji Line and narrow range day are excellent additions to existing indicators. These little-known market concepts reiterate the need for an open mind and an understanding of all available market concepts that can help the trader. As you can see by the test results, Doji Lines and a defined narrow range day are logical additions to market concepts.

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Opening range breakout

Part 4

by Toby Crabel

Opening range breakout is a trade in which entry is taken at a predetermined amount above or below the opening range. I've set this predetermined amount (the "stretch") through observation. (See *Stocks & Commodities*, September 1988.) To trade the opening range breakout, a buy stop is placed above the high of the opening range an amount equal to the stretch and a sell stop is placed the same amount below the low of the opening range. The first stop that is traded is your position.

An inside day is one in which the daily range is completely within the previous day's range. More specifically, an inside day's high is less than the previous day's high and the inside day's low is greater than the previous day's low.

Figures 1 and 2 demonstrate the inside day and the next day's opening range breakout technique. My hypothesis is that inside days precede trend day activity and, consequently, successful opening range breakouts. Figure 3 tabulates the results of this hypothesis in the Treasury bond, S&P 500, soybean and cattle markets.

There were four tests per market with the only difference being the points of entry above or below the open. For example, bond market tests were conducted on an entry 16 ticks above the open (open plus 16 ticks), 8 ticks above the open, 8 ticks below the open (open minus 8 ticks) and 16 ticks below the open.

In the next column are the results of trades taken from the entry point with an exit on the close of the same day of entry. Stops were not used after and, if the market traded both above and below the opening range the given amount, both a buy and a sell could be registered. This test provides an objective means for determining if the inside day is actually preceding successful opening range breakouts and, therefore, is one indicator of future trend days.

I found it useful to compare the results of Figure 3 to the results of an opening range breakout taken on any day regardless of the previous day's price pattern (Figure 4). In all cases except the S&P 500's moves below the open and cattle's moves above the open, an inside day improved the percentage of profitable
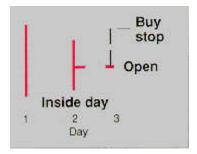
FIGURE 1: An inside day with an opening range breakout up. After the inside day on day 2, the market opens on day 3 and rallies a predetermined amount above the open. A buy is made on a stop at the predetermined level with an exit on the close on day 3.

FIGURE 2: An inside day with an opening range breakout down. After the inside day on day 2 the market opens on day 3 and declines a predetermined amount below the open. A sale is made at the stop at the predetermined level with an exit on the close of day 3.

		# Trades	% Profitable	Avg. Win	Avg. Loss	Win/ Loss	Gross Profits
BONDS	Open plus 16 ticks	51	76	392	140	2.8:1	13,625
	Open plus 8 ticks	90	74	418	373	1.12:1	19,435
	Open minus 8 tick	91	62	421	392	1.07:1	9,870
	Open minus 16 ticks	50	66	377	362	1.04:1	6,304
S&P	Open plus 160 points	57	61	896	693	1.29:1	16.124
	Open plus 80 points	103	57	860	612	1.40:1	23,800
	Open minus 80 points	89	48	739	571	1.29:1	5,520
	Open minus 160 points	58	45	691	762	0.90:1	-6,429
BEANS	Open plus 10 cents	67	70	426	268	1.58:1	14,687
	Open plus 5 cents	152	67	354	298	1.18:1	21,243
	Open minus 5 cents	130	69	376	342	1.09:1	20,169
	Open minus 10 cents	55	76	417	281	1.48:1	13,875
CATTLE	Open plus 50 points	101	55	130	135	0.96:1	1,196
	Open plus 25 points	208	55	137	156	0.87:1	1,191
	Open minus 25 points	194	60	173	155	1.11:1	8,372
	Open minus 50 points	103	73	144	162	0.88:1	6,334

FIGURE 3:

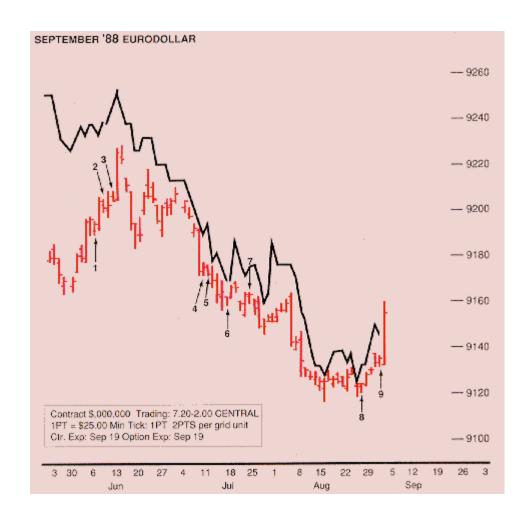| Opening range breakout, % profitable trades		On any day	After inside day
BONDS	Open plus 16 ticks	60%	76%
	Open plus 8 ticks	55	74
	Open minus 8 ticks	56	62
	Open minus 16 ticks	56	66
S&P	Open plus 160 points	68	61
	Open plus 80 points	55	57
	Open minus 80 points	49	48
	Open minus 160 points	49	45
BEANS	Open plus 10 cents	60	70
	Open plus 5 cents	56	67
	Open minus 5 cents	58	69
	Open minus 10 cents	63	76
CATTLE	Open plus 50 points	65	55
	Open plus 25 points	58	55
	Open minus 25 points	58	60
	Open minus 50 points	63	73

FIGURE 4:

SEPTEMBER '88 EURODOLLAR

FIGURE 5: *Source: Commodity Trend Service.*

trades in the direction of the breakout improved, sometimes dramatically. Out of the 16 possible entry points, only four showed lower percentages after an inside day. This means that 75% of the tests showed improvement. I think this is conclusive.

Figure 5 displays nine inside days. Notice the action following the inside day and close proximity of the open of that day to one of the extremes, particularly numbers 1, 3, 8 and 9. On those days the open is within one tick of the extreme with sizable range expansion.

The bond and soybean markets show the best results on the trades after an inside day. I should add that with the addition of a night session in the bond market some changes have occurred, primarily a general lack of trend and a loss of volatility.

An analysis of price action is necessary when utilizing the opening range breakout in any situation. Ideally, on the day a trade is taken with this technique there should be no momentum increases against the trade. The market should be able to maintain the direction of the original move off the open without moving in the opposite direction at an accelerated rate. In the best cases, the previous half-hour low is not violated in an up move and vice versa in a down move. Also, new highs should occur at least every hour or new lows should occur every hour in a down move.

My conclusion is that the tests do suggest that inside days are valid precursors of trending action and can be integrated into a trader's philosophy.

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Opening range breakout

Part 5

by Toby A. Crabel

A trade taken at a predetermined amount above or below the opening price of a given day is called an opening range breakout (ORB).A narrow range four pattern (NR 4) is a day with a daily range that is narrower than the previous three days' daily ranges compared individually. In my experience, trades using the ORB technique on a day following an NR 4 pattern tend to coincide with trend day activity—and, consequently, successful ORBs.

Figures 1 and 2 demonstrate an ORB on the day following the NR 4 pattern. The table in Figure 3 shows the results of testing the relationship between the NR4 pattern and trending markets with this technique. action on the day of an ORB. There were four tests per market and the only difference between them was the point of entry above or below the open. Trades were entered on a stop at the indicated level with an exit on the same day's close.

In 15 of 16 comparisons, ORB days following NR 4s have a higher percentage of winning trades than the control group.

The results consistently exhibit trending activity following an NR 4 pattern. The number of trades was high, indicating the frequency with which the pattern occurs. This pattern and a resulting move off the open appears on average once in every eight to 10 market days. The win/loss ratio is not significant at 1 :1, but gross profits were high given the frequency of the pattern.

In no tests did the frequency of profitable trades exceed 70%, yet all but two tests showed at least 60% profitable trades. The best results occurred in the bean market. Cattle, with entries 25 points off the open in either direction, showed surprising success. I say surprising because I had observed that cattle was not as reliable as the other markets with this technique.

Figure 4 compares the percentage of profitable trades on ORB days following an NR 4 pattern with ORB days whether or not they followed an NR 4 pattern. In 15 of 16 comparisons, ORB days following NR 4s have a higher percentage of winning trades than the control group (control group data not shown in Figure 3).

The only exception is buying 50 points above the open in the cattle market. But, this is probably not a significant difference. At 50 points above the open, cattle produced 63% winning trades following an NR 4 and 65% on any day.

Although many patterns can be associated with trending, the results of the tests in Figures 3 and 4 are very strong evidence that NR 4s have some immediate relationship with trending action.

Generally, there is a relationship between any narrow, directionless day and trending action on the following day. The general principle behind this price action I call contraction/expansion. On a bar chart,

this contraction occurs almost always just before a trend move, although there are times when a trend move takes place without contraction.

A word of warning about the tests. When commission and slippage are added, gross profits are reduced dramatically. This does not compormise the intention of this report. As I previously stated, the intent of all my testing is to define the market's nature and verify general market principles. If, in your testing, you find a high percentage system (75%) with a win/loss ratio of more than 1: 1, you are beginning to discover the market's nature.

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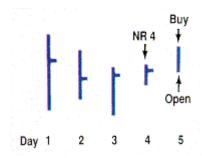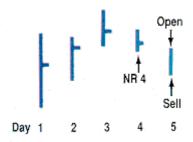

FIGURE 1:

FIGURE 2:

Opening Range Breakout after NR 4

	Entry point	No. trades	% Win	Avg. win	Avg. loss	Win/loss	Gross profits
Bonds	Open plus 16 ticks	148	64%	$418	$366	1.14:1	$20,346
(1978-86)	Open plus 8 ticks	263	63	416	444	0.93:1	26,916
	Open minus 8 ticks	289	64	424	403	1.05:1	36,596
	Open minus 16 ticks	162	65	402	409	0.98:1	19,779
S&P 500	Open plus 160 pts.	145	62%	$1,093	$1,021	1.07:1	42,224
(1982-88)	Open plus 80 pts.	233	57	1,060	865	1.22:1	54,550
	Open plus 80 pts.	231	59	790	961	0.82:1	16,195
	Open plus 160 pts.	140	61	750	1,116	0.67:1	2,395
Beans	Open plus 10 cents	204	62%	$321	$458	0.70:1	4,712
(1970-85)	Open plus 5 cents	416	66	316	375	0.84:1	32,625
	Open minus 5 cents	400	63	417	313	1.33:1	58,356
	Open minus 10 cents	183	68	470	304	1.54:1	40,406
Cattle	Open plus 50 pts	329	63%	$142	$132	1.07:1	12,948
(1970-88)	Open plus 25 pts.	606	61	164	150	1.09:1	24,492
	Open minus 50 pts.	607	60	159	141	1.12:1	22,702
	Open minus 50 pts.	315	64	151	146	1.03:1	14,454

FIGURE 3:

Frequency of profitable ORB trades			
	Entry point	% winning trades on any day	% winning trades after NR 4
Bonds	Open plus 16 ticks	60%	64%
(1978-86)	Open plus 8 ticks	55	63
	Open minus 8 ticks	56	64
	Open minus 16 ticks	56	65
S&P 500	Open plus 160 pts.	58	62
(1982-88)	Open plus 80 pts.	55	57
	Open minus 80 pts.	49	59
	Open minus 160 pts.	49	61
Beans	Open plus 10 cents	60	62
(1970-88)	Open plus 5 cents	56	66
	Open minus 5 cents	58	63
	Open minus 10 cents	63	68
Cattle	Open plus 50 pts.	65	63
(1970-88)	Open plus 25 pts.	58	61
	Open minus 25 pts.	58	60
	Open minus 50 pts.	63	64

FIGURE 4:

Opening Range Breakout

Part 6

by Toby Crabel

Two price chart patterns — the inside day (ID) and the four-day narrowing range (NR 4) — have proven to be reliable predecessors of trending action that can be profitably traded with an opening range breakout (ORB) system. (See *Stocks & Commodities*, February and April 1989.)

What happens to the predictive power of these patterns when they're combined? My research assumption was that, because they were both individually successful, they would produce clearer ORB buy/sell indications when combined.

I examined this assumption in several ways. First, I directly tested how the ID/NR 4 pattern affected ORB trades entered at various points on either side of the opening range (Figure 1). Secondly, I compared the percentage of winning trades taken after the ID/NR 4, ID and NR 4 patterns and on any day regardless of whether or not a pattern existed (Figure 2).

ORB trades and patterns

An ORB is a trade entered at a predetermined amount above or below the opening range (the range of prices that occur in first 30 seconds to 5 minutes of trading. The predetermined amount, or "stretch," is the 10-day average of the differences between the open for each day and the closest extreme to the open on each day.

Opening Range Breakout after ID/NR 4

	Entry point	No. trades	% Win	Avg. win	Avg. loss	Win/loss	Gross profits
Bonds	Open plus 16 ticks	31	81%	$438	$187	2.34:1	$9,843
(1978-86)	Open plus 8 ticks	50	80	463	390	1.18:1	14,623
	Open minus 8 ticks	52	63	374	378	0.99:1	4,979
	Open minus 16 ticks	29	69	289	364	0.79:1	2,499
S&P 500	Open plus 160 pts.	32	66%	$998	$1,040	0.95:1	9,525
(1982-88)	Open plus 80 pts.	55	55	997	807	1.23:1	9,750
	Open plus 80 pts.	54	56	778	602	1.29:1	8,895
	Open plus 160 pts.	36	53	722	712	1.01:1	1,620
Beans	Open plus 10 cents	36	69%	$467	$297	1.57:1	8,400
(1970-85)	Open plus 5 cents	73	71	384	267	1.43:1	14,368
	Open minus 5 cents	68	66	342	325	1.05:1	7,912
	Open minus 10 cents	27	78	336	420	0.80:1	4,550
Cattle	Open plus 50 pts	62	55%	$132	$114	1.15:1	1,296
(1970-88)	Open plus 25 pts.	116	63	135	148	0.91:1	3,535
	Open minus 50 pts.	109	61	164	136	1.20:1	4,966
	Open minus 50 pts.	56	70	142	135	1.05:1	3,272

FIGURE 1

Frequency of profitable ORB trades

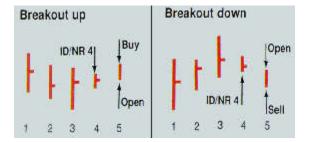| Entry point		% winning trades on any day	% winning trades after NR 4	% winning trades after ID	% winning trades after ID/NR 4
Bonds (1978-86)	Open plus 16 ticks	60%	64%	76%	81%
	Open plus 8 ticks	55	63	74	80
	Open minus 8 ticks	56	64	62	63
	Open minus 16 ticks	56	65	66	69
S&P 500 (1982-88)	Open plus 160 pts.	58	62	61	66
	Open plus 80 pts.	55	57	57	55
	Open minus 80 pts.	49	59	48	56
	Open minus 160 pts.	49	61	45	53
Beans (1970-88)	Open plus 10 cents	60	62	70	69
	Open plus 5 cents	56	66	67	71
	Open minus 5 cents	58	63	69	66
	Open minus 10 cents	63	68	76	78
Cattle (1970-88)	Open plus 50 pts.	65	63	55	55
	Open plus 25 pts.	58	61	55	63
	Open minus 25 pts.	58	60	60	61
	Open minus 50 pts.	63	64	73	70

FIGURE 2

FIGURE 3

Figure 1 provides evidence that the ID/NR 4 pattern has a positive relationship with trending action.

To trade the ORB, place a buy stop above the high of the opening range an amount equal to the stretch and a sell stop the same amount below the low of the opening range. The first stop traded is your position.

Figure 3 demonstrates the ID/NR 4 pattern on a vertical bar chart when the market is rallying or declining. An ID/NR 4 pattern occurs when the current daily range is narrower than the previous three days' daily ranges compared individually (days l, 2 and 3) *and* the current daily range is completely within the previous day's range (day 3).

Analysis

Figure 1 provides evidence that the ID/NR 4 pattern has a positive relationship with trending action. Note the percentage profits in the T-bond market with entries taken at 8 ticks and 16 ticks above the opening range. The percentage of winning trades for both is very high and entering 16 ticks above the open also gives an extraordinary win/loss ratio of 2.34-to-1 during the test period from 1978 to 1986.

The soybean market in both directions and the cattle market on the sell side also gave high-probability results with winning trades in the 70% region during the test periods.

Figure 2 provides more evidence that the ID/NR 4 pattern precedes trending activity. In 15 of 16 tests, the ID/NR 4 pattern showed a higher probability of success on an ORB than a similar ORB taken without regard to whether a pattern existed or not. This suggests that the more defined the congestion area, the better the chances it will be followed by trend day activity.

It also verified the assumption that the ID/NR 4 would provide a better indication of trend day activity than any of the patterns individually. Eight of 16 ORBs traded after the ID/NR 4 showed a higher probability of success than any of the three other groups tested. Again, this would suggest the contraction/expansion principle is valid, that there is a relationship between a narrow, directionless day and trending action the following day. A larger price pattern ending with an ID/NR4 that has historically carried a high percentage of winning trades is an ideal point of entry.

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Opening Range Breakout

Part 7

by Toby Crabel

Bear hook is a day in which the open is below the previous day's low and the close is above the previous day's close with a narrow range relative to the previous day (Figure 1). As implied by the name, there is a tendency for prices following a bear hook pattern to move to the downside.

Figure 2 tabulates how this downward tendency after the pattern manifests itself in different markets and with a variety of opening range breakout (ORB) trades taken the day after the pattern appeared.

Figure 3 charts the bear hook patterns for December T-bonds. Notice the price action on the day following the patterns and the market's tendency to place the open on the high of the day.

Very briefly, an ORB is a trade entered at a predetermined amount above or below the opening range (the range of prices that occur in first 30 seconds to 5 minutes of trading). The predetermined amount, or "stretch," is the 10-day average of the differences between the open for each day and the closest extreme to the open on each day.

In the perpetual tug of war between market timers and value players, the timers win many battles but the value players win the war.
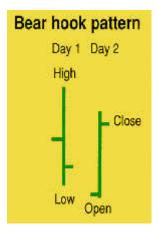
Bear hook pattern

Day 1   Day 2

High

Close

Low   Open

FIGURE 1

Opening Range Breakout after bear hook pattern

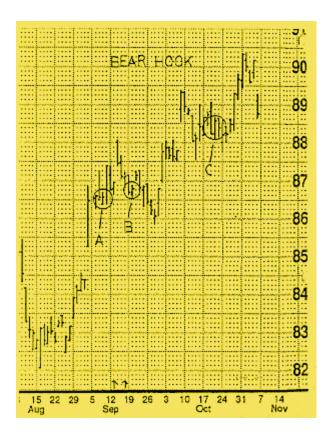|	Entry point	No. trades	% Win Trades	Avg. win	Avg. loss	Win/loss ratio	Gross profits
Bonds	Open plus 16 ticks (S)	8	75%	$812	$515	1.57:1	$1,469
(1978-86)	Open plus 8 ticks (S)	24	67	355	652	0.54:1	7,593
	Open minus 8 ticks(S)	30	70	435	146	2.97:1	7,890
	Open minus 16 ticks (S)	17	65	440	125	3.52:1	4,093
S&P 500	Open plus 160 pts. (B)	6	50%	$2,150	$166	12.95:1	6,999
(1982-88)	Open plus 80 pts. (B)	11	55	1,391	340	4.09:1	6,649
	Open plus 80 pts. (S)	16	75	780	1,400	0.55:1	3,830
	Open plus 160 pts. (S)	10	80	721	2,912	0.24:1	0
Beans	Open plus 10 cents (S)	14	43%	$481	$315	1.52:1	362
(1970-88)	Open plus 5 cents (S)	28	36	668	297	2.24:1	1,325
	Open minus 5 cents (S)	20	60	510	159	3.20:1	4,850
	Open minus 10 cents (S)	13	62	470	312	1.50:1	2,200
Cattle	Open plus 50 pts (B)	16	63%	$63	$92	0.68:1	80
(1970-88)	Open plus 25 pts. (S)	34	41	209	97	2.15:1	1,584
	Open minus 50 pts. (S)	28	63	200	167	1.19:1	1,928
	Open minus 50 pts. (S)	16	81	155	124	1.25:1	1,644

FIGURE 2

FIGURE 3

The usual way to trade the ORB is to place a buy stop above the high of the opening range an amount equal to the stretch and a sell stop the same amount below the low of the opening range. The first stop traded is your position. (See *Stocks & Commodities*, September 1988) However, in this study, I found there were times when it was better to fade the move at the stretch point. That is, there were times when it was better to sell the higher stretch point or buy the lower stretch point. Figure 2, therefore, has *both buys and sells* at the breakout points.

As a result, 13 of the 16 ORB trades tested after a bear hook pattern were profitable *sales and only three were buys*. The bond market during this test period (1978-1986) was particularly conclusive with high-percentage sales on moves below and above the open.

These results indicate that the pattern is not valid for a bi-directional trade and should be pursued only to the downside. (One exception would be a gap above the bear hook day with a move above the open and the market's holding the gap through mid-session, but this is from tests I've not yet reported here.)

The S&P market was the only one showing gross profits high enough on the buy side to consider going long. The tremendous upward bias in the data throughout the test period caused this result. Otherwise, the only other market to show a profitable buy was cattle on the open plus 50 points, but gross profits there were only $80.

The bear hook pattern clearly does not support the general concept that, on any given day, the market tends to continue in the same direction as its initial move off the open. Given no other information other than the open and the initial move off the open, traders unaware of the bear hook pattern would assume continuation. The bear hook, therefore, is essential knowledge because recognizing the exception to a general rule can help the trader save money.
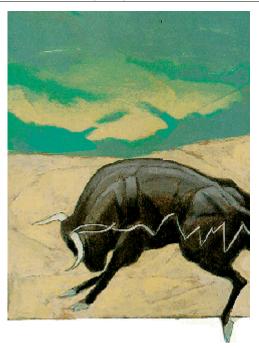
In summary, use bear hook days for ORB trades to the downside. This pattern provides another reference and filter for the ORB technique. When trading, in general, do not go against a high percentage bias especially when that bias also favors the intermediate-term trend.

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Opening Range Breakout

Part 8

by Toby Crabel

The bull hook pattern, as suggested by its name, is a bullish indication and, in most cases, will be followed by a price move to the upside on the day or days following the hook. However, as you will see from the tests I ran, this is not always the case.

A bull hook day (Figure 1) opens above the previous day's high and closes below the previous day's close with a narrowing range. Tests of opening range breakout (ORB) trades taken the day following the bull hook pattern are shown in Figure 2.

A bull hook day opens above the previous day's high and closes below previous day's close...

An ORB trade is entered at a predetermined amount above or below the opening range (the range of prices that occur in first 30 seconds to 5 minutes of trading). The predetermined amount, or "stretch," is the 10-day average of the differences between the open for each day and the closest extreme to the open on each day. (See *Stocks & Commodities,* February and April 1989.)

The orthodox way to trade the ORB is to place a buy stop above the high of the opening range an amount equal to the stretch and a sell stop the same amount below the low of the opening range. The first stop traded is your position.

FIGURE 1:

Opening Range Breakout after bull hook pattern

	Entry point	No. trades	% Win Trades	Avg. win	Avg. loss	Win/loss ratio	Gross profits
Bonds	Open plus 16 ticks (B)	17	71%	$515	$825	0.62:1	$2,062
(1978-86)	Open plus 8 ticks (B)	23	74	584	776	0.75:1	5,281
	Open minus 8 ticks (S)	24	58	497	690	0.72:1	62
	Open minus 16 ticks (S)	13	62	519	712	0.73:1	593
S&P 500	Open plus 160 pts. (B)	14	64%	$983	$460	2.14:1	6,549
(1982-88)	Open plus 80 pts. (B)	20	55	1,140	366	3.11:1	9,250
	Open minus 80 pts. (B)	16	63	542	854	0.63:1	300
	Open minus 160 pts. (S)	8	50	775	412	1.88:1	1,450
Beans	Open plus 10 cents (S)	10	60%	$327	$265	1.23:1	900
(1970-88)	Open plus 5 cents (B)	23	65	231	300	0.77:1	1,075
	Open minus 5 cents (S)	19	63	273	203	1.34:1	1,862
	Open minus 10 cents (S)	7	57	340	191	1.78:1	787
Cattle	Open plus 50 pts (B)	21	76%	$148	$92	1.61:1	1,912
(1970-88)	Open plus 25 pts. (B)	37	78	155	117	1.32:1	3,560
	Open minus 25 pts. (S)	37	50	192	144	1.33:1	2,054
	Open minus 50 pts. (S)	22	68	161	188	0.86:1	1,108

FIGURE 2:

Note in this article that I tested both buys and sells at

either end of the stretch. For example, the S&P 500 open minus 80 points is a good place to buy, not sell. However, if we trade open minus 160 points, a sell-stop should be hit.

The results in Figure 2 show a bias to the upside after the pattern. Eight of the 16 trades were profitable as buys, but the most conclusive evidence of an upward bias after the bull hook was the amount of gross profits—$30,051 on the buy side and $7,854 on the sale side. In contrast, the bear hook pattern *(S&C,* June 1989) showed cumulative profits of $41,768 on the sell side and $13,728 on the buy side.

It should be noted that the bull hook cattle result—a 78% profit on a 25-point move above the open—is extraordinary and one of the best buy results I have seen in that market, particularly with a reasonably high win/loss ratio of 1.32:1.

Observe the market action the day after a bull or bear hook pattern appears in your charts. A quick move off the open in the direction of the pattern's bias is the ideal. A move against the bias suggests caution.

The bull hook also is enhanced when the market opens lower on the day following the pattern. This provides greater profit potential and goes along with a natural inclination of the market to fill the gap between the open and the previous day's close. If the closing price of the hook day is traded, then continuation to the upside is likely.

In general, the bull hook pattern does not display the consistency of the bear hook. Nevertheless, the test results provide enough evidence of a predictable bias after the bull hook.

It's also useful to integrate the bull hook with trend and price action studies. Ideally, if trend is up and the open is lower than the close of the bull hook and early entry buying occurs, it's highly probable an ORB trade will be profitable. You can trade more confidently, too, if an important angle of support is in the vicinity of this type of price action.

If you are using the Chicago Board of Trade's Market Profile reports, another thing to consider when assessing the trade is whether a large buying extreme occurred near the open on any day beforehand. On regular intraday price chart, this will look like a spike or a spring. Quite naturally, support will come into the market at this point.

With the examples presented in this series thus far, you should be able to test the ORB concept on tradeables of your choice. I believe there is good evidence that you will find profitable combinations to trade.

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