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# The Principle Of Contraction/Expansion

by *Toby Crabel, CTA*



I define the principle of contraction/expansion as the market phenomenon of change from a period of rest to a Period of movement back to a period of rest. This interaction between the phases of motion and rest is constant, with one phase directly responsible for the other's existence.

The sidebar that is titled "Contraction/Expansion" displays an example of the operation of this principle (sidebar Figure 1). Below the last six vertical bars a letter (C) or (E) denotes whether the bar represents a contraction or expansion. This principle is applicable to any time frame. For this report I will use daily open, high, low and close data. I tested a trading method called opening range breakout—a trade taken at a predetermined amount above or below the opening range.

**I tested four price patterns for profitability on an opening range breakout (ORB) after the pattern. Two were contraction patterns...two were expansion patterns.**

A trend day is defined as a day when the first hour's trade makes up less than 10% of the day's range or the market has no dominant area of trade throughout the session. Trend days are characterized by an opening near one extreme and a close on the opposite extreme of the daily range. Trend days fall into the category of expansions.

To establish some basis for comparing action after an expansion or contraction, I established a control group. In both the control group and the four patterns, trades were taken off the open at a predetermined level above and below the open. The control group was ORB trades without a qualified trading pattern preceding the trade.

I tested four price patterns for profitability on an opening range breakout (ORB) after the pattern. Two were contraction patterns (NR4 and NR7) and two were expansion patterns (WS4 and WS7). All trades were exited at the close. The patterns are defined as follows:

- **NR4**—The narrowest daily range relative to the previous three days' daily ranges compared individually (Figure 1).
- **WS4 (Widespread 4)**—A day with a daily range larger than any of the previous three days' daily ranges (Figure 2).
- **NR7**—A day with a daily range narrower than the previous six days' daily ranges compared individually (Figure 3).
- **WS7 (Widespread 7)**—A day with a daily range larger than any of the previous six days' daily ranges compared individually (Figure 4).

**These results suggest that one should be looking to go with a forceful move off the open after a contraction and not willing to do so after an expansion.**

What happens to trades taken after contractions and expansions in the direction of the move off the open? From Figure 5, the average of all percentages under the column labeled NR7 was 64%; for NR4 it was 64%; Control was 57%; WS4 was 54% and WS7 was 52%. This indicates that the more pronounced the expansion, the smaller the percentage chance of the market following through in the direction of an ORB !

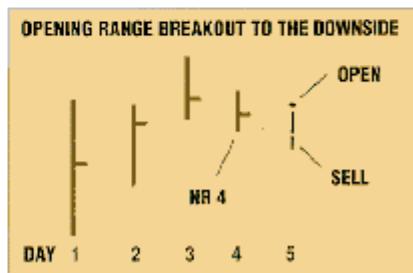
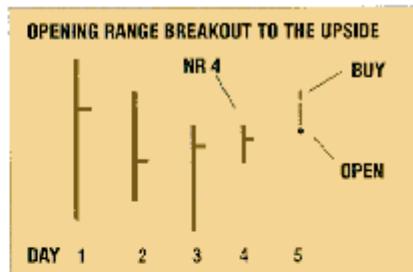
In summarizing Figures 1 through 4, a cumulative total of gross profits for the contraction patterns showed \$710,000 on 7,313 trades vs. \$ 102,000 on 7,524 trades for expansion patterns on trades in the direction of the move off the open. Profits were seven times larger for ORB trades after contractions than they were after expansions, clearly indicating that followthrough is significantly greater after contractions than they were after expansions.

I also compared the percentage profitability to a control I group. The control group results made one thing obvious: the move off the open by the predetermined amount usually was profitable if followed in that direction. Even so, the contraction patterns showed *better* results 30 out of 32 times, while the expansions showed *worse* results 29 out of 32 times.

These results suggest that one should be looking to go with a forceful move off the open after a contraction and not willing to do so after an expansion. In fact, fading price action off the open, perhaps with trend, after an expansion is a consideration. If nothing else, one should be aware of the dangers of ORB trades the day after a big directional day. Caution is necessary after expansions. This is when the most attention is given to the market by the novice traders who invariably get caught in whipsaws and trendless markets.

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OPENING RANGE BREAKOUT (NR4)							
	Entry point	Trades (#)	Profit (%)	Avg. win (\$)	Avg. loss (\$)	Win/loss ratio	Gross profits (\$)
<b>Bonds</b> (1978-86)	Open plus 16 ticks	148	64%	\$418	\$356	1.14:1	\$20,346
	Open plus 8	253	63	415	444	0.93:1	26,916
	Open minus 8	269	64	424	403	1.05:1	36,596
	Open minus 16	152	65	402	409	0.98:1	19,779
<b>S&amp;P</b> (1982-88)	Open plus 120 pts	145	62	1093	1021	1.07:1	42,224
	Open plus 80	233	57	1060	865	1.22:1	54,550
	Open minus 80	231	59	790	961	0.82:1	16,185
	Open minus 160	140	61	750	1116	0.67:1	2,385
<b>Beans</b> (1970-85)	Open plus 10 cents	204	62	321	453	0.70:1	4,712
	Open plus 5	416	66	316	375	0.84:1	32,625
	Open minus 5	400	63	417	313	1.33:1	58,856
	Open minus 10	183	66	470	304	1.54:1	40,406
<b>Cattle</b> (1970-88)	Open plus 50 pts	329	63	142	132	1.07:1	12,948
	Open plus 25	606	61	164	150	1.09:1	24,492
	Open minus 25	607	60	159	141	1.12:1	22,702
	Open minus 50	315	64	151	146	1.03:1	14,454



**FIGURE 1:** After the NR4 on Day 4 the market opens on Day 5 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 of Day 5. After the NR4 on Day 4 the market opens on Day 5 and declines a predetermined amount below the open. A sale is made on a stop at the predetermined level with an exit on the close of Day 5. An NR4 pattern is the narrowest daily range relative to the previous three days' daily ranges compared individually.

OPENING RANGE BREAKOUT (WS4)						
	Entry point	Buy/ Sell	Trades (#)	Profit (%)	Avg. win (\$)	Avg. loss (\$)
Bonds (1978-86)	Open plus 16 ticks	Buy	151	59%	\$414	\$492
	Open plus 8	Buy	292	50	445	423
	Open minus 8	Buy	281	46	453	359
	Open minus 16	Buy	145	54	440	411
S&P (1982-88)	Open plus 160 pts	Sell	129	46	1247	859
	Open plus 80	Sell	244	45	961	754
	Open minus 80	Sell	245	47	1028	646
	Open minus 160	Sell	134	49	1255	646
Beans (1970-88)	Open plus 10 cents	Sell	185	40	620	355
	Open plus 5	Sell	438	48	407	347
	Open minus 5	Sell	444	54	397	394
	Open minus 10	Sell	199	60	421	489
Cattle (1970-88)	Open plus 50 pts	Buy	308	62	116	130
	Open plus 25	Buy	620	55	140	155
	Open minus 25	Sell	577	54	159	159
	Open minus 50	Sell	321	52	147	149

## WIDESPREAD 4 (WS4)



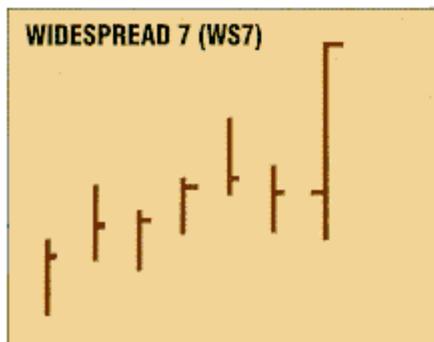
A widespread 4 (WS4) is a day with a daily range larger than any of the previous three days' ranges.

**FIGURE 2:** A widespread 4 (WS4) is a day with a daily range larger than any of the previous three days' ranges.



OPENING RANGE BREAKOUT (NR7)								
	Entry point	Buy/ Sell	Trades (#)	Profit (%)	Avg. win (\$)	Avg. loss (\$)	Win/Loss ratio	Gross profits (\$)
Bonds	Open plus 16 ticks	Buy	81	74%	\$439	\$373	1.17:1	\$18,530
	Open plus 8	Buy	144	64	481	471	1.02:1	19,783
	Open minus 8	Sell	153	62	414	429	0.96:1	14,497
	Open minus 16	Sell	88	64	373	394	0.95:1	8,311
S&P	Open plus 160 pts	Buy	84	67	881	984	0.90:1	21,800
	Open plus 80	Buy	132	61	918	760	1.20:1	35,625
	Open minus 80	Sell	120	62	822	762	1.01:1	25,820
	Open minus 160	Sell	84	60	716	647	1.10:1	13,795
Beans	Open plus 10 cents	Buy	105	66	284	267	1.06:1	9,987
	Open plus 5	Buy	239	67	284	306	0.93:1	21,912
	Open minus 5	Sell	227	63	437	352	1.24:1	33,750
	Open minus 10	Sell	103	71	495	359	1.37:1	25,331
Cattle	Open plus 50 cents	Buy	181	65	139	140	1.00:1	7,243
	Open plus 25	Buy	350	59	153	156	1.00:1	9,195
	Open minus 25	Sell	361	61	154	135	1.14:1	15,586
	Open minus 50	Sell	190	61	159	139	1.14:1	8,180

**FIGURE 3:** An NR7 pattern is a daily range narrower than the previous six days compared individually.



OPENING RANGE BREAKOUT (WS7)							
	Entry point	Buy/	Trades	Profit	Avg.	Avg.	Gross
		Sell	(#)	(%)	win (\$)	loss (\$)	profits (\$)
Bonds (1978-86)	Open plus 16 ticks	Buy	105	56%	\$452	\$491	\$4,089
	Open plus 8	Buy	184	50	492	444	4,486
	Open minus 8	Buy	164	51	458	352	10,290
	Open minus 16	Buy	85	60	463	424	9,183
S&P (1982-88)	Open plus 160 pts	Sell	75	44	1709	877	19,550
	Open plus 80	Sell	137	46	1186	826	13,574
	Open minus 80	Sell	139	45	1292	730	25,850
	Open minus 160	Sell	77	48	1670	675	34,799
Beans (1970-88)	Open plus 10 cents	Sell	117	39	717	369	6,750
	Open plus 5	Sell	274	50	467	372	13,081
	Open minus 5	Sell	272	54	398	415	7,475
	Open minus 10	Sell	131	58	412	511	3,237
Cattle (1970-88)	Open plus 50 pts	Buy	178	59	109	137	1,496
	Open plus 25	Sell	348	47	163	135	1,240
	Open minus 25	Sell	339	53	161	146	5,164
	Open minus 50	Sell	186	53	149	154	1,041

**FIGURE 4:** A widespread 7(WS7)pattern is a day with a daily range larger than any of the previous six days' ranges.

<b>COMPARING PATTERNS FOR PROFITABILITY</b>							
	<b>Entry point</b>	<b>Control (%)</b>	<b>WS4 (%)</b>	<b>NR4 (%)</b>	<b>WS7 (%)</b>	<b>NR7 (%)</b>	
Bonds (1978-86)	Open plus 16 ticks	Buy 60	Buy 59	Buy 64	Buy 56	Buy 74	
	Open plus 8	Buy 55	Buy 50	Buy 62	Buy 50	Buy 64	
	Open minus 8	Sell 56	Buy 45	Sell 64	Buy 51	Sell 62	
	Open minus 16	Sell 56	Buy 64	Sell 65	Buy 60	Sell 64	
S&P (1982-88)	Open plus 160 pts	Buy 58	Sell 46	Buy 62	Sell 44	Buy 67	
	Open plus 80	Buy 55	Sell 45	Buy 57	Sell 46	Buy 61	
	Open minus 80	Sell 49	Sell 47	Sell 59	Sell 45	Sell 62	
	Open minus 160	Sell 49	Sell 49	Sell 61	Sell 48	Sell 60	
Beans (1970-88)	Open plus 10 cents	Buy 60	Sell 40	Buy 62	Sell 39	Buy 66	
	Open plus 5	Buy 56	Sell 48	Buy 66	Sell 50	Buy 67	
	Open minus 5	Sell 58	Sell 54	Sell 63	Sell 54	Sell 63	
	Open minus 10	Sell 63	Sell 60	Sell 68	Sell 58	Sell 71	
Cattle (1970-88)	Open plus 50 pts	Buy 65	Buy 62	Buy 63	Buy 59	Buy 66	
	Open plus 25	Buy 58	Buy 56	Buy 61	Sell 47	Buy 59	
	Open minus 25	Sell 58	Sell 54	Sell 60	Sell 53	Sell 61	
	Open minus 50	Sell 63	Sell 52	Sell 64	Sell 53	Sell 61	
Average		57%	54%	64%	52%	64%	

**FIGURE 5:** Trades taken after contractions in the direction of the move off the open (the NR4 and NR7 patterns) were on average, more profitable by the close than trades taken after expansion patterns (WS4 and WS7). Likewise, the more pronounced the expansion, the smaller the percentage chance of the market continuing in the direction of an opening range breakout.

## Contraction/Expansion

The principle: The market as a phenomenon is constantly changing from a period of movement to a period of rest and back to a period of movement (Figure 1). This interchange between the phases of motion and rest is constantly taking place, with one phase directly responsible for the other's existence.

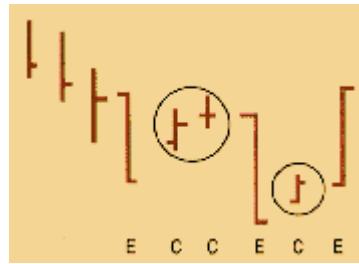


FIGURE 1

## ORB/Trend Day

- *Opening range breakout (ORB):* A trade taken at a predetermined amount above or below the opening range (Figure 2, left).
- Trend day: When the first hour's trade composes less than 10% of the day's range or the market has no dominant area of trade throughout the session. A trend day is characterized by an opening near one extreme and a close on the opposite extreme of the daily range (Figure 2, right).

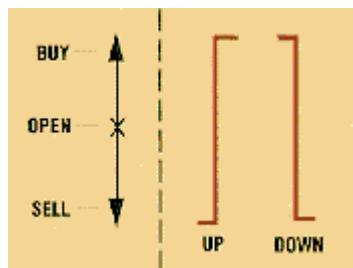


FIGURE 2



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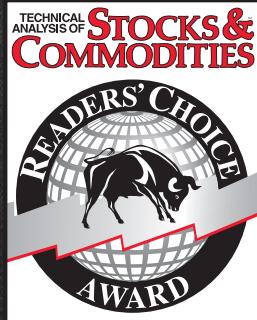
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