



# Inside days in major currency pairs

Alone, inside days don't tell you much. Combined with other price action, though, they can become more useful guides.

BY CHRIS PETERS

**T**he inside day, which is a day with a lower high and a higher low than the previous day, is the subject of many analysis and trading techniques because of what it is and what it's thought to represent.

By definition, an inside day represents a volatility contraction from the previous day — a condition that is often characterized as the calm before a potential market storm (i.e., renewed volatility). This pause gives traders the opportunity to enter the market and catch the

next move before it occurs.

If only things were that straightforward. This simplified interpretation leaves out the many nuances that are required to understand price action, and which make or break an actual trading approach, such as the price action preceding an inside bar and the activity within the inside bar itself.

Do inside days simply represent a pause in the prevailing trend or do they signal an important shift in market conditions? The following analysis examines inside days in the major currency pairs, focusing on those that form after short-term price runs.

The study examined behavior after inside days in seven currency pairs: U.S. dollar/Canadian dollar (USD/CAD), Euro/U.S. dollar (EUR/USD), British pound/ U.S. dollar (GBP/USD), U.S. dollar/Japanese yen (USD/JPY), U.S. dollar/Swiss franc (USD/CHF), Australian dollar/U.S. dollar (AUD/USD), and New Zealand dollar/U.S. dollar (NZD/USD). The analysis spanned

15 years of daily price data from Jan. 4, 1993 to Sept. 12, 2008.

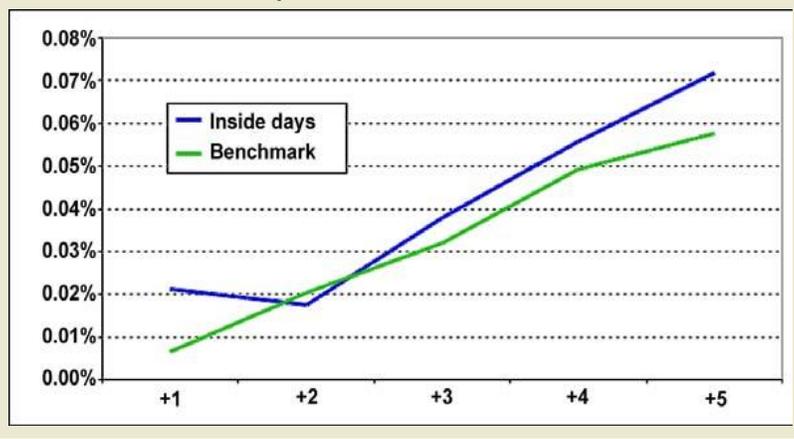
TABLE 1 — INSIDE DAY STATISTICS

Overall, inside days were followed by positive moves in the following week.

Performance following inside days							
	Day 1	Day 2	Day 3	Day 4	Day 5	5-day LUM	5-day LDM
<b>Avg.</b>	0.01%	0.01%	0.00%	0.00%	0.01%	1.06%	-1.05%
<b>Med.</b>	0.02%	0.02%	0.04%	0.06%	0.07%	0.85%	-0.78%
<b>Min.</b>	-3.49%	-4.35%	-5.84%	-5.68%	-7.17%	0.00%	-8.13%
<b>Max.</b>	2.55%	3.43%	3.69%	4.34%	4.48%	5.69%	0.00%

FIGURE 1 — PERFORMANCE AFTER INSIDE DAYS

The currencies outperformed their average (benchmark) performance the week after inside days.



### Basic statistics

The first step is to measure price moves one week after all inside days in the seven currency pairs. There were 4,174 inside days during the test period, averaging 596 per currency pair. About three inside days formed per month in each pair.

Table 1 lists performance statistics across all seven currency pairs, including the average, median, maximum, and minimum cumulative moves from one to five days after inside days. The table also shows the five-day largest up move (LUM), or close-to-high move, and largest down move (LDM), or close-to-low move, during the following week.

Overall, Table 1's median values show an upside bias following all inside days. Figure 1 compares these median moves to benchmark price moves, or same-length moves, in all currency pairs during the test period. After all inside days, currencies climbed slightly higher than their benchmarks.

### Up-closing and down-closing inside days

The patterns were then split into two groups: Inside days that closed above yesterday's close and those that closed below it. Slightly more than half of all inside days (52 percent) closed below the previous close.

Table 2 compares the currencies' cumulative performance after up-closing and down-closing inside days. The pairs climbed modestly, regardless of whether the inside days closed higher or lower. By the fifth day, however, the currencies were slightly more bullish after inside days that closed higher, although the LUMs and LDMs were roughly the same.

Let's examine how the currencies behaved after strings of consecutive highs and lows that culminate in an inside day. Do these trends tend to continue after inside days form?

### Trend runs

You should always consider the context in which an inside day occurs, because any existing trend tends to influence short-term price action. In this case, we'll look at price action after inside days that were immediately preceded by short-term price thrusts. Uptrends are defined as a series of consecutive higher highs and higher closes (HH+HC); downtrends are defined as strings of lower lows and lower closes (LL+LC).

For example, three-day runs of HHs and HCs occurred 1,613 times in the analysis period, averaging about 230 per currency pair. Of those total runs, just 260 (around 16 percent) were followed by an inside day.

Table 3 lists the currencies' overall performance after uptrends of different lengths — consecutive HHs and HCs from two to five days long, followed by an inside day. Table 4 shows the pairs' behavior after downtrends of different

**TABLE 2 — UP-CLOSING AND DOWN-CLOSING INSIDE DAYS**

*Currencies tended to rally more after inside days that closed higher.*

	Day 1	Day 2	Day 3	Day 4	Day 5	5-day LUM	5-day LDM
<b>Inside day gains</b>							
<b>Avg.</b>	0.01%	0.00%	-0.02%	-0.01%	0.03%	1.06%	-1.05%
<b>Med.</b>	0.01%	0.00%	0.04%	0.04%	0.10%	0.86%	-0.77%
<b>Min.</b>	-3.27%	-3.92%	-5.65%	-5.55%	-6.39%	0.00%	-7.53%
<b>Max.</b>	2.27%	2.76%	3.14%	3.87%	4.10%	5.11%	0.00%
<b>Inside day losses</b>							
<b>Avg.</b>	0.01%	0.02%	0.02%	0.01%	0.00%	1.06%	-1.05%
<b>Med.</b>	0.03%	0.03%	0.04%	0.06%	0.06%	0.85%	-0.79%
<b>Min.</b>	-2.50%	-3.41%	-4.03%	-4.10%	-5.22%	0.01%	-6.32%
<b>Max.</b>	2.12%	3.31%	3.56%	3.70%	4.06%	5.05%	0.00%

**TABLE 3 — CONSECUTIVE HIGHS**

*The longer an uptrend lasted, the more likely it was to continue after an inside day.*

	Day 1	Day 2	Day 3	Day 4	Day 5	5-day LUM	5-day LDM
<b>2 days of consecutive higher highs + higher closes</b>							
<b>Avg.</b>	0.02%	0.02%	0.01%	0.00%	0.00%	1.02%	-1.00%
<b>Med.</b>	0.01%	-0.01%	-0.01%	0.04%	0.02%	0.83%	-0.77%
<b>Max.</b>	1.70%	2.59%	2.71%	3.21%	3.60%	4.25%	0.00%
<b>Min.</b>	-1.71%	-2.20%	-2.52%	-3.22%	-3.30%	0.01%	-3.81%
<b>3 days of consecutive higher highs + higher closes</b>							
<b>Avg.</b>	0.01%	0.03%	0.06%	0.11%	0.14%	1.09%	-0.96%
<b>Med.</b>	0.02%	0.01%	0.05%	0.08%	0.11%	0.86%	-0.75%
<b>Max.</b>	1.22%	2.24%	2.37%	3.17%	3.58%	4.22%	-0.04%
<b>Min.</b>	-1.44%	-1.98%	-2.40%	-2.69%	-2.93%	0.02%	-3.54%
<b>4 days of consecutive higher highs + higher closes</b>							
<b>Avg.</b>	0.01%	0.00%	0.00%	0.02%	-0.01%	1.05%	-1.04%
<b>Med.</b>	0.00%	0.04%	0.07%	0.02%	0.12%	0.88%	-0.73%
<b>Max.</b>	0.96%	1.47%	1.62%	2.36%	2.45%	2.91%	-0.18%
<b>Min.</b>	-1.10%	-1.57%	-1.99%	-2.23%	-2.57%	0.07%	-3.09%
<b>5 days of consecutive higher highs + higher closes</b>							
<b>Avg.</b>	0.07%	0.03%	0.11%	0.15%	0.13%	1.09%	-0.91%
<b>Med.</b>	0.08%	0.04%	0.18%	0.18%	0.27%	1.00%	-0.65%
<b>Max.</b>	0.65%	0.81%	1.08%	1.46%	1.73%	2.28%	-0.20%
<b>Min.</b>	-0.63%	-0.95%	-1.18%	-1.47%	-2.10%	0.25%	-2.51%

lengths — back-to-back LLs and LCs from two to five days long, followed by an inside day. (Note: All patterns end with an inside day, so they are one day longer than these labels indicate.)

The shorter-term patterns are included within longer-term patterns. For example, each of the four-day consecu-

*continued on p. 24*



**TABLE 4 — CONSECUTIVE LOWS**

*Price tended to climb after inside days formed in the wake of strings of consecutive lows.*

	Day 1	Day 2	Day 3	Day 4	Day 5	5-day LUM	5-day LDM
<b>2 days of consecutive higher highs + higher closes</b>							
<b>Avg.</b>	0.02%	0.03%	-0.03%	0.02%	0.02%	1.10%	-1.06%
<b>Med.</b>	0.01%	0.04%	0.01%	0.15%	0.12%	0.89%	-0.72%
<b>Max.</b>	1.94%	2.12%	2.53%	2.90%	3.74%	4.27%	-0.01%
<b>Min.</b>	-2.22%	-2.51%	-3.64%	-3.83%	-4.25%	0.04%	-5.68%
<b>3 days of consecutive higher highs + higher closes</b>							
<b>Avg.</b>	0.11%	0.11%	0.03%	0.09%	0.10%	1.17%	-0.95%
<b>Med.</b>	0.09%	0.14%	0.05%	0.23%	0.21%	0.99%	-0.68%
<b>Max.</b>	1.86%	1.79%	2.06%	2.36%	3.36%	4.06%	-0.02%
<b>Min.</b>	-1.58%	-2.24%	-2.76%	-2.72%	-3.08%	0.12%	-3.96%
<b>4 days of consecutive higher highs + higher closes</b>							
<b>Avg.</b>	0.05%	0.14%	0.05%	0.16%	0.14%	1.18%	-0.94%
<b>Med.</b>	0.02%	0.13%	0.06%	0.23%	0.17%	1.03%	-0.68%
<b>Max.</b>	1.60%	1.74%	1.84%	2.00%	2.14%	3.26%	-0.04%
<b>Min.</b>	-1.29%	-1.70%	-2.21%	-2.12%	-2.43%	0.19%	-3.24%
<b>5 days of consecutive higher highs + higher closes</b>							
<b>Avg.</b>	-0.07%	0.12%	-0.04%	0.06%	-0.25%	1.11%	-1.08%
<b>Med.</b>	-0.18%	0.11%	0.04%	0.08%	-0.33%	0.92%	-0.93%
<b>Max.</b>	1.03%	1.13%	0.80%	0.95%	0.87%	2.05%	-0.53%
<b>Min.</b>	-0.79%	-0.77%	-1.20%	-0.96%	-1.47%	0.65%	-2.45%

tive patterns is included in the list of five-day patterns, all three-day patterns are included within four-day patterns, and so on.

When comparing Tables 3 and 4, you will notice few differences between both patterns. Price tended to climb after either type of pattern, and LUMs were skewed higher than LDMs in both tables.

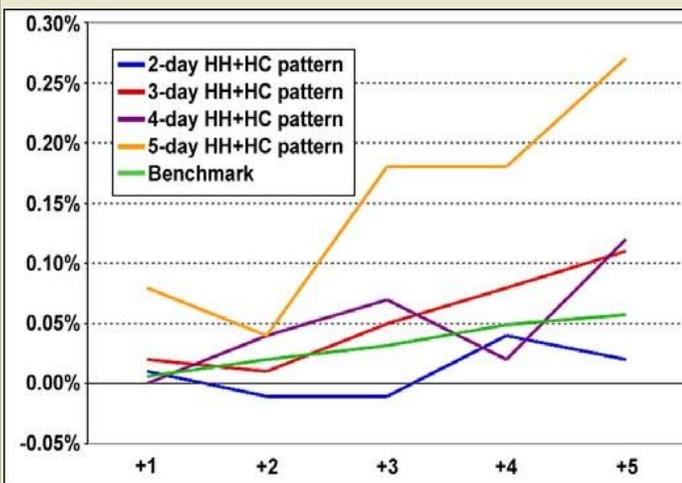
Figure 2 compares weekly median moves after consecutive HHs and HLs 2 days to 5 days long ending with an inside day. Overall, the longer the uptrend lasted, the more likely it was to continue after an inside day.

For example, price rose just 0.02 percent in the week after 2-day HH+HC patterns, but it climbed 0.27 percent in the week after five-day HH+HC patterns. In addition, price gained ground nearly 70 percent of the time after five-day HH+HC patterns, compared to only half the time after shorter-term up trends. However, five-day HH+HC patterns were rare, appearing only 36 times over the test period, or about twice per year (not shown).

Figure 3 shows the pairs' behavior after back-to-back LLs and LCs was slightly more erratic. The currencies tended to rally after inside days fol-

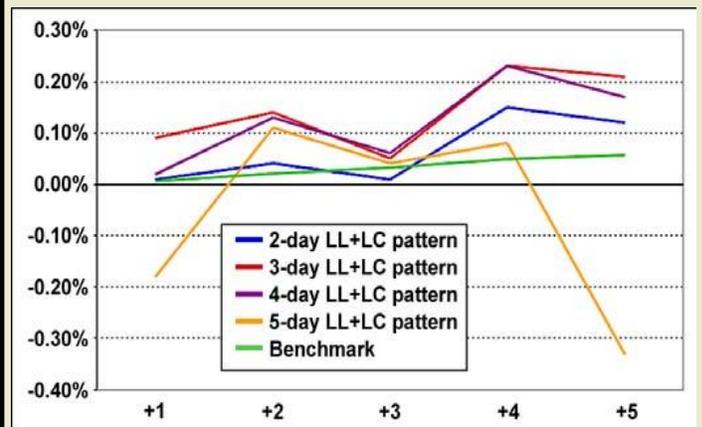
**FIGURE 2 — HIGHER HIGHS AND HIGHER CLOSES**

*The currency pairs beat the benchmarks when inside days were preceded by at least three consecutive days of higher highs and higher closes.*



**FIGURE 3 — LOWER LOWS AND LOWER CLOSES**

*Overall, the currencies remained in positive territory in the week following strings of lower lows (LL) and lower closes (LC) that ended with inside days. However, price fell 0.33 percent in the week after five-day LL+LC patterns that ended with inside days.*



lowed downtrends. However, price fell 0.33 percent in the week after five-day LL+LC patterns, the one exception to this rule. And price continued to drop 60 percent of the time after that pattern (not shown).

### Looking for patterns

The largest price moves tended to occur after the longest trends. For instance, price climbed 0.27 percent after five-day HH+HC patterns followed by an inside day. And price fell 0.33 percent after five-day LL+LC patterns followed by an inside day. However, these patterns were too rare to draw meaningful conclusions as they formed only 36 and 32 times, respectively, during the 15-year test period.

By contrast, three-day HH+HC and three-day LL+LC patterns appeared 252 and 247 times, respectively — a larger, more reliable sample.

Table 5 shows the performance statistics in the week after three-day HH+HC and three-day LL+LC patterns, depending on the direction of the subsequent inside day's close.

Roughly 80 percent of all inside days that followed three-day HH+HC patterns closed lower. However, when these patterns ended with a up-closing inside day, price continued to trend higher. For example, price climbed an average 0.33 percent in the week after three-day HH+HC patterns with a up-closing inside day. On the other hand, price was flat after three-day HH+HC patterns with a down-closing inside day.

Figure 4 compares the currencies' median performance after three-day HH+HC patterns with up-closing inside days vs. down-closing inside days. The pairs were much more bullish when the inside day gained ground as they rose 0.27 percent within a week. Also, price posted gains 60 percent of the time after these bullish patterns. By contrast, price lagged its benchmark, rising only 0.03 percent when three-day HH+HC patterns ended with down-closing inside days.

Figure 5 compares the performance after three-day LL+LC patterns with up-closing inside days vs. down-closing inside days. Performance wasn't as consistent after consecutive lows. Most of these patterns ended with up-closing inside days instead of down-closing inside days (74 percent vs. 26 percent, respectively).

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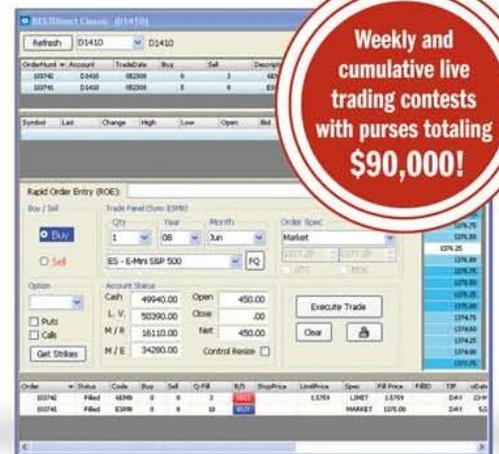
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**TABLE 5 — THREE-DAY CONSECUTIVE HIGHS AND LOWS**

Price rallied after three-day HH+HC patterns with up-closing inside days, but it also climbed after the opposite pattern — three-day LL+LC patterns with down-closing inside days.

	Day 1	Day 2	Day 3	Day 4	Day 5	5-day LUM	5-day LDM
<b>3-day HH+HC pattern with inside-day gain</b>							
<b>Avg.</b>	-0.01%	0.12%	0.11%	0.25%	0.33%	1.27%	-0.93%
<b>Med.</b>	0.01%	0.06%	0.15%	0.20%	0.28%	1.08%	-0.78%
<b>Min.</b>	-0.87%	-1.15%	-1.72%	-1.79%	-1.97%	0.15%	-2.40%
<b>Max.</b>	0.74%	1.38%	1.47%	2.33%	2.85%	3.52%	-0.30%
<b>3-day HH+HC pattern with inside-day loss</b>							
<b>Avg.</b>	0.01%	-0.01%	0.01%	0.03%	0.05%	1.01%	-0.99%
<b>Med.</b>	0.02%	-0.02%	-0.02%	0.04%	0.03%	0.77%	-0.78%
<b>Min.</b>	-1.44%	-1.97%	-2.17%	-2.73%	-3.00%	0.02%	-3.71%
<b>Max.</b>	1.21%	2.06%	2.18%	2.33%	2.89%	3.30%	-0.06%
<b>3-day LL+LC pattern with inside-day gain</b>							
<b>Avg.</b>	0.06%	0.04%	-0.12%	-0.03%	-0.06%	1.14%	-1.11%
<b>Med.</b>	0.07%	0.12%	0.01%	0.20%	0.06%	0.98%	-0.77%
<b>Min.</b>	-2.43%	-2.93%	-4.03%	-3.86%	-4.84%	0.10%	-5.58%
<b>Max.</b>	1.85%	1.79%	1.61%	2.09%	2.44%	3.24%	-0.05%
<b>3-day LL+LC pattern with inside-day loss</b>							
<b>Avg.</b>	0.07%	0.12%	0.18%	0.23%	0.27%	1.21%	-0.84%
<b>Med.</b>	0.02%	0.15%	0.05%	0.24%	0.25%	0.98%	-0.64%
<b>Min.</b>	-0.90%	-1.03%	-1.18%	-1.33%	-2.16%	0.19%	-2.58%
<b>Max.</b>	0.99%	1.34%	1.82%	1.85%	2.68%	3.42%	-0.15%

Price rallied much further after these downtrend patterns ended with down-closing inside days. For instance, price jumped a median 0.25 percent and beat its benchmarks by day 5. The response to this downtrend pattern was nearly as bullish as its reaction to three-day HH+HC patterns with up-closing inside days (Figure 4). On the other hand, the currency pairs climbed only 0.06 percent in the week following three-day LL+LC patterns with up-closing inside days.

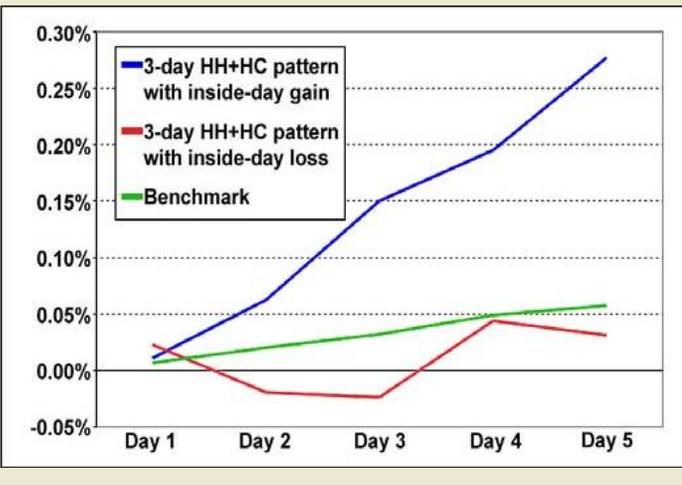
Overall, the seven currency pairs analyzed in this study had an upward bias from January 1993 to September 2008. However, price was slightly more bullish after inside days, especially when they closed higher after strings of consecutive HHs and HCs up to five days in length.

But not all currency pairs are alike, and more significant patterns might emerge if we applied the same approach on individual currencies. **❶**

*Next month's issue of Currency Trader will include more analysis of inside-day patterns in the forex market.*

**FIGURE 4 — CONSECUTIVE HIGHS WITH UP-CLOSING AND DOWN-CLOSING INSIDE DAYS**

After three-day HH+HC patterns, the currency pairs were much more bullish when the inside day closed higher as they rose 0.27 percent within a week.



**FIGURE 5 — CONSECUTIVE LOWS WITH UP-CLOSING AND DOWN-CLOSING INSIDE DAYS**

Price rallied much more after three-day LL+LC patterns that ended with down-closing inside days.

