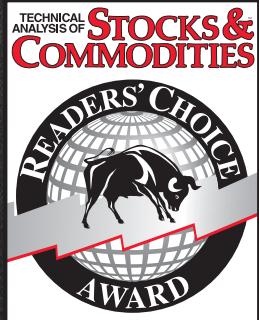


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Filtering Trades To Improve Trade Selection

The Outside Bar: A Rare And Powerful Filter

Some price patterns can be used to filter trades. Find out the impact the “outside bar” can have on some trend-following strategies and how useful this can be. This article includes code to discover outside bar frequency in various markets, and sample code to trade those occurrences.

by Andrea Unger



the markets, trading decisions are made based on the configuration of market prices. This is what makes up price action. It's commonly said that prices incorporate all available information into their movements and that the trader can start from the prices themselves to decide how to trade.

I've always used price patterns in my systems, but never as a starting point. At the Unger Academy, we teach when and how to use patterns like these, which act like filters applied to basic systems and set to a specific trading approach.

In this article, I'll discuss a pattern called the *outside bar*. This pattern can be considered rare and powerful. I'll show why that is so, and I'll show its impact on some trend-following patterns.

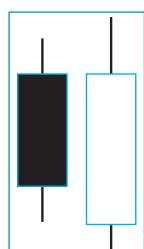
WHAT IS AN OUTSIDE BAR?

A bar is called an “outside bar” (OB) if its high is above the previous bar's high and its low is below the previous bar's low.

It should be noted that in this article, I'll always refer to an outside bar with a *daily* timeframe. Figure 1 helps to explain. On the right, you can see a daily price bar for yesterday, with a range that exceeds the highs and lows from the day before yesterday, represented by the bar on the left.

This pattern indicates an increase in volatility and doesn't necessarily indicate

FIGURE 1: THE OUTSIDE BAR (DAILY TIMEFRAME). In this diagram, on the right is a daily price bar for yesterday with a range that exceeds the highs and lows from the day before yesterday, represented by the bar on the left.


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PRICE PATTERNS

a market direction. In other words, it shows us that during yesterday's session, buyers and sellers took turns moving the book until they reached both relevant highs and lows.

IS IT A COMMON PRICE PATTERN?

If we understood how the construction of this pattern takes place, we could guess that an OB occurs very rarely. But how rarely?

To answer that question, we can use some simple code (in PowerLanguage for MultiCharts) that calculates the percentage of occurrences in different markets from 2010 to the present as I write this in the third quarter of 2022:

```
var: countOB(0), countsession(0),
dateInDateFormat(0), datereadable("");
dateInDateFormat = ELDateToDateTIme(date);
datereadable = FormatDate("dd-MM-yyyy", dateInDate-
TimeFormat);
if (high[1]>high[2] and low[1]<low[2]) then begin // valid for
daily bars
    countOB = countOB+1;
end;
sessioncount=sessioncount+1;
print(File("C:\test.txt"),datereadable," ",countOB," ",ses-
sioncount);
```

We'll count all the OBs produced by a market and relate them to the total number of sessions. (See Figure 2.)

If we use this pattern as a traffic light to allow our market entries (that is, we're only allowed to trade if an OB was formed yesterday), it's expected that the number of trades in our system will be significantly reduced by up to 90%.

A SIMPLE SYSTEM FOR TRADING THE OUTSIDE BAR THAT CAN BE APPLIED TO DIFFERENT MARKETS

Let's analyze the impact of this pattern on instruments with different characteristics. We'll create a basket of instruments containing CME futures, such as stock indexes, bonds, metals, and energy commodities, and plot each instrument using a 30-minute timeframe (so a futures contract that trades 23 hours per day is plotted with 46 bars per session). Specifically, we'll use the following futures: @CL, @RB, @NG, @HO, @GC, @HG, @ ES, @US.

We'll now need some code with which we can perform the first test on all underlying assets:

	countsession	countOB	% occur
@CL	3.262	302	9%
@EC	3.266	342	10%
@GC	3.262	337	10%
@NQ	3.266	416	13%
@US	3.265	300	9%

FIGURE 2: HOW RARE IS THE OUTSIDE BAR PRICE PATTERN? We can use a simple program to count all the OBs produced by a market and relate them to the total number of sessions. This table shows the percentage of occurrences in different markets from 2010 to October 2022 as calculated by the program.

input:

```
mystartbar(2), myendbar(35),
length(90),
ID(1),
mystop(0);
var:
mybar(0),
mylonglevel(1000), myshortlevel(0),
mypattern(true);
if sessionlastbar then mybar = 0;
mypattern = (highs(1)>highs(2) and lows(1)<lows(2));
mybar = mybar + 1;
mylonglevel = HighestFC(High, length);
myshortlevel = LowestFC(Low, length);
if mybar >= mystartbar and mybar <= myendbar and
mypattern then begin
    buy next bar at mylonglevel stop;
    sellshort next bar at myshortlevel stop;
end;
setstopcontract;
if mystop > 0 then setstoploss(mystop);
if ID = 1 then setexitonclose;
```

The code shown above contains a mirror trigger for the long and short sides, calculated on a 90-bar Donchian channel (length equals about two sessions). The number of bars of the channel is equivalent to the estimated number of bars in a given trade.

A bar is called an “outside bar” (OB) if its high is above the previous bar’s high and its low is below the previous bar’s low.



We use a trading time window, meaning we only allow entries when we are within a time window that starts one hour after the session opens and ends about five hours before the session closes to give the trades time to develop.

In our code, we used a Boolean-type variable called “mypattern.” The Boolean variable is *true* if an OB occurred in yesterday’s session or otherwise *false*.

```
if mybar >= mystartbar and mybar <= myendbar and
mypattern then begin
    buy next bar at mylonglevel stop;
    sellshort next bar at myshortlevel stop;
end;
```

From the above part of the code, we see how our system takes a market position through stop orders, both long and short, placed on the upper and lower levels of the channel, respectively, but only if:

- we are inside the trading time window
- yesterday’s session was an outside bar.

Note that we don’t apply a stop-loss because we want to introduce as few conditions as possible to read the results better at this stage of the study. However, we’ll close the position at the end of the session by applying a time stop.

THE RESULTS: HOW DO A SYSTEM’S METRICS CHANGE WITH OR WITHOUT THE USE OF THE OB FILTER?

Thanks to our code, we can insert the filter “mypattern” or the filter “mypattern=false” to see how the results of the original system change with and without filters (see the three-part table in Figure 3).

For the first case, we’ll use the code already shown in the previous section. For the second case, we’ll replace the line highlighted in yellow with the following line:

```
if mybar >= mystartbar and mybar <= myendbar and
mypattern = false then begin
```

The metrics shown in the tables in Figure 3 contain data from 01/01/2010 to the present.

From the analysis of the results provided by our system, we obtained information, some of which we expected and some of which revealed something new:

- If we apply the “mypattern” filter—that is, we assume that there was an OB on the previous day—

	Average trade	Num trade	NetProfit	Max DD
@CL	45 \$	2.332	104.320 \$	-21.290 \$
@RB	69 \$	2.219	152.804 \$	-32.689 \$
@NG	-9 \$	2.404	-22.790 \$	-39.260 \$
@HO	66 \$	2.282	149.562 \$	-38.602 \$
@GC	26 \$	2.407	62.370 \$	-65.820 \$
@HG	37 \$	2.480	90.638 \$	-33.175 \$
@ES	-38 \$	1.986	-75.825 \$	-78.988 \$
@US	-9 \$	1.967	-17.688 \$	-33.531 \$

System A (without the filter “mypattern”)

	Average trade	Num trade	NetProfit	Max DD
@CL	153 \$	204	31.280 \$	-11.130 \$
@RB	100 \$	227	22.709 \$	-18.522 \$
@NG	58 \$	239	13.940 \$	-11.960 \$
@HO	141 \$	221	31.067 \$	-23.117 \$
@GC	-73 \$	232	-16.900 \$	-38.310 \$
@HG	83 \$	219	18.138 \$	-11.700 \$
@ES	41 \$	275	11.288 \$	-13.350 \$
@US	-87 \$	229	-19.875 \$	-31.219 \$

System B (with the filter “mypattern”)

	Average trade	Num trade	NetProfit	Max DD
@CL	34 \$	2.128	73.040 \$	-26.510 \$
@RB	65 \$	1.992	130.095 \$	-35.460 \$
@NG	-17 \$	2.165	-36.730 \$	-50.560 \$
@HO	56 \$	2.061	115.513 \$	-42.752 \$
@GC	36 \$	2.175	79.270 \$	-44.220 \$
@HG	32 \$	2.261	72.500 \$	-31.625 \$
@ES	-21 \$	2.056	-43.763 \$	-86.737 \$
@US	-6 \$	2.072	-13.094 \$	-40.594 \$

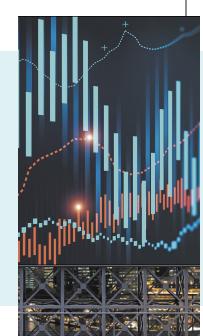
System C (with the filter “mypattern=false”)

FIGURE 3: SYSTEM TRADES WITH AND WITHOUT THE FILTER. We can look at how a system’s metrics change with and without the use of the outside bar (OB) price pattern used to filter the trades taken by the system.

the number of trades will be significantly reduced, and, consequently, the net profit will be reduced as well (what we had expected). This is not a problem, though, since now our goal isn’t to identify a strategy but to understand how the presence of an OB affects the results.

- By setting mypattern to false, we are making sure we do not trade after an OB occurs.
- Comparing the metrics of systems B and C with those of the original system A, we can see how system B leads to selecting trades with a higher average trade (AT) and significantly reduces the maximum

If we understood how the construction of this pattern takes place, we could guess that an OB occurs very rarely. But how rarely?



drawdown (max DD) in almost all the analyzed instruments, especially in dynamic markets such as the energy futures.

- From the results of system B, the @HG is also positively affected by the use of the OB filter, while in the case of the @GC, the system significantly worsens the AT.
- In the case of the @ES, system B brings tangible benefits, although we know that the US stock markets respond much better to mean-reverting approaches with countertrend entries.

LET'S GO FURTHER: ARE THERE OTHER CONDITIONS WE CAN ANALYZE?

So far, we've seen how the introduction of OB leads to stringent filtering of trades and improved AT of the basic system in some markets (especially in energy futures).

We wonder now whether any conditions could affect the results in any way. We'll therefore ask the following questions, focusing on the energy futures sector:

- a. Yesterday, when the OB was being developed, did the value of the body-to-range ratio have an impact on the systems analyzed?
- b. Do the previous results change regardless of whether yesterday's close was at the top or bottom of OB? And if so, how?

Tests on historical data can provide the answer to these questions. We will change the original code periodically, introducing or removing a single additional condition and observing if and how the results vary.

For case (a), we'll introduce the new variable "mybodyrange" and change the entry condition as follows:

```
var: mybodyrange(true);
mybodyrange = absvalue(opens(1)-closes(1)) >
0.5*(highs(1)-lows(1));
if mybodyrange and mybar >= mystartbar and mybar <=
myendbar and mypattern then begin
  buy next bar at mylonglevel stop;
  sellshort next bar at myshortlevel stop;
end;
```

The results are shown in the table in Figure 4. These results show that the introduction of this new condition and the presence of an OB leads to an increase in AT and a decrease in max DD in almost all cases.

To examine how the results change in case (b), we'll introduce two new variables, "mycloseupyest" and "myclosedownyest," and change the entry condition as follows:

	Average trade	Num trade	NetProfit	Max DD
@CL	153 \$	104	15.960 \$	-7.870 \$
@RB	236 \$	110	25.973 \$	-13.881 \$
@NG	114 \$	132	15.000 \$	-11.840 \$
@HO	111 \$	102	11.294 \$	-14.276 \$

with the filter "[mypattern](#)" and the filter "[mybodyrange](#)."

FIGURE 4: SYSTEM TRADES WITH THE OB FILTER. We can look at how a system's metrics change with the use of the OB price pattern as a filter. This shows results from the original system with the filter applied. The results show that the introduction of this new condition and the presence of an OB leads to an increase in average trade and a decrease in drawdown in almost all cases.

	Average trade	Num trade	NetProfit	Max DD
@CL	86 \$	124	10.690 \$	-12.030 \$
@RB	142 \$	149	21.202 \$	-15.880 \$
@NG	96 \$	162	15.630 \$	-11.840 \$
@HO	108 \$	133	14.398 \$	-23.776 \$

with the filter "[mypattern](#)" and the filters "[mycloseupyest](#)" and "[myclosedownyest](#)."

FIGURE 5: TESTING DIFFERENT CONDITIONS. We can change the original code from time to time to introduce or remove a single additional condition and observe if and how the results vary. Here, two new variables were introduced in the code to change the entry condition. In this case, the results show that the position of the close, associated with the presence of an outside bar, doesn't have a clear and significant impact on the trade results.

```
var: mycloseupyest(true), myclosedownyest(true);
mycloseupyest = ((highs(1)-closes(1))<0.20*(highs(1)-
lows(1)));
myclosedownyest = ((closes(1)-lows(1))<0.20*(highs(1)-
lows(1)));
if mybar >= mystartbar and mybar <= myendbar and
mypattern then begin
  if mycloseupyest, then buy next bar at mylonglevel
stop;
  if myclosedownyest then sellshort next bar at myshort-
level stop;
end;
```

The results are shown in the table in Figure 5. The results show that the position of the close, associated with the presence of an OB, doesn't have a clear and significant impact on the trade results.

In all the situations studied in this section, we used rules containing a specific value. In the first case, we set the value 0.5 as a watershed to identify the so-called dailyfactor (mybodyrange); in the second case we use the value of 0.2 as a limit to indicate whether the close of the previous day was in the high (over 80%) or low (under 20%) part of the daily range. These parameters could be further explored to find better solutions with surrounding values that provide stable results—but we'll leave that task to the reader.

We can conclude, however, that of the cases analyzed

in this section, the first case certainly brought the most benefit to our starting system.

FINAL THOUGHTS AND FURTHER USES OF OB

We've shown that in the case of the major energy futures, allowing market entry only after the presence of an OB had a significant impact on system metrics by increasing AT and significantly reducing max DD.

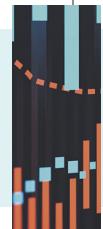
Metrics improved further when OB had a body-to-range factor of at least 50%, while the closing level of OB didn't provide clear benefits.

On the other hand, we observed that allowing the system to enter only in the absence of an OB didn't produce significant improvements.

It would be worthwhile to continue the study and test different entry strategies on a broader basket of instruments to try to benefit from such a rare and powerful filter.

Andrea Unger is a full-time professional trader, president of The Unger Academy, and author of The Unger Method. He is a four-time World Trading Champion (2008, 2009, 2010, and 2012), an honorary member of SIAT (Italian Society of Technical Analysis, a branch of IFTA), and speaks throughout Europe, America, Australia, and Asia. He may be reached at Andrea@UngerAcademy.com. The Unger Academy provides services to traders, including individuals, to help them improve their ap-

This pattern indicates an increase in volatility and doesn't necessarily indicate a market direction.



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FURTHER READING

- Unger, Andrea [2021]. *The Successful Trader's Guide To Money Management: Proven Strategies, Applications, And Management Techniques*, Wiley Trading.
- _____[2021]. *The Unger Method: The Winning Strategy Of The 4-Time World Trading Champion*, The Boss Books.
- _____[2022]. "Filters On The Test Bench," *Technical Analysis of STOCKS & COMMODITIES*, Volume 40: November.

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