

INDICATORS

Which Way The Market Goes

Premier Stochastic Oscillator



This indicator lets you respond quickly to changes in market direction.

by Lee Leibfarth

As

with any business, trading requires researching unique ideas that can be used to develop and maintain an edge in the markets. One place that traders can find inspiration is modifying existing technical indicators to meet their specific trading needs. It was this type of research and customizing that

created the premier stochastic oscillator (PSO).

The premier stochastic oscillator is a technical indicator that provides a quick response to changes in market direction. This highly sensitive indicator allows for early anticipation of price turns and can be used to establish definitive trading zones that identify potential trading opportunities. In this article, I will discuss the theory behind this unique stochastic variation as well as some possible trading applications that can be used in today's competitive emini futures markets.

DESCRIPTION

The PSO is a rewired version of a short-period stochastic. Unlike a standard stochastic oscillator, this indicator is normalized to register neutral values at zero while providing greater sensitivity to short-term price moves. This indicator uses a central zero line as a reference point and will oscillate above and below this point as price fluctuates. In addition, the PSO is smoothed by using a double exponential moving average to provide a more even response to turns in the market. The price chart of the emini Russell 2000 in Figure 1 shows both the PSO and standard, eight-period stochastic indicators as a comparison.

To understand the concepts behind the premier stochastic oscillator, traders should be aware of the composition of a standard stochastic indicator. Ironically, the stochastic oscillator commonly used in trading is not based on a stochastic process at all. The word "stochastic" is derived from the Greek *stochos*, which means "aim" or

“guess” and refers to a process that deals with an indeterminate or random element.

In a stochastic process, a sequence of values is developed from a corresponding sequence of random variables, but with an element of uncertainty often defined by probability. A classic example of a stochastic process is in medicine, where a doctor could administer the same treatment to patients suffering from the same symptoms, but with not all patients reacting to the treatment in the same way. These stochastic principles are used in many fields of science and mathematics, including artificial intelligence and in the development of complex neural networks.

In trading, the classic stochastic oscillator does not use a stochastic process but simply measures price momentum. Developed by George C. Lane in the late 1950s, this technical indicator has become a popular short-term trading tool. A stochastic oscillator measures momentum by comparing the current price of a trading symbol to its price range over a specified lookback period (or number of bars). The stochastic looks inside price bars to determine whether prices are closing nearer their highs or their lows.

As price closes near the high of the bar, it indicates an uptrending market, while prices closing near the low show a downtrend. The main value is known as %K and is the faster of the two lines that typically make up the stochastic oscillator. In addition, horizontal lines are used to illustrate upper and lower thresholds where price can be considered overbought or oversold, respectively. The basic formula for a stochastic oscillator is as follows:

$$\%K = 100 \times [(C - L_n) / (H_n - L_n)]$$

C = The most recent closing price

n = Lookback period

L_n = The low of the n previous price bars

H_n = The highest price traded during the same n period.

The PSO takes these calculations a step further with a five-period double-exponential smoothing of the %K and then normalizing the oscillator to register on a symmetrical scale of +1 to -1. The PSO calculation is based on the %K of the eight-period stochastic as follows:

$$\text{Premier stochastic} = (\text{exponential value (S)} - 1) / (\text{exponential value (S)} + 1)$$

S = 5-period double-smoothed EMA ((%K - 50) * .1)

%K = 8-period stochastic

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FIGURE 1: A COMPARISON BETWEEN A STANDARD STOCHASTIC OSCILLATOR AND THE PREMIER STOCHASTIC OSCILLATOR. The first indicator below the price chart is the standard stochastic, while the second is the premier stochastic oscillator.

TRADING APPLICATIONS

While technical indicators such as moving averages are typically used to trade with a trend, the PSO is best suited for trading changes in market direction (countertrend trading). For this style of trading to be effective, it is important that traders are decisive and act as soon as changes in market direction are detected. A slow reaction to market turns often result in traders missing out on the move.

The advantage to trading with the PSO is it can quickly anticipate changes in market direction based on four different threshold levels. These levels provide an interpretation of price behavior that can lead to high-probability market reversals. When analyzing the daily chart of the emini Russell 2000 in Figure 2, the thresholds are defined by the red and blue horizontal lines at +/-0.20 and +/-0.90. These thresholds create two symmetric buy and sell areas with the following rules:

- **Long trades:** (1) Premier stochastic crosses below 0.90, (2) premier stochastic crosses below 0.20
- **Short trades:** (1) Premier stochastic crosses above -0.90, (2) premier stochastic crosses above -0.20

These rules allow the premier stochastic oscillator to establish two separate modes for trade entry on both the long and short sides. The first mode occurs when the PSO moves out of the extremes, or areas that can be considered highly overbought or oversold. In these instances, the PSO must move outside the +/-0.90 range and begin to fall back. As is often the case, these pullbacks at the extreme level are followed by another push or “pop” back toward the extremes.

In the case of an overbought market, once prices push the PSO above 0.90 as seen in Figure 3, traders can look for a buying opportunity on the next bar close below this threshold. Short trades can be taken by reversing this logic at the oversold,



FIGURE 2: THE PREMIER STOCHASTIC OSCILLATOR. Here you see the premier stochastic oscillator applied to a daily chart of the emini Russell.

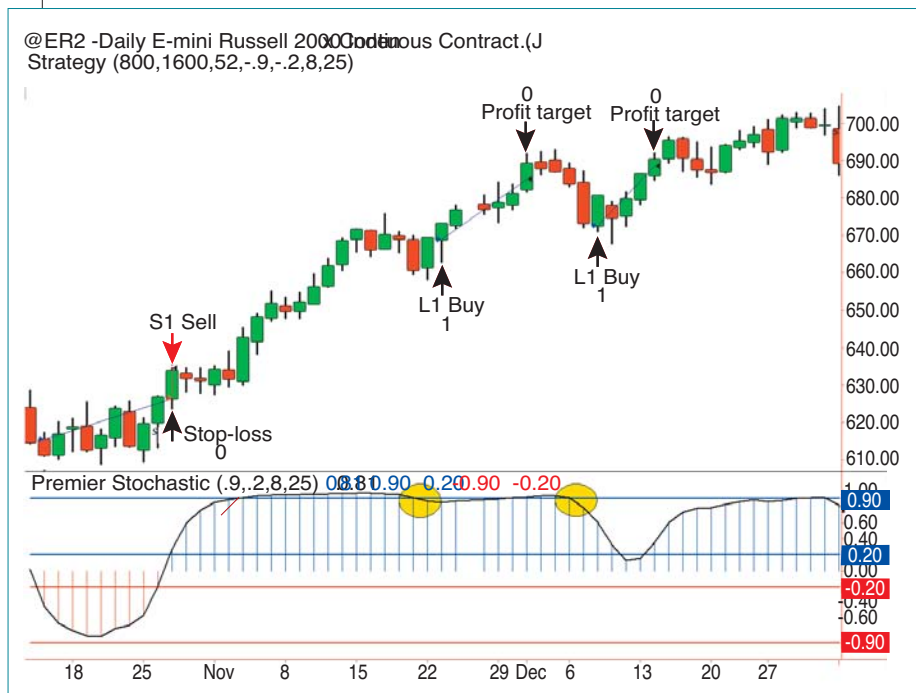


FIGURE 3: OVERBOUGHT MARKET. The shaded areas show the long trade locations when the premier stochastic reaches extremes and then closes below the 0.90 threshold.

-0.90 threshold.

The second mode for trade entries occurs as the PSO approaches the zero-line level. In these instances, price can accelerate as it returns from overbought/oversold areas, reach the ± 0.20 level, and then reverse. In many cases, the area immediately surrounding the zero line provides a transitional area where pullbacks and short-term reversals are likely. A long condition can be seen in Figure 4, where the PSO returns from a high area and crosses below the 0.20 threshold to trigger a long trade. This mode provides the most frequent short-term trading opportunities.

HITTING A MOVING TARGET

The challenge with most technical indicators is that their calculations are based on past price or volume activity. They are a reflection of what has already happened in the market and often fall behind or lag the current conditions. Even with the use of double-exponential smoothing and relatively short lookback periods, which emphasize the most recent price activity, the premier stochastic oscillator also falls victim to lag (since it is based on past prices).

One method of overcoming the lag inherent to the indicator is to use it to anticipate the movement of price as a moving target. Since the price in any chart interval or time frame will be dynamic and continually change, the PSO can help identify conditions where price tends to accelerate.

Applying this principle to the markets may help traders aim in front of price in order to more precisely hit the move and eliminate lag. The trade entry thresholds require acting on signals that are ahead of the actual move. For this trading application to be successful, it requires an aggressive approach to an-

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Strategy (800,1600,52,-.9,-.2,8,25)

INDICATORS

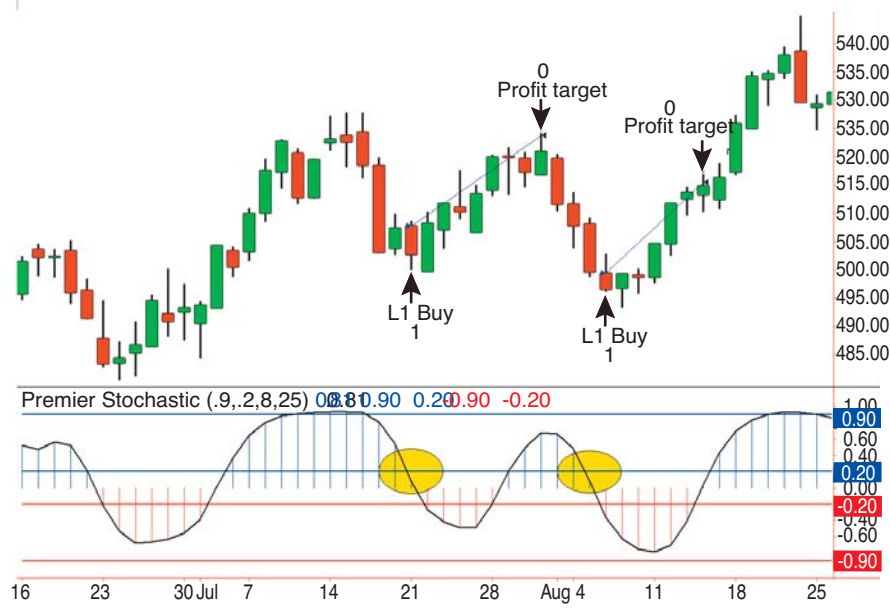


FIGURE 4: A LONG CONDITION. The shaded areas show the trade locations as the premier stochastic closes in on the central area, moving below the 0.20 threshold.

anticipating price reversals before they actually occur or are confirmed.

PREMIER EXIT STRATEGIES

The strength of the premier stochastic oscillator is in catching turns in the market at their earliest phase. We do not know if

retracement and will vary by market or trading instrument. In the case of the strategy example in Figures 3 and 4 (applied to the daily chart of the emini Russell 2000), the profit target is set at \$1,600 with a stop-loss risk of \$800. These values were established through optimizing to find the best values with a 2-to-1 ratio.

TRADESTATION CODE FOR PREMIER STOCHASTIC OSCILLATOR

```
// =====
// PREMIER STOCHASTIC
// Indicator
// =====

inputs:
    Line1(.9),
    Line2(.2),
    StochLength(8),
    Period(25);

variables:
    oFastK(0),
    oFastD(0),
    oSlowK(0),
    oSlowD(0),
    Length(0),
    NormStoch(0),
    SmoothStoch(0),
    Premier(0);

Value1 = Stochastic( h, l, c, StochLength, 1, 3, 1, oFastK,
oFastD, oSlowK, oSlowD);
Length = iff(Period < 0, 1, squareroot(Period));
NormStoch = .1 * (oslowK - 50);
SmoothStoch = xaverage(xaverage(NormStoch, Length),
Length);
Premier = (expValue(1 * SmoothStoch) - 1) / (expValue(1 *
SmoothStoch) + 1);
plot1(Premier, "Premier");
plot2(Line1, "1");
plot3(Line2, "2");
plot4(Line1 * -1, "3");
plot5(Line2 * -1, "4");
```

CONCLUSION

The premier stochastic oscillator (PSO) provides a new way to look at a classic indicator. Its quick response to price activity can help traders spot countertrend moves that occur in volatile markets, such as the stock index and eminis. As with any technical indicator or methodology, traders should employ sound research and money management to fully develop their trading strategies as part of their overall trading business.

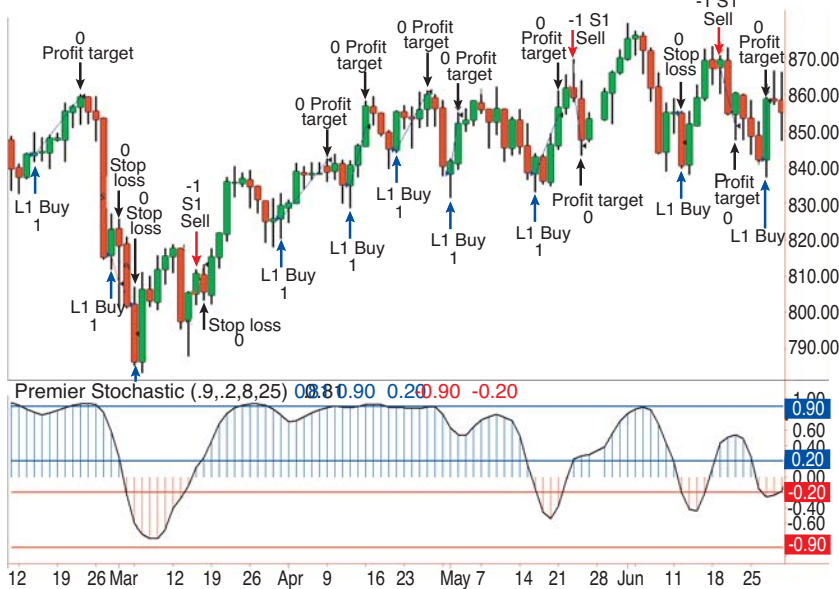
Lee Leibfarth is an independent futures trader. He develops custom indicators and provides educational services for traders. He can be reached at lee@powerzonetrading.com.

SUGGESTED READING

Folger, Jean, and Lee Leibfarth [2007]. *Make Money Trading: How To Build A Winning Trading Business*, Market-place Books.

Lane, George C. [1984]. "Lane's Stochastics," *Technical Analysis of STOCKS & COMMODITIES*, Volume 2: Chapter 3.

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Strategy (800,1600,52,-.9,-.2,8,25)



SIDEBAR FIGURE 1: APPLYING THE STRATEGY

TRADESTATION CODE FOR PREMIER STOCHASTIC STRATEGY

```
// =====  
// PREMIER STOCHASTIC  
// Strategy  
// =====
```

inputs:

```
StopLoss(800),  
ProfitTarget(1600),  
Line1(-.9),  
Line2(-.2),  
StochLength(8),  
Period(25);
```

variables:

```
oFastK(0),  
oFastD(0),  
oSlowK(0),  
oSlowD(0),  
Length(0),  
NormStoch(0),  
SmoothStoch(0),  
Premiere0;
```

```
value1 = Stochastic( h, l, c, StochLength, 1, 3, 1,  
oFastK, oFastD, oSlowK, oSlowD);  
Length = iff(Period < 0, 1, squareroot(Period));  
NormStoch = .1 * (oslowK - 50);  
SmoothStoch = xaverage(xaverage(NormStoch,  
Length), Length);  
Premier = (expValue(1 * SmoothStoch) - 1) /  
(expValue(1 * SmoothStoch) + 1);  
if Premier crosses over Line1 or Premier crosses  
over Line2 then sellshort ("S1 Sell") next bar at  
market ;  
if Premier crosses under Line1 * -1 or Premier  
crosses under Line2 * -1 then buy ("L1 Buy") next  
bar at market ;  
setstopcontract;  
setstoploss(StopLoss);  
setprofittarget(ProfitTarget);
```

TradeStation Performance Summary

Collapse ^

All Trades

Total Net Profit	\$39,540.00	Profit Factor	1.67
Gross Profit	\$98,740.00	Gross Loss	(\$59,200.00)
Roll Over Credit	\$0.00		
Open Position Profit/Loss	\$0.00		
Select Total Net Profit	\$37,490.00	Select Profit Factor	1.63
Select Gross Profit	\$96,690.00	Select Gross Loss	(\$59,200.00)
Adjusted Total Net Profit	\$20,118.15	Adjusted Profit Factor	1.30
Adjusted Gross Profit	\$86,200.01	Adjusted Gross Loss	(\$66,081.86)
Total Number of Trades	136	Percent Profitable	45.59%
Winning Trades	62	Losing Trades	74
Even Trades	0		
Avg. Trade Net Profit	\$290.74	Ratio Avg. Win:Avg. Loss	1.99
Avg. Winning Trade	\$1,592.58	Avg. Losing Trade	(\$800.00)
Largest Winning Trade	\$2,050.00	Largest Losing Trade	(\$800.00)
Largest Winner as % of Gross Profit	2.08%	Largest Loser as % of Gross Loss	1.35%
Net Profit as % of Largest Loss	4942.50%	Adj. Net Profit as % of Largest Loss	2514.77%
Slct. Net Profit as % of Largest Loss	4686.25%		
Max. Consecutive Winning Trades	6	Max. Consecutive Losing Trades	12
Avg. Bars in Winning Trades	4.06	Avg. Bars in Losing Trades	2.55
Avg. Bars in Total Trades	3.24		
Max. Shares/Contracts Held	1	Account Size Required	\$12,000.00
Total Commission	\$0.00	Total Slippage	\$0.00
Return on Initial Capital	39.54%	Annual Rate of Return	6.93%
Buy and Hold Return	42.72%	Return on Account	329.50%
Avg. Monthly Return	\$580.00	Std. Deviation of Monthly Return	\$2,120.17
Return Retracement Ratio	0.28	RINA Index	245.04
Sharpe Ratio	0.29	K-Ratio	3.81
Trading Period	4 Yrs, 9 Mths, 21 Dys	Percent of Time in the Market	25.11%
Time in the Market	1 Yr, 2 Mths, 14 Dys	Longest Flat Period	34 Dys
Max. Equity Run-up	\$52,380.00		
Date of Max. E. Run-up	06/27/07 16:15	Max. E. Run-up as % of Initial Capital	52.38%
Max. Drawdown (Intra-day Peak to Valley)		Max. Drawdown (Trade Close to Trade Close)	
Value	(\$14,100.00)	Value	(\$12,000.00)
Date	03/20/08 16:15	Date	04/11/08 16:15
as % of Initial Capital	14.10%	as % of Initial Capital	12.00%

SIDEBAR FIGURE 2: STRATEGY PERFORMANCE REPORT

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