

## Market Cycles

08/30/2025

As advocated by Howard Marks, the market follows business cycles and all investors must recognize these cycles and allocate assets accordingly. In most part, the business cycles as described by these legendary investors are long term cycles that span over several years. There are also many short term market cycles that a trader must recognize and intentionally target these peaks and troughs. Several technical indicators have been designed to display the market cycles. Stochastic oscillator appears to be among those sensible ones.

### Stochastic Oscillator

As defined by the original author, George Lane, two lines are employed for the Stochastic Oscillator, %K line and %D line. %K is call the fast stochastic and %D is called the slow stochastic. The computation requires the daily high, low and close prices.

$$\%K = \frac{close - \min(low)}{\max(high) - \min(low)}$$

The min and max functions are typically evaluated over 14 periods.

$$\%D = SMA(\%K)$$

The simple moving average (SMA) is evaluated over 3 periods.

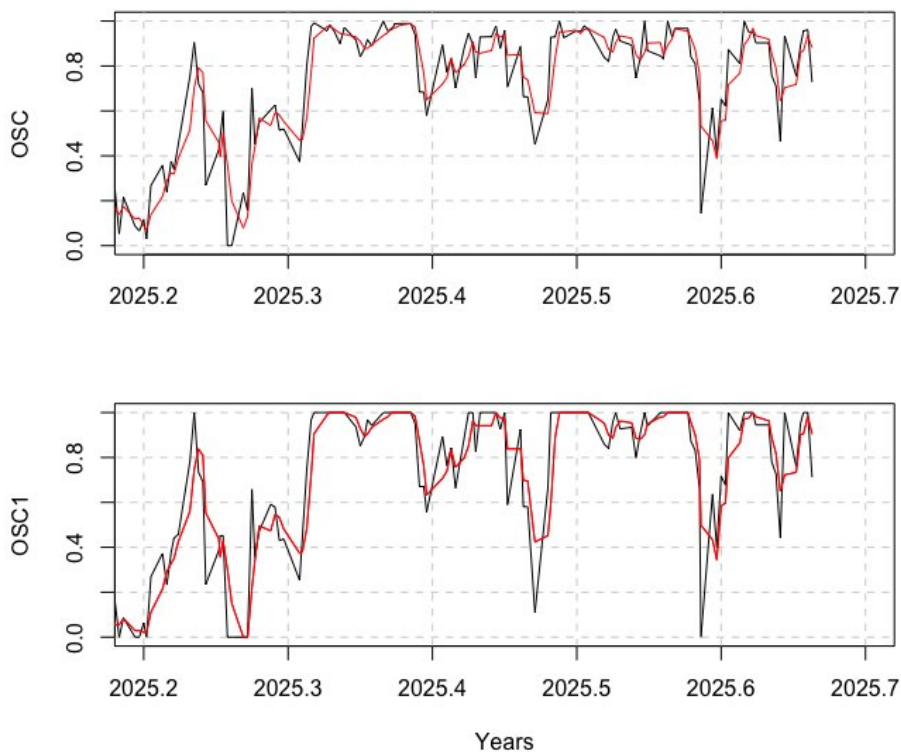


Figure 1. Stochastic Oscillator of SPY over 6 months. The black curve is %K and the red curve is %D.

Figure 1 shows the computed Stochastic Oscillator of ETF SPY, a proxy for SP500, or “the market.” The upper graph uses the strict definitions of %K and %D lines. The lower graph, however, used a much simplified approach that only uses the daily close prices. As such, the inputs to the min and max functions in the original definition are replaced by the daily close price, not the daily highs and daily lows. The differences between these two approaches are small.

$$\%K_{simplified} = \frac{close - \min(close)}{\max(close) - \min(close)}$$

Further, in Figure 2, the %D lines of these two approaches are graphed in the same plot. The overall “structure” of the market cycles is the same. In the rest of this article, simplified %D line is used exclusively.

It must be noted that the Stochastic Oscillator graphs from several financial websites are much smoother than the ones computed using the original formula. It is speculated that these websites perhaps employed some “beautifier” on the graphs to smooth out the sharp edges.

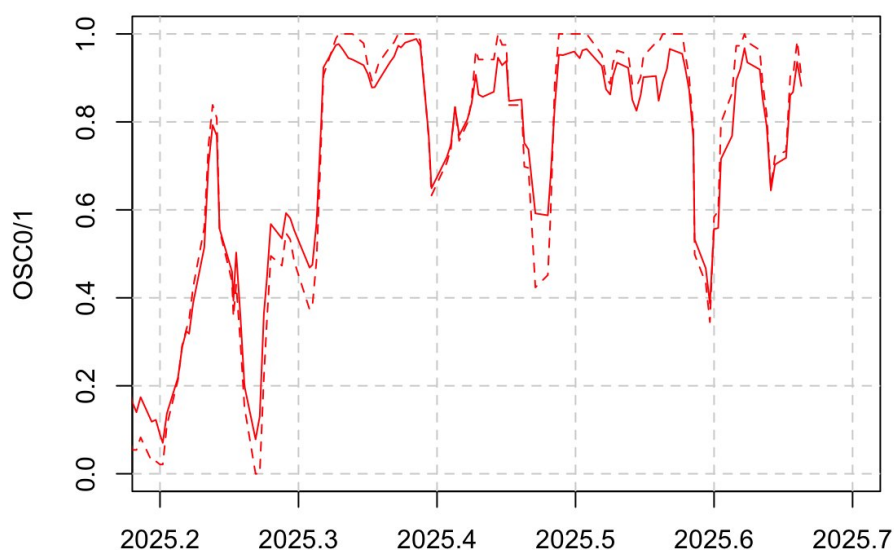


Figure 2. Stochastic Oscillators (%D lines) using the original formula and the simplified formula (dashed line)

### A Proxy for Market Cycles

Figure 3 shows the price and stochastic oscillator of SPY. The price curve shows several ups and downs in price reflecting the short-term market cycle. These price fluctuations are greatly amplified on the stochastic oscillator line. Therefore, stochastic oscillator line not only serves as a proxy for market cycles, but the magnitude of the cycles has been amplified. Because of the amplification effect, the

market peaks and valleys do not necessarily precisely align with those on the stochastic oscillator. Rather, it is the on-set of the peaks and valleys that are important. One should also note that once the market hits a new high, the oscillator goes to full scale (100%). If the market continues going higher, the oscillator will stay at 100%. This does not suggest the arrival of a market peak, but shows the market is now at its “full scale.”

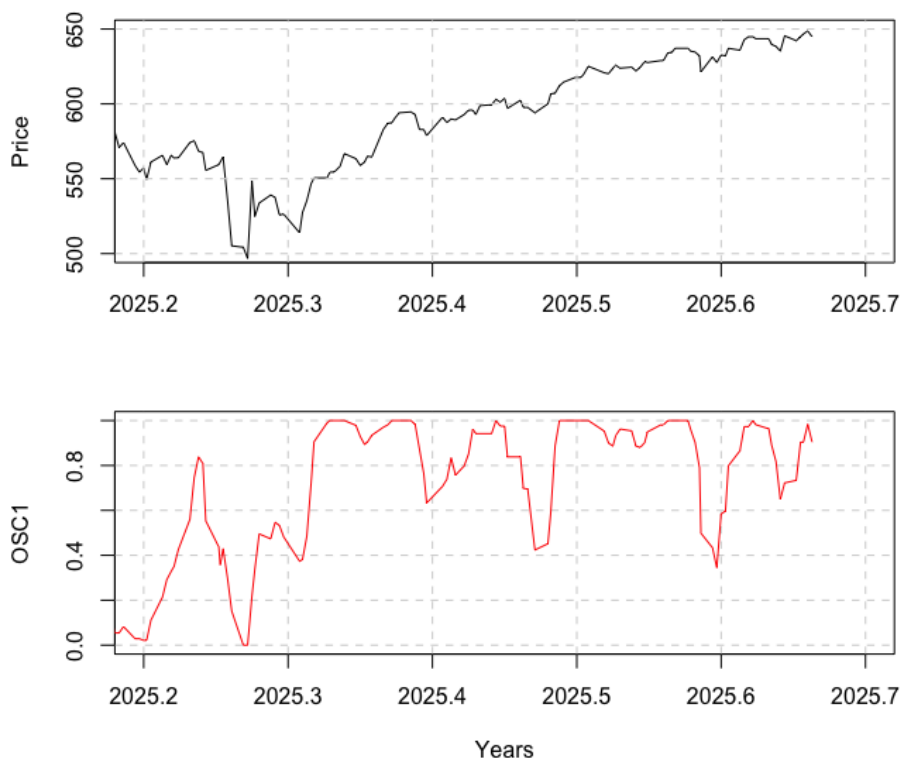


Figure 3. The Price (the upper plot) and the Stochastic Oscillator (1%D line, the lower plot) of SPY

This phenomenon is the same if the market drops to a 14-day low and keeps dropping. If one chooses an asset that is fundamentally healthy, like SPY, such a scenario may happen but should be rare and short. Indeed, during the early 6-month span of 2025, the market was at this point only briefly during the import tariff “Libration Day” which is among the worst in the recent history of the market.

Although SPY serves as an excellent proxy for the broad market, QQQ is a proxy for the tech sector. Figure 4 (upper graph) shows the comparison among SPY, QQQ and TQQQ. These are highly correlated in most part except for a few small gyrations during the summer of 2025 (2025.5). Therefore, market cycles (either long term or short term ones) are primarily driven by systematic factors, rather than sector specific, idiosyncratic events. For trading systems that focus on “volatility targeting”, these cycles are particularly important for timely execution to capture the volatility ebb and flow.

This is specifically true for tech heavy ETFs like TECL and SOXL (see Figure 4, lower graph). The correlations are dominant among these assets, but SOXL has its own events although they are very few in numbers.

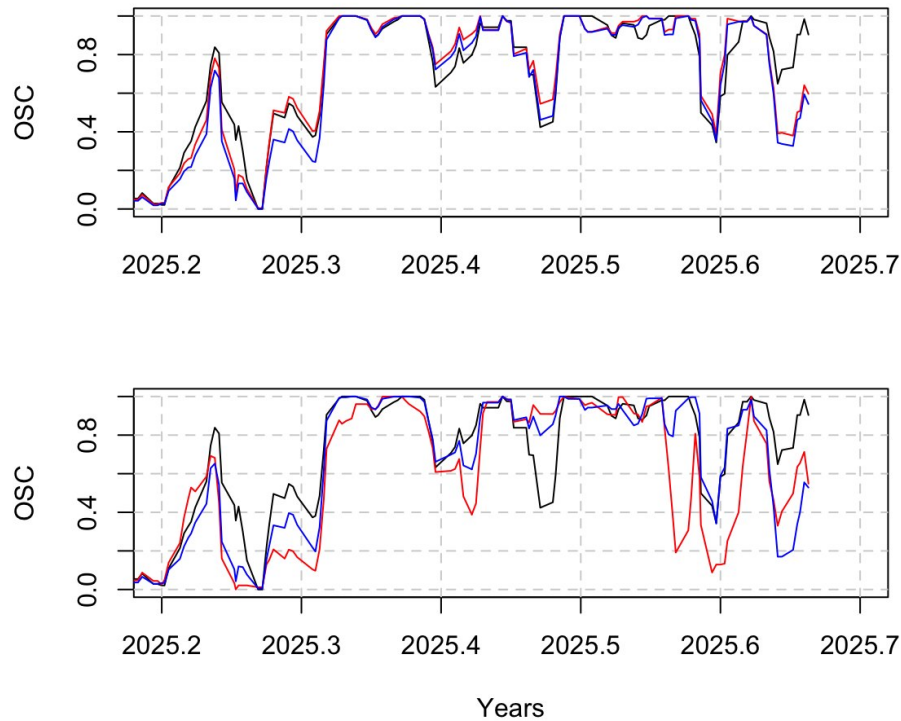


Figure 4. Upper Graph: Stochastic Oscillators of SPY (black), QQQ (red), and TQQQ (blue). Lower Graph: Stochastic Oscillators of SPY (black), SOXL (red), and TECL (blue).

Let's go back to Figure 2. During the six months (or 26 weeks) of 2025 (from 2025.2 to 2025.7), there were 7 market cycles. On average, there is one cycle every 3.7 weeks; or at least one trading opportunity in every 4 weeks. The upward swing from a market trough to its next peak can take 3 to 9 days – typically 7 days or one and half weeks. The downward swing, however, may take 3 to 5 days – 4 days on average, less than a week. As such, a “trading campaign” will take overall ten days from the market about to hit the bottom (in 4 days) to the market mostly recovered to its next peak (7 days). This leads to a technically holding period of 10 trading days for the trading assets.

### Concluding Remarks

For a sensible trader, there are several swing trading opportunities in a year, 14 on average. During these trading campaigns, one would hold the positions for approximately 10 days before exiting. To hit a given annual growth objective ( $y\%$ ), each campaign must at least realize a growth rate ( $x\%$ ):

$$1 + x\% = \exp\left(\frac{\ln(1 + y\%)}{14}\right) = \sqrt[14]{1 + y\%}$$

For example, to reach a 70% annual growth rate (known as the *Rentech rate*), the minimum per-cycle growth must be 4%. Not all trading vehicles would offer a 4% growth. Since the market cycles are highly correlated across most assets, one may readily find some assets more capable of delivering a sound growth than the rest.