Cross Asset Systematic Highlights

Man plans, the market laughs: Our Market Topping framework

- Market tops are hard to call in real time, the index prints new highs right up until it doesn't. Rather than pinpoint the peak, we track a panel of late-cycle topping signals. Seven independent signals across rates, credit, equity leadership, breadth and options-market that tend to light up in late bull market.
- Market bottoms have distinct capitulation points with clear messages from market bottoming signals, whereas topping signals may fire two years in advance, and we need to deal with varying lead times.
- Our goal here is not to be a more active trader, but to be more selective about exits.
- The approach: topping signals accumulate as the late-cycle picture fills in, high-yield spreads breaking wider, consumer staples quietly taking the market's leadership, real rates grinding restrictively high, the yield curve un-inverting after an inversion, the index pushing to new highs while breadth narrows beneath it, and the options market turning complacent, with the put/call ratio and implied correlation sinking to multi-year lows. When enough of these are lit at once and the S&P 500 is still near its highs, the warning is on.
- We also need a responsive Momentum catalyst for the exit. Signals can stay active while the market keeps climbing, so we only exit once momentum breaks, five consecutive S&P 500 closes below the 100-day moving average.
- Apart from the poor market breadth / high concentration, none of the topping signals are confirming. Stay OW Stocks UW Bonds.

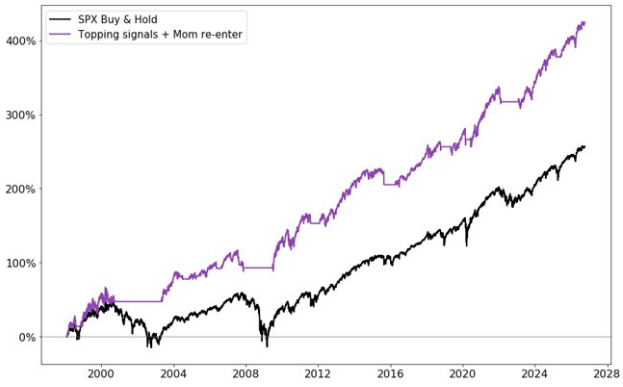
Cross Asset Systematic Strategy

Thomas Salopek AC
(1-212) 834-5476
thomas.salopek@jpmorgan.com
J.P. Morgan Securities LLC

Sandra Djambazovska AC
sandra.djambazovska@jpmorgan.com
J.P. Morgan Securities plc

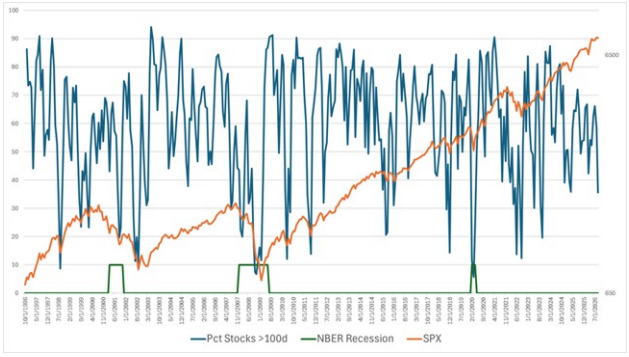
Figure 1: Our topping signals framework requires multiple topping signals to be in place w/ a responsive momentum trigger to exit.

PnL is scaled to the same volatility on the plot.



Source: J.P. Morgan, Bloomberg Finance L.P.

Figure 2: Yes, a market rising on falling participation is ugly, but concentration alone not enough to trigger our Topping framework exit.



Source: J.P. Morgan, Bloomberg Finance L.P.

See page 10 for analyst certification and important disclosures.

Thomas Salopek [AC]
(1-212) 834-5476
thomas.salopek@jpmorgan.com

J.P.Morgan

Market Backdrop: Where is the top in stocks?

It is one thing knowing the market topping and bottoming signals and quite another to try to apply them in a practical sense. Visually, these things are compelling with a clear signal flashing, but false positives abound. Our experience has been that for bottoming signals, it has been easier to pinpoint the timing, with regards to a moment of capitulation. Even so, this is a process. It may be the case we see capitulation and re-establish only to see another leg down. All of this is effort, and our experience is that it is well worth it, providing an entry point much closer to the true bottom. In the recent period, the overall indices, as a whole, have not had the sort of pullbacks that trigger the broad bottoming signals. Only the 'Liberation Day' sell-off triggered a few. So we hold on to the bottoming signals framework, as we await the market conditions where it will be necessary.

For smaller equity sell-offs where the VIX only goes to 20-25, these can be viewed as opportunities to re-enter at a better level, and using less stringent criteria than the Bottoming framework. One example of a rule for minor sell-offs: have vols rolled off the highs (through the 5d MAVG) and is a short lookback window (20d for example) holding in the S&P500? That is good enough for re-entry in sell-offs that will not amount to anything. Although it may require more than one attempt to re-establish.

As for market topping, one might think we are trying to suggest much more active trading. Actually, just the opposite: we are looking to be more selective about our exits. With a market topping framework sourced from broad signals, we are looking to find agreement from a variety of sources: macro, valuation, technical, sector-based, etc. And topping is more challenging, since unlike for bottoming where the signals converge on a capitulation moment, topping signals may fire two years in advance e.g. housing starts tanking, yield curve inverting, etc. So a different approach is necessary.

To deal with the different lead times, our approach is to have a checklist where we see how many topping signals have fired, and then to allow a responsive momentum exit rule to keep us invested as a tired market rally rises on fumes, and get out as soon as the momentum exit rule says it is done. By having a stringent topping framework, we are exiting less often, for broadly-sourced good reasons. Looking at a long term chart of stocks, we can see that stocks want to go up so long as the business cycle is going, so the goal here is to stay invested, and buy dips so long as that is the case. And ahead of the real sell-offs, the topping framework aims to flash a warning of a serious dislocation and potential threat to the business cycle.

What's the conclusion for today's markets? Of the market topping signals, only one has meaningfully fired, and it is not a secret: it is rising markets on poor participation, aka breadth divergence. We have seen this before e.g. 2015, where percent of stocks above the 100d MAVG falls from the 80s to the 30s, despite a rising index. That being said, the longer term signals, housing starts rolling over and yield curve inverting have not fired. (We will set aside the recent failure of the yield curve inversion signal for recession, as the disinversion came from inflation expectations rolling over, not growth risk). In sectors, there is no defensive rally, indicating we are close to a top. Credit spreads have not blown out. In the past, credit spreads would start to widen ahead of problems. Recently the pattern has been for credit to under-react, suggest buying

opportunities rather than market tops. For valuation our stock vs bond risk premia still suggests OW stocks and UW bonds (for US, UK Europe, Japan, Australia, and Canada), so it is premature to consider the big re-allocation to bonds where there are more hikes to come.

What are the risks? Rising yields of course. But stocks can handle these given high profitability and strong earnings. Could housing crack? Yes, eventually as the job market cracked, but the high profitability and tight labor supply suggest this will not happen soon. Potential improvements on the geopolitical side, would bring yields down thanks to the strong oil vs yield correlation. Ultimately, the high bond yields will be the thing that kills the stock market, but that will be an issue for late 2027, where the final rate hikes could turn out to be policy mistakes if AI or other hiccups emerge.

In the previous hiking cycle, the drivers for higher yields were powerful i.e. massive repricing of Fed funds, CPI of 9%, and Fed stopping purchases and reversing them with QT. In this hiking cycle, there is less wood to chop, but the reasons for higher yields are broader: strong growth, sticky inflation, high debt/gdp, geopolitics and policy uncertainty pushing for higher term premium, price-insensitive buyers still gone, and finally the global nature of the fiscal/inflation issues (France, UK, Japan) driving the long end higher. So, investors are reasonably tempted to allocate from stocks to bonds, although mid-2027 might be a better time to start, with potential cracks emerging for equities in the midst of even higher yields.

Topping signals

Market tops are notoriously hard to call in real time: the index is usually printing new highs right up until it isn't. Rather than trying to pinpoint the exact peak, we assemble a panel of topping signals, independent, economically motivated indicators that each tend to light up in the late stages of a bull market, when risk appetite is quietly fading beneath the surface. In this section, we walk through these signals one at a time and show, visually, when each has historically fired relative to the S&P 500. Crucially, we never act on a topping signal in isolation. Late-cycle indicators are early and noisy by nature, a signal can sit "on" for months while the market grinds higher, and it often flickers, tripping for a few days, switching off, then tripping again. To keep those brief warnings from being lost, once a signal fires we keep it "on" for the next two months. But a standing warning is not an exit on its own, to act, we also require a momentum confirmation. Our momentum confirmation is a simple trend break: the S&P 500 closing below its 100-day moving average for five consecutive days.

All the charts in this section share the same layout. The indicator behind the signal is plotted on the left axis, with the S&P 500 overlaid on a log-scaled right axis for context. Red shading marks the episodes when the signal was on (having fired within the prior two months) and the momentum confirmation was met.

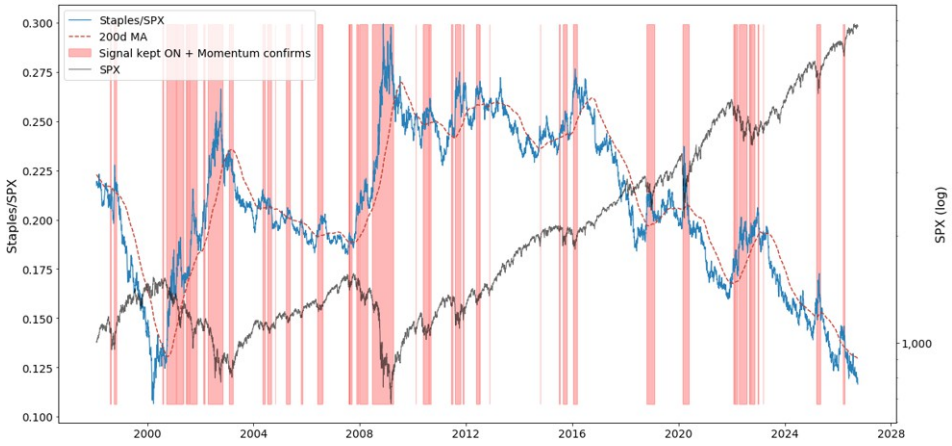
Late in a bull market, leadership quietly rotates from offense to defense well before the index rolls over. We track this with the relative strength of Consumer Staples versus the S&P 500. When the Staples/SPX ratio climbs above its 200-day moving average, defensive names are outrunning the market. On its own, the rotation is early and can persist for months, which is exactly why we pair it with the momentum confirmation above. The red zones below mark where defensive leadership was in force and price momentum had already broken.

Thomas Salopek [AC]
(1-212) 834-5476
thomas.salopek@jpmorgan.com

J.P.Morgan

Figure 3: Sector Topping Criteria: Defensive Leadership

Red indicates the signal was on in the past 2 months and momentum confirmed.

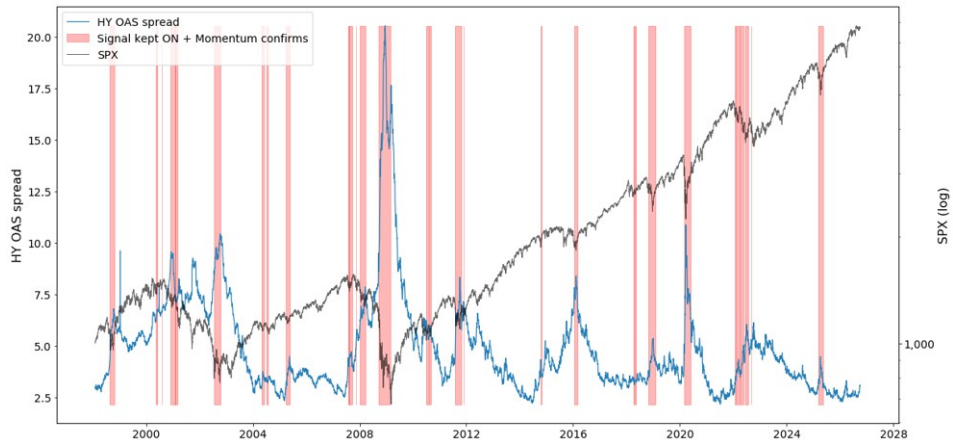


Source: J.P. Morgan, Bloomberg Finance L.P.

Credit markets are often the first to flinch. High-yield spreads, the extra yield investors demand to hold risky corporate debt, are the clearest real-time gauge of risk appetite, and they have a long history of cracking before equities at cyclical turns, as lenders reprice default risk while stock investors are still chasing highs. We don't wait for spreads to reach an alarming level, though, what leads is the change. We flag the signal when the three-month change in the high-yield spread is more than two standard deviations above its own one-year norm. An unusually sharp, fast widening that marks a genuine shift in credit conditions rather than everyday noise. We again pair it with the momentum confirmation, the red zones below mark where credit was deteriorating quickly and the S&P 500's trend had already broken. When risk-free havens and credit both turn while price momentum rolls over, it is a strong, actionable cue that the late-cycle backdrop is giving way.

Figure 4: Credit Topping Criteria: HY spreads breaking out

Red indicates the signal was on in the past 2 months and momentum confirmed.



Source: J.P. Morgan, Bloomberg Finance L.P.

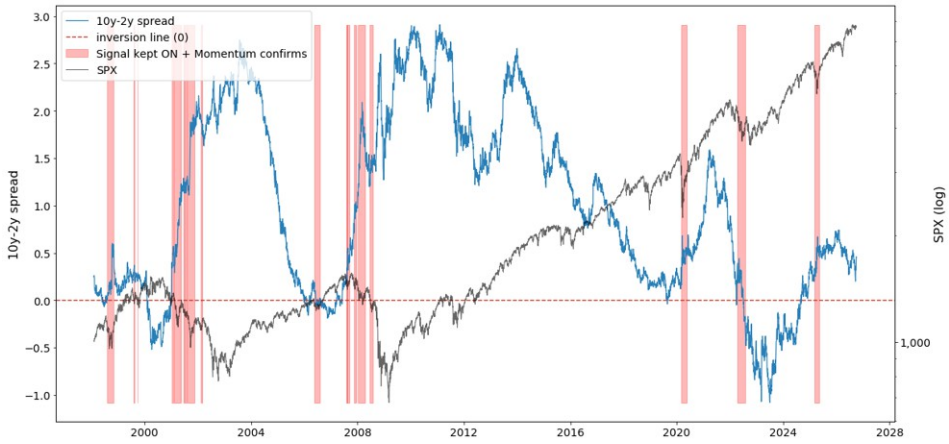
A yield curve inversion is one of the most famous recession warning signs, but as a market-timing tool it is too early. The curve can sit inverted for a year or more while stocks keep climbing. The sharper signal is the dis-inversion. When the 10-year to 2-

Thomas Salopek [AC]
(1-212) 834-5476
thomas.salopek@jpmorgan.com

year spread climbs back above zero after a period of inversion, historically that re-steepening lands far closer to the actual top than the inversion itself did. We flag the signal when the curve has been inverted at some point in the past year and then holds back above zero for five straight days, marking a genuine regime change rather than a one-day wobble. Paired with the momentum confirmation, the red zones below mark where the curve had dis-inverted and the S&P 500's trend had broken.

Figure 5: Rates Topping Criteria: YC inversion then dis-inversion

Red indicates the signal was on in the past 2 months and momentum confirmed.

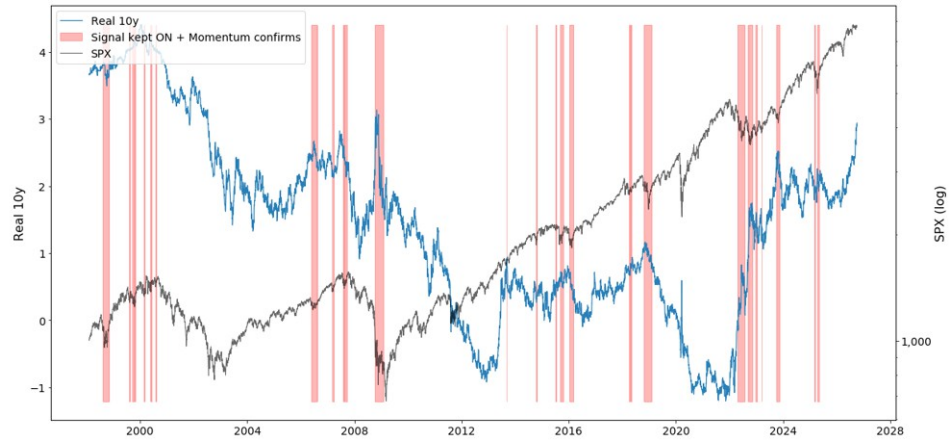


Source: J.P. Morgan, Bloomberg Finance L.P.

We track the 10-year real yield as a clean read on how restrictive policy has become. We switch the signal on when the z-score (3-year lookback) is above 1. On its own this can stay elevated for months, so we pair it with the momentum confirmation: the red zones below mark where real rates were restrictively high and the S&P 500's trend had already broken.

Figure 6: Rates Topping Criteria: High real rates rolling off

Red indicates the signal was on in the past 2 months and momentum confirmed.



Source: J.P. Morgan, Bloomberg Finance L.P.

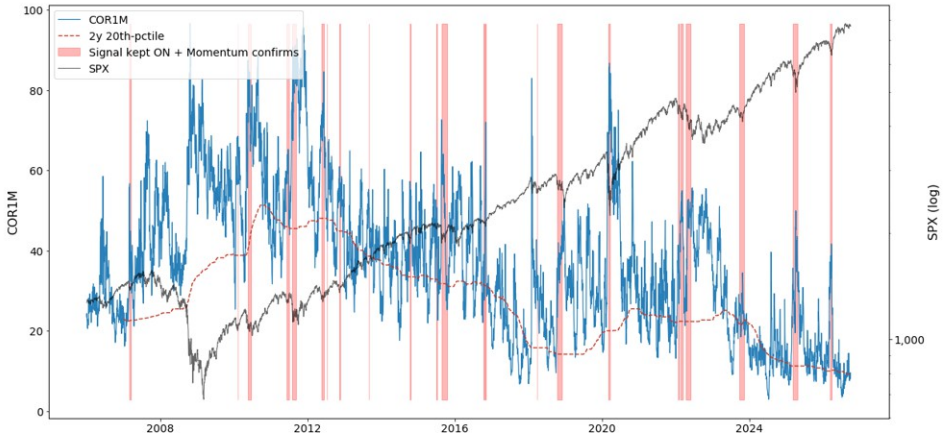
When investors stop worrying about a broad market shock, they stop paying up for it, and nowhere is that clearer than in implied correlation. Cboe's one-month implied correlation index (COR1M) backs out, from index and single-stock options, how tightly

Thomas Salopek [AC]
(1-212) 834-5476
thomas.salopek@jpmorgan.com

the market expects stocks to move together in a selloff. High readings mean investors are braced for everything to fall at once, low readings mean they see stocks drifting on their own idiosyncratic stories, with little systemic risk priced in. That latter state, cheap correlation, is a hallmark of late-cycle complacency. We flag the signal when COR1M sits below its own two-year 20th percentile, a level of calm reached only one-fifth of the time over the prior two years. On its own, this can persist for months, as implied correlation grinds lower through a placid uptrend, which is why we pair it with the momentum confirmation. The red zones below mark where implied correlation was unusually depressed and the S&P 500's trend had already broken.

Figure 7: Options Topping Criteria: Implied Correlation

Red indicates the signal was on in the past 2 months and momentum confirmed.



Source: J.P. Morgan, Bloomberg Finance L.P.

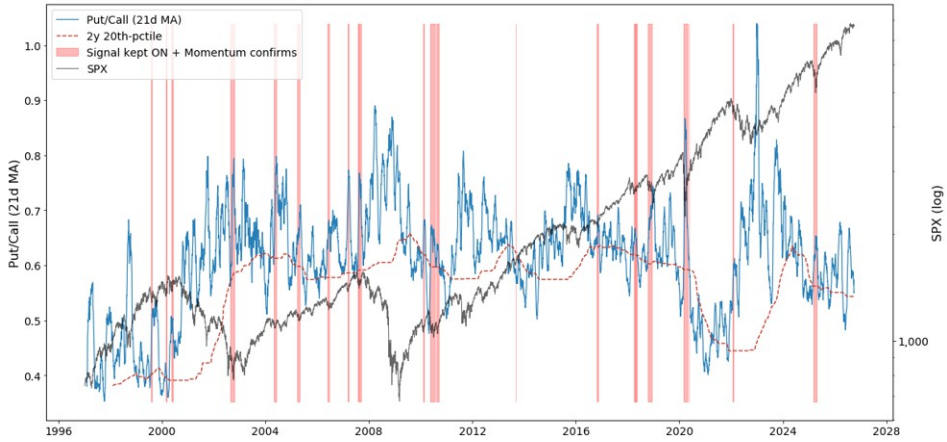
The put/call ratio is the market's most direct read on fear and greed. When the ratio falls, investors are buying fewer hedges and chasing more upside, a crowd that has stopped insuring itself. We smooth the daily series with a 21-day moving average to strip out single-day noise, then flag the signal when that smoothed ratio drops below its own two-year 20th percentile. Like implied correlation, a low put/call reading is a complacency gauge, not a timing tool. Sentiment can stay greedy for a long time while the market keeps rising. So we again require the momentum confirmation: the red zones below mark where hedging demand had gone quiet and the S&P 500's trend had already broken, the point at which an unprotected, complacent market meets a real downturn.

人在草木间

Thomas Salopek [AC]
(1-212) 834-5476
thomas.salopek@jpmorgan.com

Figure 8: Options Topping Criteria: Put/Call ratio at lows

Red indicates the signal was on in the past 2 months and momentum confirmed.

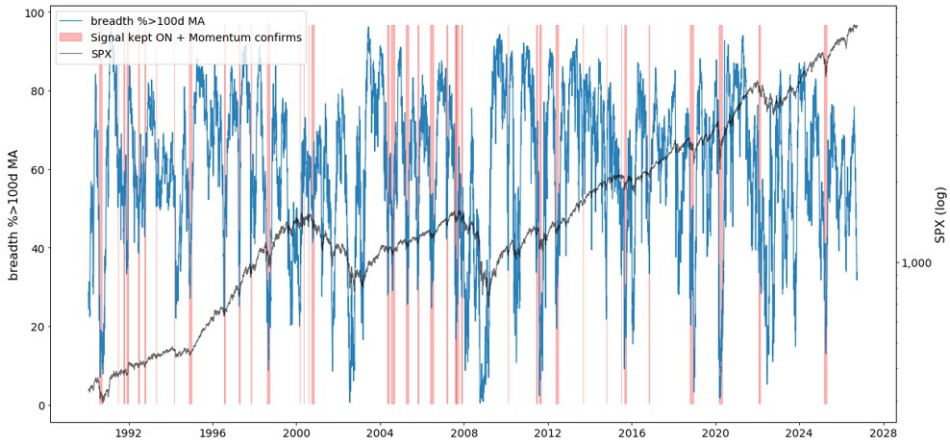


Source: J.P. Morgan, Bloomberg Finance L.P.

Market tops are frequently preceded by narrowing participation: the index pushes to new highs while fewer and fewer stocks come along for the ride. We measure this with market breadth, the percentage of S&P 500 members trading above their own 100-day moving average, and watch for it to diverge from price. The signal flags when the index is making a fresh three-month high while breadth sits more than 10% below its own three-month high. In other words, the headline is still climbing, but it is being carried by a shrinking group of leaders while the average stock has already begun to roll over. The red zones below mark where breadth was lagging a new high in price and the S&P 500's trend had already broken. When the index's strength is this hollow and momentum turns with it, the divergence becomes an actionable cue.

Figure 9: Technical Topping Criteria: Market breadth

Red indicates the signal was on in the past 2 months and momentum confirmed.



Source: J.P. Morgan, Bloomberg Finance L.P.

From signals to tradable strategy

The panel above tells us when the late-cycle backdrop is deteriorating; the backtest turns that into a single, rules-based equity position. We exit when two conditions line up on

Thomas Salopek [AC]
(1-212) 834-5476
thomas.salopek@jpmorgan.com

the same day: enough of the panel is flashing, and price momentum has actually broken. Specifically, on we check that at least 4 out of the 7 signals have fired in the past 2 months and SPX is within 3% of its 52-week high. We will only act on that warning once momentum confirms it: the S&P 500 closing below its 100-day moving average for five consecutive days. We re-enter on evidence that the trend has genuinely turned back up: the S&P 500 trading above its 150-day moving average and that average itself rising (higher than it was a month earlier). This keeps the strategy out during the choppy, failed-rally phase of a drawdown and only re-engages once a durable uptrend has re-established. We compare this strategy with a simple Buy & Hold strategy. The Topping Signals strategy outperforms the benchmark with a Sharpe of 0.77 vs 0.46.

Figure 10: Cumulative performance

PnL is scaled to the same volatility in this plot.



Source: J.P. Morgan, Bloomberg Finance L.P.

Figure 11: Performance statistics

2.5bps transaction cost is included.

	Ann Return	Ann Volatility	Sharpe	Max DD
Topping signals + Mom re-enter	8.88%	11.51%	0.77	-16.32%
SPX Buy&Hold	8.98%	19.22%	0.47	-56.78%

Source: J.P. Morgan, Bloomberg Finance L.P.

The table below is the panel with the latest values for each signal, the level that would trip it, and whether it has fired in the past two months. Together these give a point-in-time picture of how much of the late-cycle backdrop is currently in place and, combined with the momentum check, whether the strategy is flagging an exit today. Because the momentum break has not triggered, the exit flag is off and the strategy stays fully invested in the S&P 500.

Thomas Salopek [AC]
(1-212) 834-5476
thomas.salopek@jpmorgan.com

J.P.Morgan

Figure 12: Today's Topping Signals Scorecard

Signal	Indicator	Today	Threshold	Fired (last 2m)
Staples/SPX defensive	Staples/SPX	0.12		no
HY widening	HY 3m-chg z(1y)	1.70	2.00	no
Real rate restrictive	real-rate z(3y)	3.94	1.00	yes
Put/Call complacent	p/c pctile(2y) %	33.73	20.00	no
Yield curve dis-inverting	10y-2y spread	0.45	0.00	no
Breadth divergence	breadth %>100d MA	33.73		yes
Implied correlation complacent	COR1M pctile(2y) %	14.88	20.00	yes

Momentum confirmation (100d-MA break): OFF | Flag (ON + momentum): OFF

Source: J.P. Morgan, Bloomberg Finance L.P.