US – Early lead indicators of yield curve change

- **Several real-side indicators give early signals of impending yield curve slope change**
- **ISM and Philadelphia orders tend to lead the most**
- **Combinations of indicators may give more reliable results than individual indicators**
- **No real signal of impending curve steepening, but some holdover flattening signals remain**

Economic data give early indications of yield curve shifts

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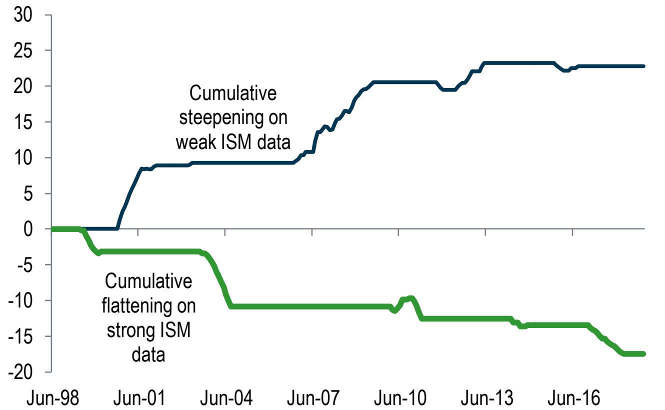
Economic data typically give an early indication that the yield curve is going to shift. Both labour market and survey data provide good signals, with combined results possibly even stronger. This note extends results from *Labour data predict yield curve changes* by broadening the set of indicators that point to yield curve shifts and by sharpening the results to give even earlier warnings that the cycle is going to turn.

In particular, we show that:

- A broad set of business and consumer survey indicators lead changes in the US yield curve slope
- Data signals can emerge right at the start of yield curve turns
- Combinations of indicators seem to outperform single indicators
- Some indicators capture small shifts within the cycle, not just big cycle turns
- The more reliable activity indicators have not yet deteriorated sufficiently to suggest an imminent steepening

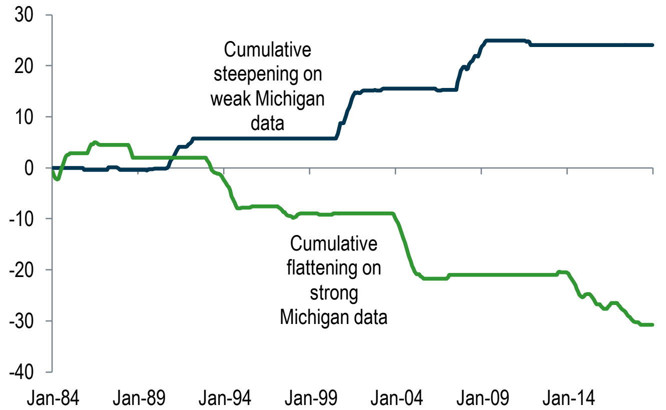
A reminder that we focus on the ability of activity indicators to predict yield curve changes. Conventional analysis focuses on the opposite. Finance theory is uncomfortable with economic data predicting asset prices. We are willing to live with that discomfort, but recognise that investors may respond more quickly to data deterioration than in the past.

Figure 1: Yield curve indications from ISM
%, cumulative steepening or flattening



Note: See text for description of the signal; Source: Macrobond, Standard Chartered Research

Figure 2: Yield curve indication from Michigan survey
%, cumulative steepening or flattening



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Another caveat – as a rule these indicators have worked better over the last 30 years than they did in the early 1980s. We think the Fed has been able to take its cues from real-side indicators since the mid-1980s because inflation has been subdued and responsive to any increase in economic slack. If inflation surged, so that the Fed would have to put a heavier weight on capping inflation, the predictive powers of our indicators might diminish.

We also end up with some sympathy for the Fed. None of our indicators really point to a slowing US economy. If the ISM dropped below 50 or the unemployment rate ran at 4.0% or higher for another month or two, some of our indicators would point to a serious enough slump to warrant steepening of the yield curve. But so far this is not the case. If anything, some of the economic strength in Q3 still points to flattening. The indicators give signals about 33-44% of the time. Right now, financial market sentiment feels a lot worse than incoming data. Based on our analysis, incoming data are no longer outright bullish (yield curve flattening) but are not yet in outright bearish (yield curve steepening) mode.

Data signals of future US yield curve shifts

A simple ISM rule

ISM non-manufacturing and manufacturing lead yield curve moves

Figures 1 and 2 give a couple of examples of the lead indications that economic data provide for changes in the slope of the US yield curve. The Figure 1 indicator is the average combined reading of the ISM manufacturing and non-manufacturing series. Yield curve slopes tend to steepen when data deteriorate – the rule used to indicate a deterioration is that the combined ISM is less than the average of the prior 12 months *and* the average reading of the combined ISM is less than 53.

Every time the signal is triggered we measure how much the yield curve steepens over the ensuing six months and cumulate these changes. If the signal is 'on' six months in a row, we treat that as six separate signals. This is why the cumulative steepening curve steepens rapidly at times. It would fall sharply if successive signals turned out to be false, and the yield curve was flattening. Although ISM data are almost always available in the first three or four business days of the month, we calculate the yield curve steepening from the end of the month. (In other words, if December ISM data are published by 5 January, we nonetheless calculate the yield curve slope change from end-January. Results would be slightly better if we calculated the six-month holding period from end-December. Non-manufacturing ISM data are available only since the late 1990s, which is why the range is limited.

Good news triggers expectations of a yield curve flattening. The indication of a likely curve flattening is that the combined ISM outcomes exceed 110 *and* the current combined ISM exceeds the 12-month average by more than five points – basically that the reading is good and getting better. The flattening rule was last triggered in September, so the holding period will be through the end of March. Signals have been on about 44% of the time since mid-1998.

Michigan consumer survey similarly leads

We take the Michigan survey back to the early 1980s. The rule for buying and selling the yield slope is very similar to ISM-based rule. The signal for the yield curve to steepen is that the two-month average has dropped by two points *and* the 12-month average is below its level six months earlier. The signal for the yield curve to flatten is that the two-month average has increased by two points *and* the two-month average is three points above the 12-month average *and* the two-month average is above 90.

We noted in our earlier report on the employment data and the yield curve that some threshold level of improvement needed to be achieved before the data were reliable indicators of future flattening. We find some evidence for threshold levels in survey data as well.

How early can the signal be?

ISM the earliest signal of weakness

Steepening signals received when curve is flat or inverted

The combined signal of manufacturing and non-manufacturing ISM not only provides reliable signals historically but does so relatively early in the cycle. The signal switched on when the yield curve slope was 20bps in the 2000 downturn. In the 2008 downturn, there were some early signals received in November and December 2006, when the yield curve slope was 11bps inverted (Figure 3). There were persistent signals after August 2007 when the curve had a 39bps slope. The signal in the 2000 downturn was triggered when the yield curve was 15bps inverted. This is relatively early in both downturns, compared with when the other indicators switched on the steepening signal, although some labour market indicators caught the 2000 downturn slightly earlier.

The signal turned off initially when the yield curve slope was about 243bps. Further steepening signals were seen intermittently after 2011, but neither as consistent nor as correct as those in place from late 2007 to mid-2009. In each of the cycles, the change in the slope of the yield curve was roughly 300bps from trough to peak. The charts show that the cumulative yield curve steepening was about 2,000bps while the steepening signal was on. Dividing this across three cycles and recalling that each signal is on for six months suggests that the signal captures about 120-130bps of steepening per cycle, about 40% of the average steepening.

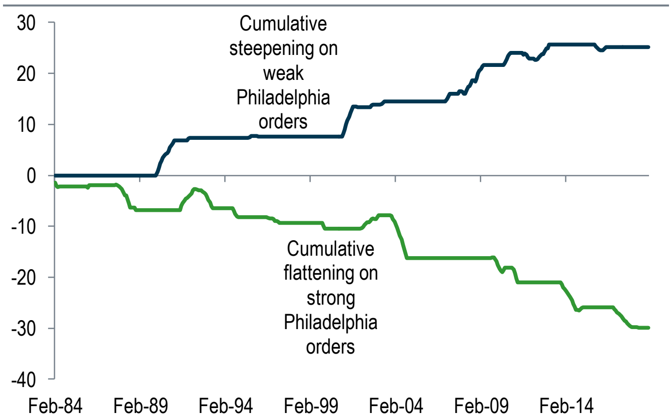
Philadelphia Fed orders have strong leading and mid-cycle properties, providing indications of yield curve steepening outside of major turning points (Figure 4). It is also somewhat earlier in signalling major turning points; in the 1989 and 2000 downturns, the steepening signal came when the 2s10s slope was 9bps and 54bps, respectively. In the 2008 downturn, the persistent signal came only at 150bps. However, there was a cluster of three successive correct steepening signals much earlier in 2007, beginning in February when the slope was -8bps. ISM manufacturing orders give similar early warnings of an impending yield curve steepening.

Figure 3: Yield curve steepness when signal triggered
bps

Indicator	Recession 1989	2000	2008
ISM combined manufacturing, non-manufacturing	NA	-15	-10/39
Michigan	88	51	94
Philadelphia orders	9	54	-8/150
Manufacturing orders	4	54	22
NFP	8	2	183
UR	9/78	51	53
Initial claims	4	-15	98
Combined UR, claims	9/78	-16	98
Combined UR, ISM manufacturing	29/84	-15	40
Yield curve slope low/high	-39/255	-47/266	-15/281

Note: The table entries show the slope of the yield curve when the steepening signal was triggered. A split entry reflects a situation when there was a short-lived preliminary signal, followed by a persistent one. Source: Macrobond, Standard Chartered Research

Figure 4: Yield curve indication from Philadelphia Fed orders
%, cumulative steepening or flattening



Note: See text for description of the signal. Source: Macrobond, Standard Chartered Research

ISM and unemployment rate provide complementary indications

Combined indicators provide complementary signals

Combined indicators seem to have reliable predictive capabilities, as we found in *Labour data predict yield curve changes*. We combine signals from the unemployment rate (UR) and ISM manufacturing as follows. When both have a signal in the same direction, the signal has a double weight relative to when only one has a signal. There is no instance when signals point in opposite directions.

The behaviour of the yield curve slope after signals are triggered is shown in Figure 5. Our ISM manufacturing signal for steepening is that the ISM manufacturing index is less than 50 and below the recent 12-month average. The signal on the employment side is that the UR is less than 6% and a quarter point below the 12-month moving average.

The cumulative magnitudes of steepening and flattening are greater than with the individual indicators, but this is because we double weight when both UR and ISM indicators give a signal. If we tighten the signal so that we register tightening or flattening only when both signals are on, the ratio of correct to incorrect signals goes up as does the steepening per signal, but the number of signals drops sharply.

Flattening signals

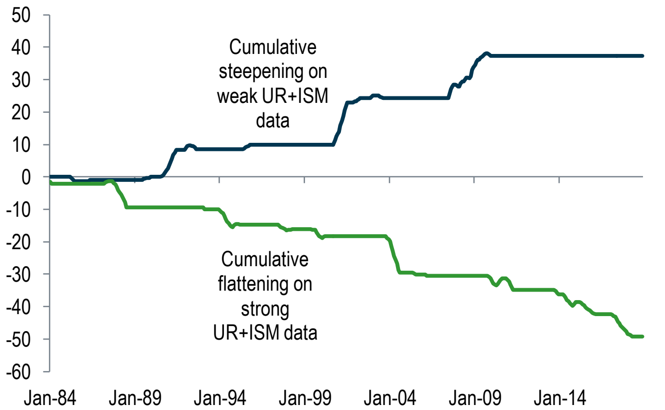
Our focus has been on steepening signals because the recession fear is the real fear in the market currently and with 2s10s having a 16bps slope, the room for further flattening is limited. That said, our combined indication is still on for flattening, because the ISM manufacturing signals for flattening from Q3 are still on – the flattening signal is that the two-month average ISM is below 55 and above its 12-month moving average. The lone signal is not as reliable as the joint signal, but has been reasonably accurate in recent years. Our judgment is that we would be cautious on flattening signals when the yield curve has only 15-20bps of slope, even though the curve has inverted significantly in each of the last three cycles.

Bottom line

A broad set of economic data give early warnings of major impending yield curve steepening or flattening. At present we are transitioning out of flattening signals but have not quite triggered any steepening signals. The data are not yet bad enough to trigger Fed capitulation, indications of policy rate cuts and a steeper curve.

Figure 5: Yield curve indications from ISM

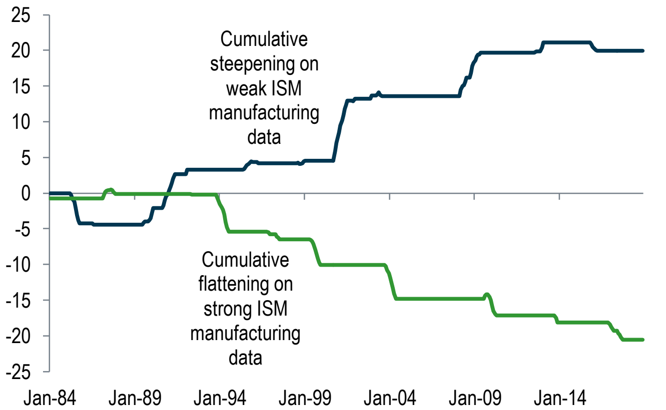
%, cumulative steepening or flattening



Note: See text for description of the signal; Source: Macrobond, Standard Chartered Research

Figure 6: Yield curve indication from Michigan survey

%, cumulative steepening or flattening



Note: See text for description of the signal; Source: Macrobond, Standard Chartered Research

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