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YIELD CURVE INVERSIONS: ALL BUT INEVITABLE?

BACKGROUND: The rapid deterioration of the yield curve over the last few weeks, even the last few trading days, has called into question whether the yield curve might invert. For example, the 2Yr/30Yr spread, which hit a 1994 peak of 228 basis points on January 25, fell below 150 bps in May, below 100 bps in November, and currently stands under 50 bps. The general view in the market, however, is that yield curve inversions are relatively rarified events, which call forth economic recession and sharply falling interest rates in the future. We examine the dynamics of previous yield curve inversions, look at the implications for the current yield curve, and develop medium-term trading recommendations.

DATA: The Federal Reserve maintains constant maturity yield data for the U.S. yield curve on a monthly average basis back to 1953. Unfortunately records on the more popular yields, such as the 2-year note and the 30-year bond, only begin in the late 1970's. As such, we conducted our investigation of historical inversions by focusing on the 3Yr/10Yr yield spread, primarily because these data are available further back in time. A cursory examination of the data for other spreads, such as 2Yr/30Yr, shows that the yield curve tends to invert as a unit, and that it does not matter especially the exact instruments chosen, so long as a short maturity coupon instrument is compared to a longer maturity coupon instrument.

ANALYSIS: A table giving the key details of prior inversions follows this text. As can be seen, there have been nine inversions since the early 1950's, ranging in length from 1 month to 35 months. Additional data is presented on the table that compares each inversion cycle to the overall tightening cycle of the Federal Reserve, as well as what the curve was doing before entering the inversion, and the details of any follow-on economic recession after the inversion begins.

Several fascinating results can be gleaned from this table, but one sticks out: virtually every post-war tightening cycle has ended with an inversion of the U.S. yield curve. The one tightening cycle that did not prompt an inversion was a brief move in 1983/84, which did in fact flatten significantly an otherwise steep yield curve, nearly inverting it in the process. Despite the common perception that inversions are rare events with special meaning, it appears that they are simply the final throes of a rising interest rate environment, and a general precursor to a period of falling interest rates. There is less evidence, however, that entry into an inversion cycle is a solid precursor to economic recession. In the list that follows, some of the more salient facts about inversion cycles (based on the 3Yr/30Yr spread as our guide to the shape of the curve) are summarized:

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[1] *Duration* - The typical inversion lasts 17 months, on median. Inversions have lasted as fleetingly as a single month, or as long as 35 months (virtually the last 3 years of the 1960's saw a flat or inverted yield curve). Only one of the nine inversions on record lasted less than a year.

[2] *Depth* - The yield curve, as measured by the 3Yr/10Yr spread, typically reaches its largest inversion at -61 bps, on median. The smallest inversion was -1 bps, and the largest was -130 bps. Only two of the nine inversions on record have been less than -25 bps (in absolute value). Deeper inversions seem to occur during tightening cycles that effectively beat back a high level of inflation, or that successfully proceed from start to finish without the economy ever experiencing a large pickup in inflation. When examining how far the yield curve fell, we see that the curve reaches a pre-inversion steepening peak of 89 bps, on median. This means that the yield curve tends to fall about 132 bps on median, or 145 bps on average, from its pre-inversion peak to its maximum inversion low.

[3] *Timing Within the Cycle* - The typical inversion starts 13-14 months into a tightening cycle, on median. Since tightening cycles tend to have differing overall lengths, this works out to be about 50% to 60% of the way through the typical tightening cycle. The relationship of the entry point into a tightening cycle and the beginning of the inversion cycle varies widely, however, and ranges from 8% of the way through the cycle to 96% of the way through the cycle. Inversions also tend to outlast the tightening cycle, spilling over into the period of falling rates that the inversion cycle is itself supposed to portend. On median, the inversion cycle lasts 4-6 months beyond the end of the tightening cycle. Inversions rarely last more than a year beyond the turning point in rates, however, and never end while rates are still rising.

[4] *Inversions and Recessions* - Contrary to popular opinion, inversions do not always precede recessions. Two of the nine historical inversions have had a recovery intervene before the next recession, effectively arguing that that inversion was not a very good precursor of an economic slowdown. Of the seven inversions that were followed by a recession, there was a median of 14 months between the time the yield curve first inverts and the month in which the economy peaks (and from there heads downward, as specified by the National Bureau of Economic Research, the acknowledged arbiters of such matters). The time from inversion to recession is still quite wide, even for those 7 instances that qualify: times range from 8 months to 27 months. One of the reasons that inversions are such inaccurate predictors of recessions is that they more properly predict future falling nominal interest rates, which can result from a slowdown in economic activity, an easing cycle by the Fed (regardless of whether such easing is economically justified), or from a sharp reduction in inflationary expectations (regardless of whether that required a slowdown of economic activity or simply a change in monetary policy).

CONCLUSIONS: The current yield curve, which arguably has only just narrowed to a state marginally below the long run average shape of the yield curve (from previously extraordinarily wide levels), is still nonetheless on track to invert. In the absence of any forthcoming inflationary evidence, the Fed's 10-month, 250 bp tightening agenda is arguably at or just beyond the halfway point of this current tightening cycle, suggesting that an inversion should be imminent. The robustness of the economy and the historically long period of time that curves remain inverted suggest that once the curve does invert, presumably around March 1995, it will stay inverted well into 1996. The incredible robustness of the current economy, combined with Republican plans to provide additional fiscal stimulus in 1995, also suggest that this will NOT be a situation in which the entry point into the inversion cycle will signal an early entry into recession.

TRADING RECOMMENDATION: First and foremost, it should be realized that an inverted yield curve is not a magical signal that makes trading any easier. The difficulty of picking the timing of a turning point in the interest rate cycle during an inversion is as difficult as it might be during a period of sharp steepness in the yield curve. The only factor that the inverted yield curve seems to guarantee is that rates are rising when it occurs, and they stop rising at some point before the curve "dis-inverts." Other than that fact, the timing of the end of the tightening cycle is uncertain. We would recommend playing the curve flattening trade safely until at least late in the year, and to look for rising rates, at least in the short end of the curve, until June.

A HISTORY OF U.S. YIELD CURVE INVERSIONS

3 Year to 10 Year Spread

	Tightening Cycle			Inversion Cycle						Pre-Inversion Facts				Recession Facts		
Cycle	Dates of Cycle		Length	Dates of Cycle		Length	Mths into	Min Inversion		Max Steepness		No. of Months til:		Entered	Months Since:	
No.	begin	end	in mths	began	ended	in mths	tight	level	as of:	level	as of:	tightening	inversion	into:	tightening	inversion
1	Oct-54	Oct-57	36	Apr-56	Nov-57	19	18	-18 bps	Feb-57	87 bps	Aug-54	2	20	Aug-57	-3	16
2	May-58	Nov-59	18	Jun-59	Jun-60	12	13	-43 bps	Dec-59	89 bps	Jun-58	-2	12	Apr-60	4	10
3	Apr-63	Nov-66	43	Dec-65	Mar-67	14	32	-61 bps	Sep-66	60 bps	Oct-62	5	38	#N/A	#N/A	#N/A
4	Jul-67	Aug-69	25	Sep-67	Aug-70	35	2	-61 bps	Sep-69	25 bps	May-67	2	4	Dec-69	4	27
5	Mar-71	Aug-71	5	Jul-71	Aug-71	1	4	-1 bp	Jul-71	120 bps	Mar-71	0	4	#N/A	#N/A	#N/A
6	Jun-72	Jul-74	24	Mar-73	Nov-74	20	8	-69 bps	May-74	81 bps	Jan-72	4	13	Nov-73	-8	8
7	Jan-77	Apr-80	38	Nov-78	May-80	17	21	-130 bps	Mar-80	120 bps	Nov-76	2	24	Jan-80	-3	14
8	Jul-80	Jun-81	11	Sep-80	Aug-82	22	2	-106 bps	Aug-81	98 bps	Jul-80	0	2	Jul-81	0	9
9	Feb-87	Mar-89	24	Jan-89	Mar-90	13	23	-25 bps	Mar-89	113 bps	Jul-85	19	42	Jul-90	16	17
MEDIANS:			24			17	13	-61		89		2	13		0	14
AVERAGES:			25			17	14	-57		88		4	18		1	14

NOTES TO TABLE:

1. The Fed tightening cycles are dated as follows: The first and last discount rate hikes in a given cycle are identified. The start of the tightening cycle is then pegged to the month before the first discount rate hike during which the Fed funds rate troughed, while the end of the cycle is dated as the month after the last discount rate hike during which the Fed funds rate peaked.

2. The 3 Year to 10 Year spread was chosen due to the fact that the Fed keeps these rates back longer than most of the others. Yields for the more popular 2 Year and 30 Year bonds were only first recorded by the Fed in the late 1970's, which would preclude analysis of all but the last three inversions.

3. The inversion cycles were dated as the first month when the 3Yr/10Yr spread actually went negative, and then the cycle is presumed over after the last month that the spread was negative. Based on pure subjectivity, some intervening months in which the spread briefly became positive again are ignored in picking the final month of the inversion cycle.

4. The measures of Maximum Steepness refer to the widest positive level the spread achieved in the months (years?) before the specified inversion cycle.

5. Under the Heading "Recession Facts," the measure "time since tightening" refers to the number of months from the end of the overall Fed tightening cycle to the peak of economic recovery (after which recession sets in), while the measure "time since inversion" refers to the time from the BEGINNING of the inversion cycle to the peak of the recovery.