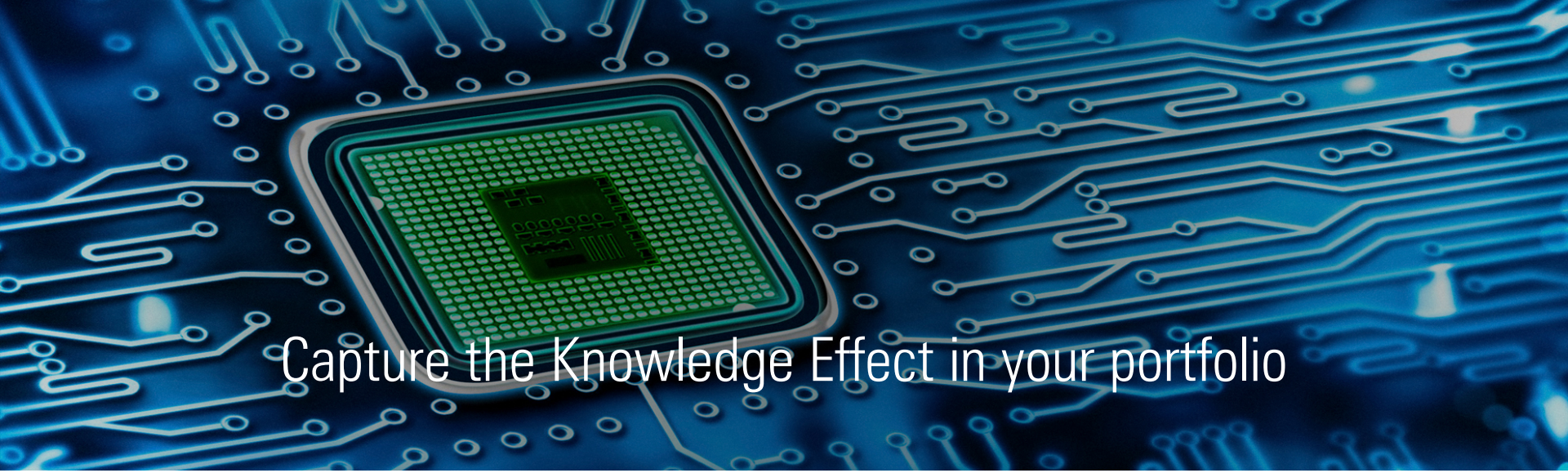
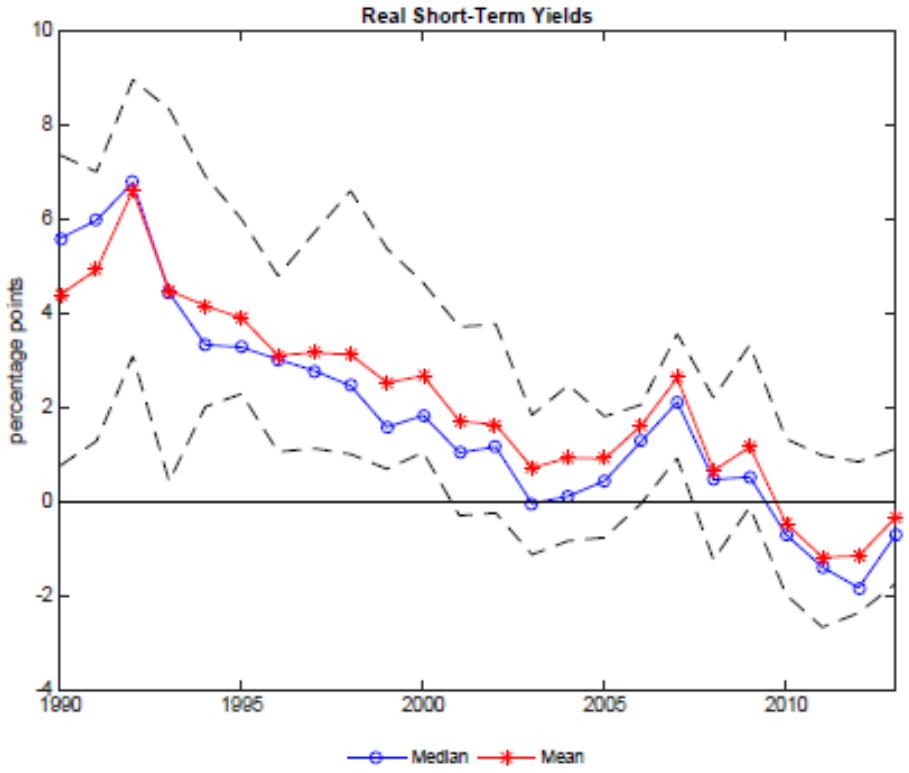


Third Quarter 2017 Update and Commentary

Knowledge Leaders Strategy

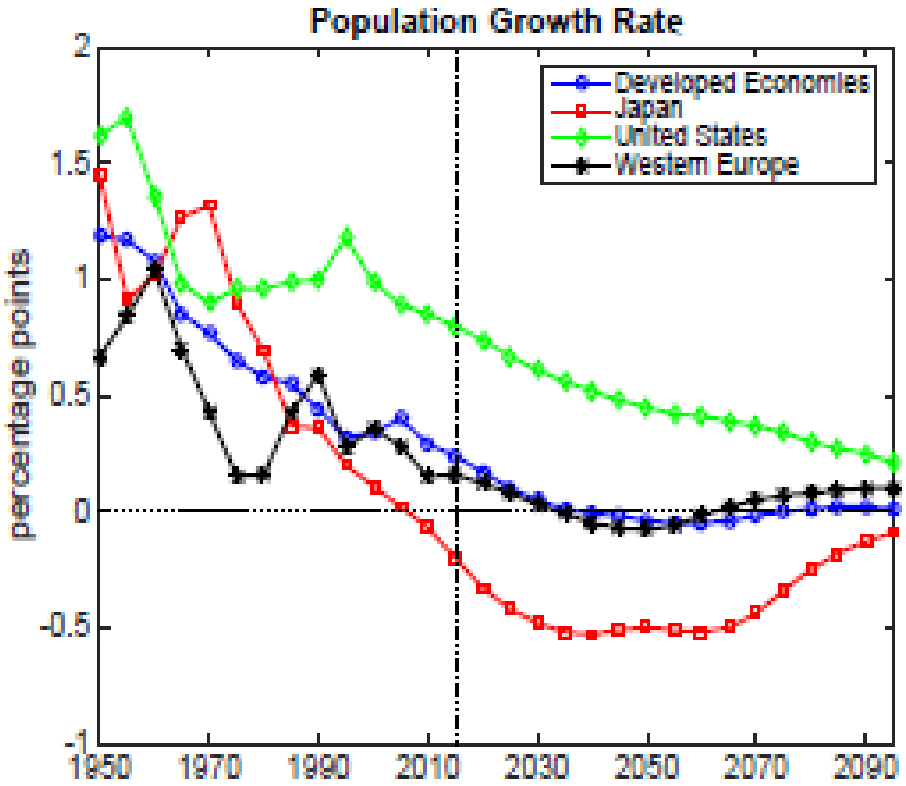
Part One: Demographics, Real Interest Rates & Monetary Policy

Real short rates have declined significantly over the last several decades due to demographic changes. The basic concept of real rates is that it is the interest rate that balances the forces of consumption and savings. As the real rate falls it suggests a growing preference for saving.



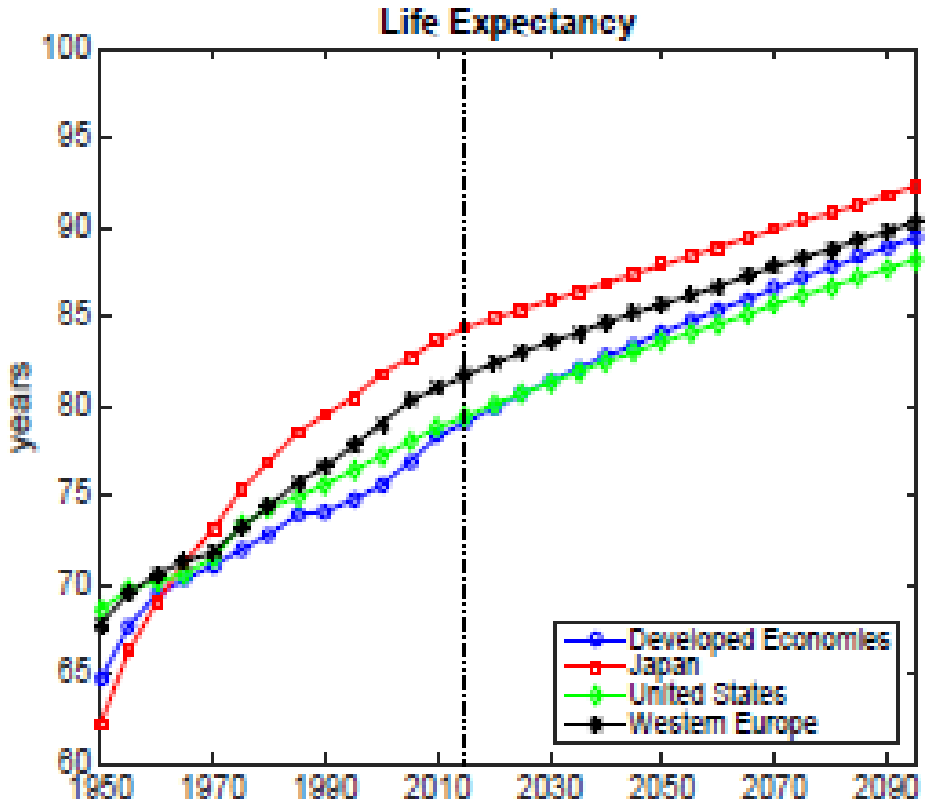
Source: *Demographics and Real Interest Rates;* Carvalho, Ferrero and Nechio; April 23, 2016

Slowing population growth is a well understood phenomenon that has led to lower real interest rates and economic growth. But this is not the main show.



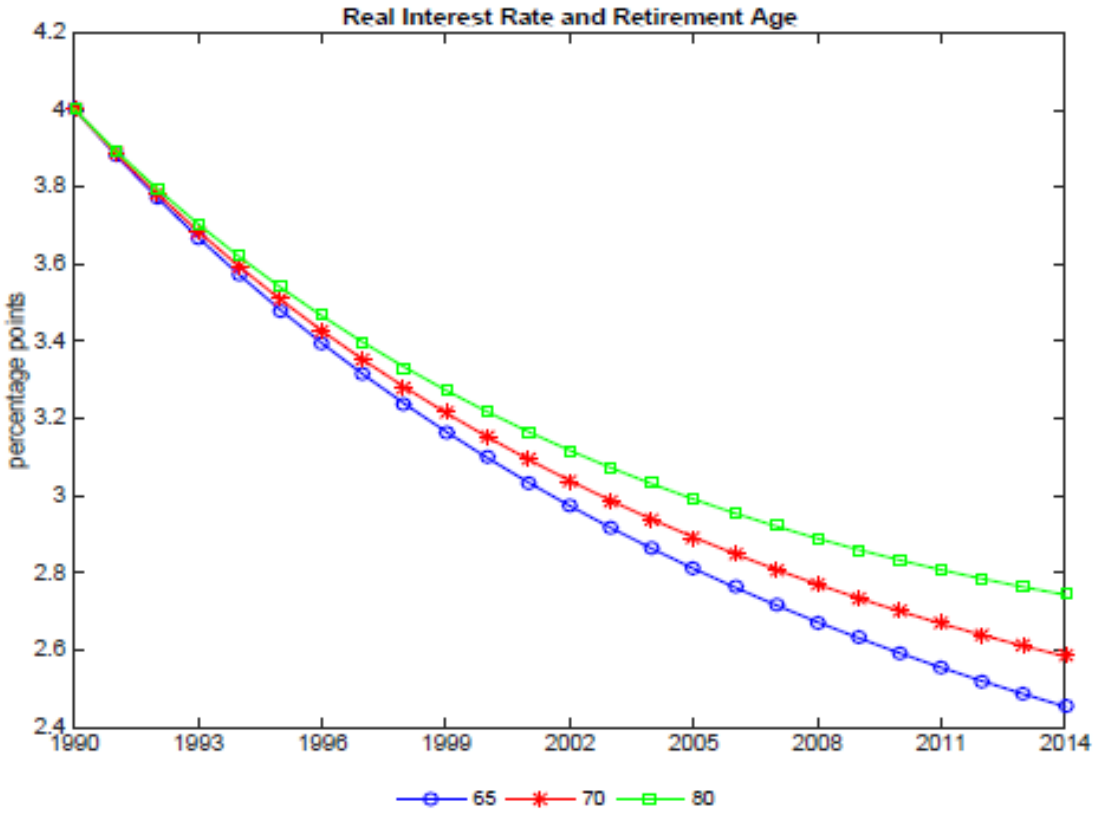
Source: *Demographics and Real Interest Rates;* Carvalho, Ferrero and Nechio; April 23, 2016

The least understood element of demographics is the sustained increase in life expectancy. Rational people respond by lowering consumption to bolster savings.



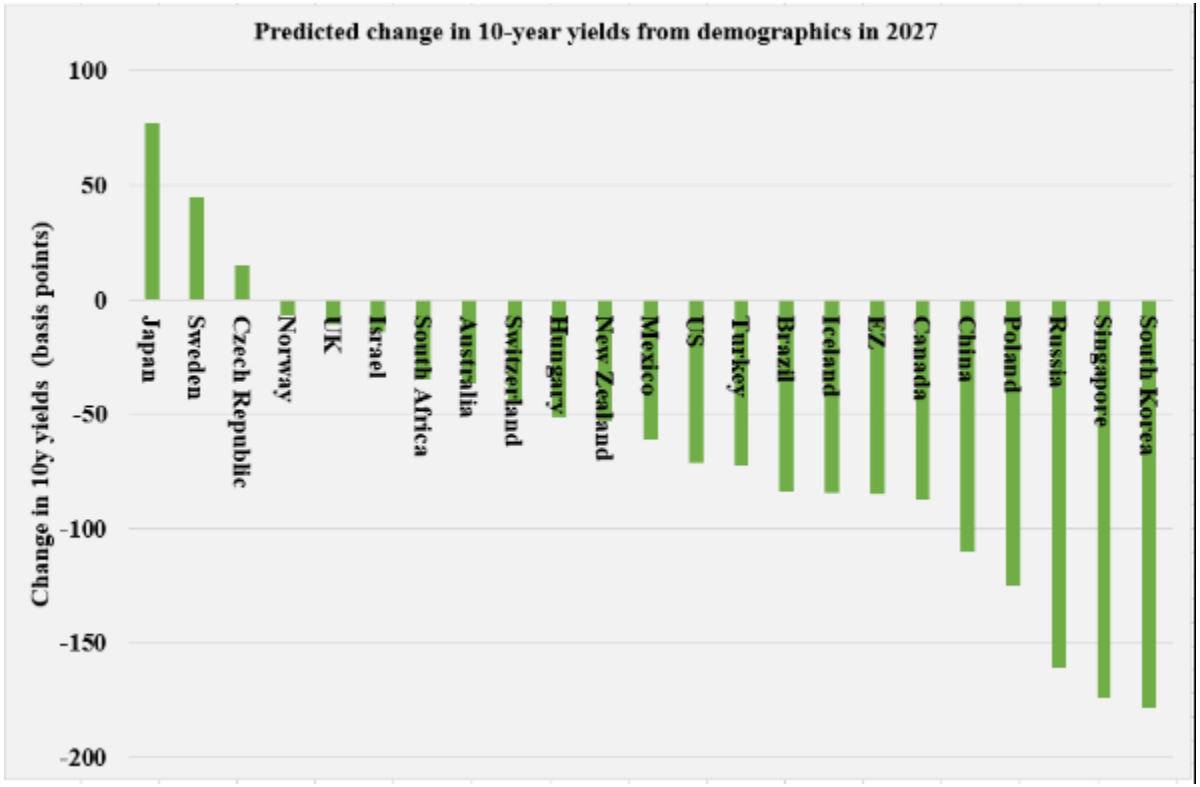
Source: *Demographics and Real Interest Rates;* Carvalho, Ferrero and Nechio; April 23, 2016

All else equal, a younger retirement age puts downward pressure on real interest rates. The combination of increased life expectancy and static retirement age puts downward pressure on interest rates as people save more.



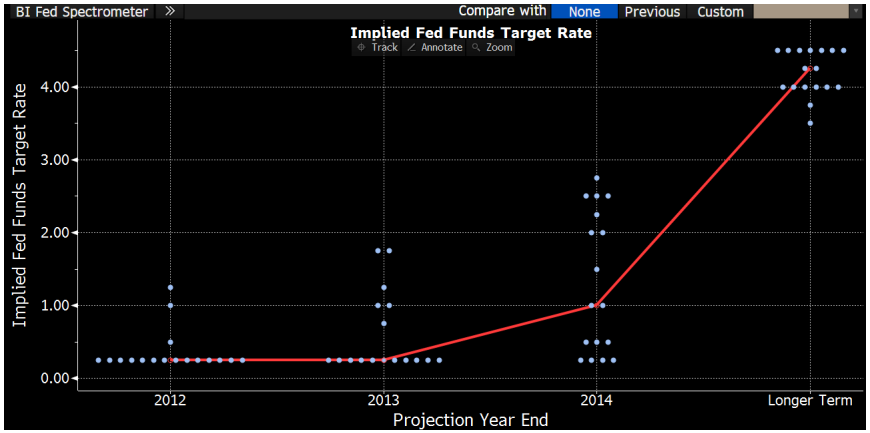
Source: *Demographics and Real Interest Rates;* Carvalho, Ferrero and Nechio; April 23, 2016

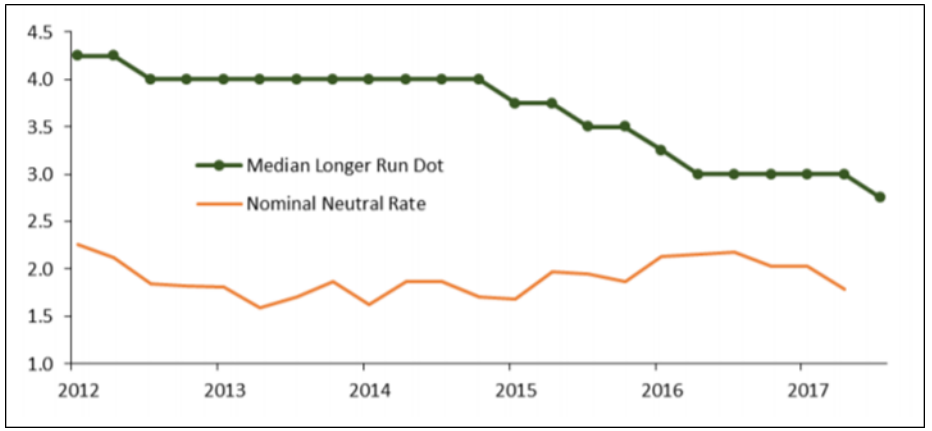
Using the United Nations forecast for the increasing share of the population 65-74, the impact on yields is significant, with modeled rates dropping in most countries.



Source: Bloomberg, Lars Christensen, CEO of Markets & Money Advisory

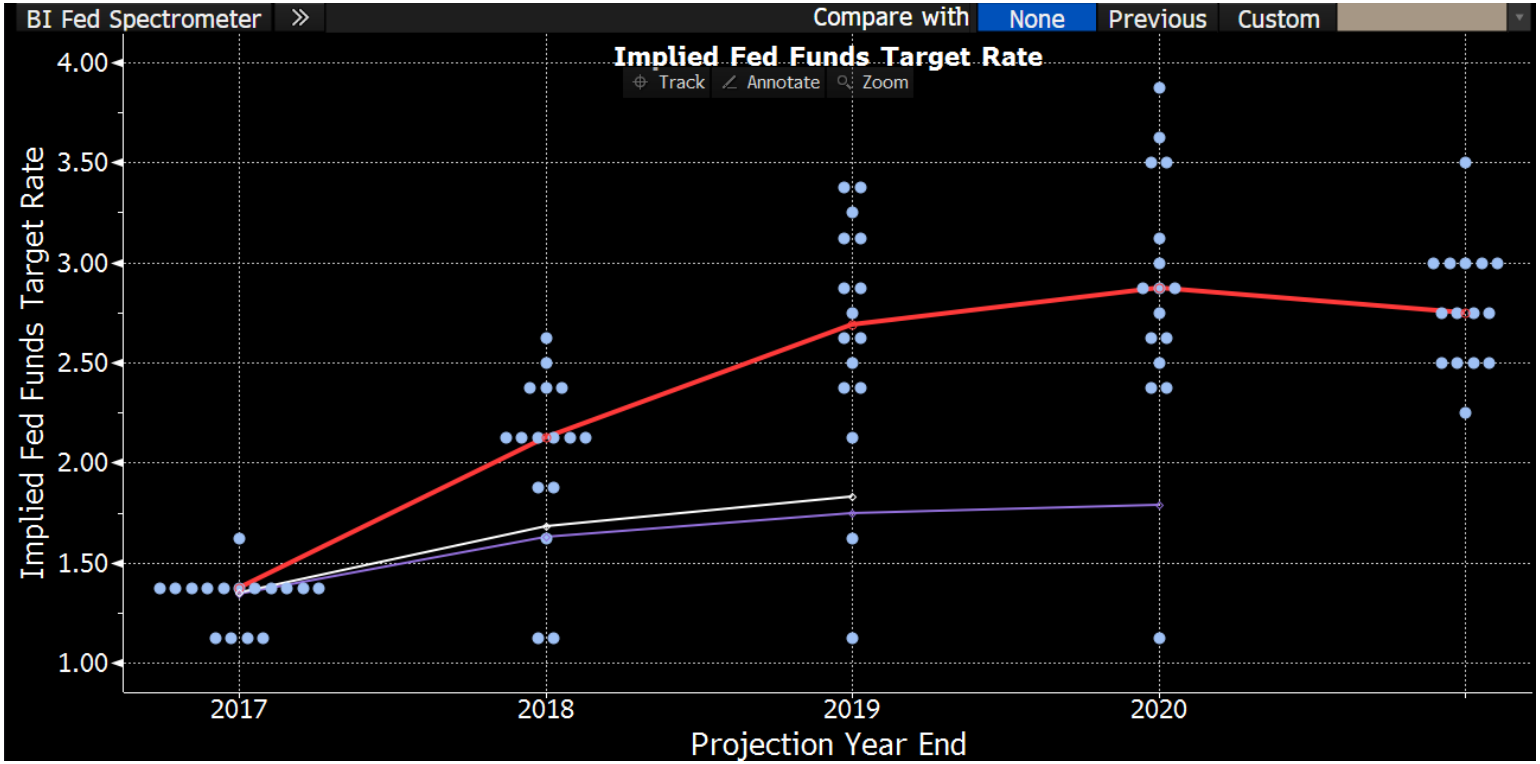
In the Federal Reserve meeting preceding (4/25/13) Bernanke's famous "taper tantrum" remarks, expectations of longer-term rates embedded in the "dot plot" were 4.25%. They have been falling since before the first rate increase at the end of 2015.





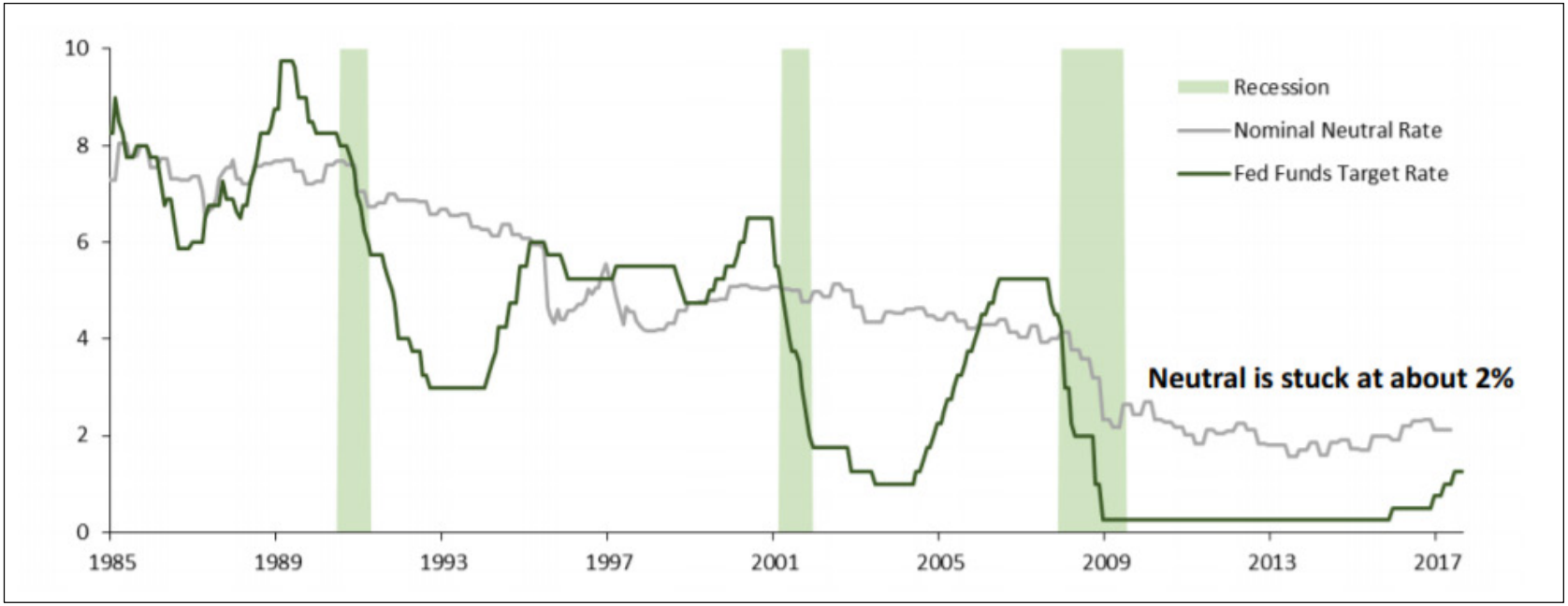
Source: Bloomberg & Cornerstone Macro. As of 10/9/17.

Longer term fed funds rate expectations have fallen to 2.75%. Longer term real rate expectations have fallen as the R* (real short-term rate) concept has gained traction. The Fed is signaling a shallower tightening cycle, with room to fall still.



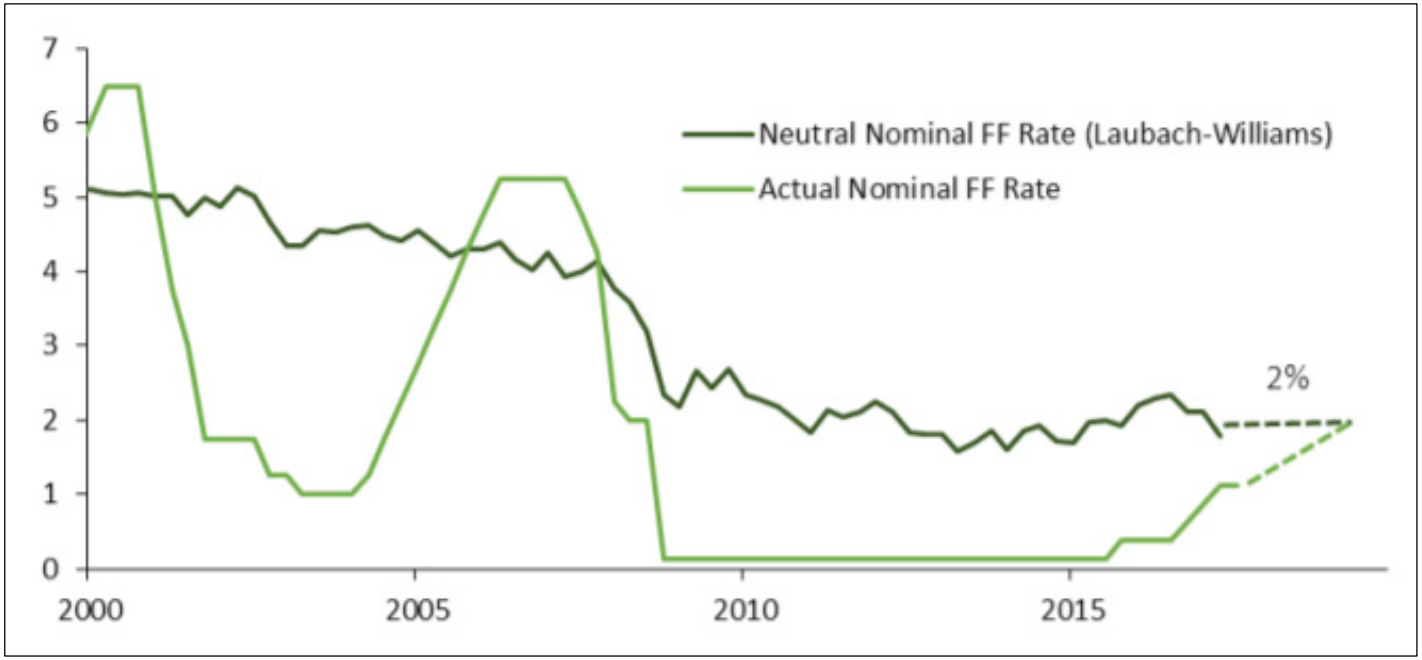
Source: Bloomberg. As of 10/9/17.

Nominal neutral rates are stuck around 2% for now using the Laubach-Williams framework. As such, 2% is a good base case for where longer-term rates settle. In a worst case scenario, the Fed has to overshoot, which historically leads to recession.



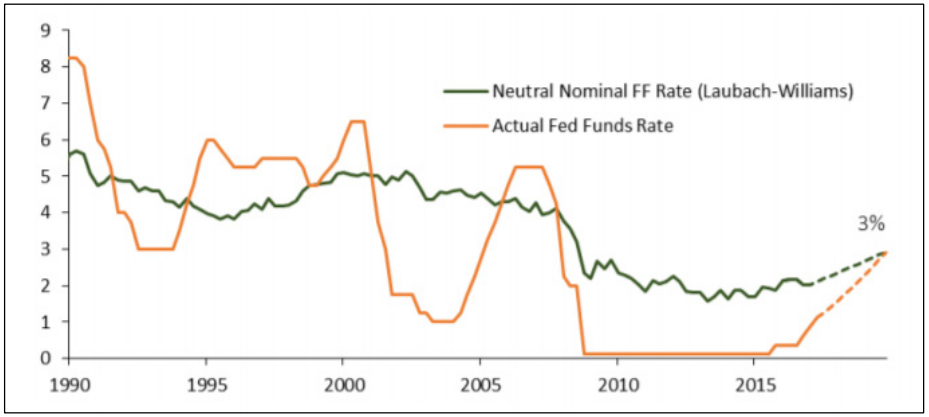
Source: Roberto Perli, Cornerstone Marco. As of 10/9/17.

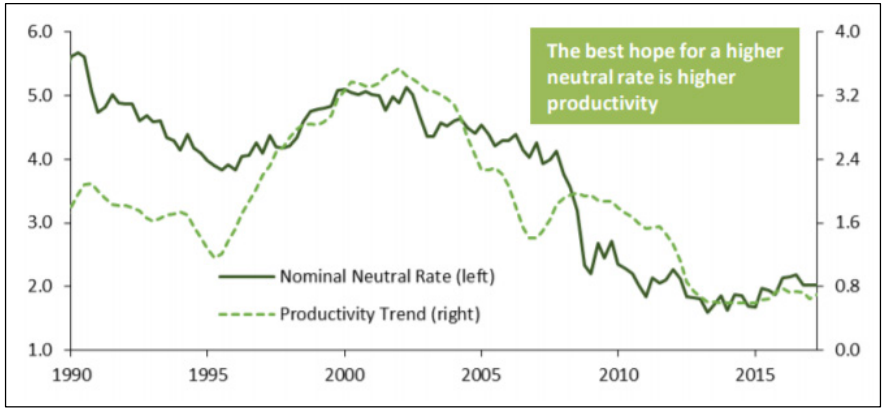
Absent any increase in productivity, it is likely neutral nominal rates remain around 2%. The Fed can then raise the fed funds to 2% without overshooting.



Source: Roberto Perli, Cornerstone Marco. As of 10/9/17.

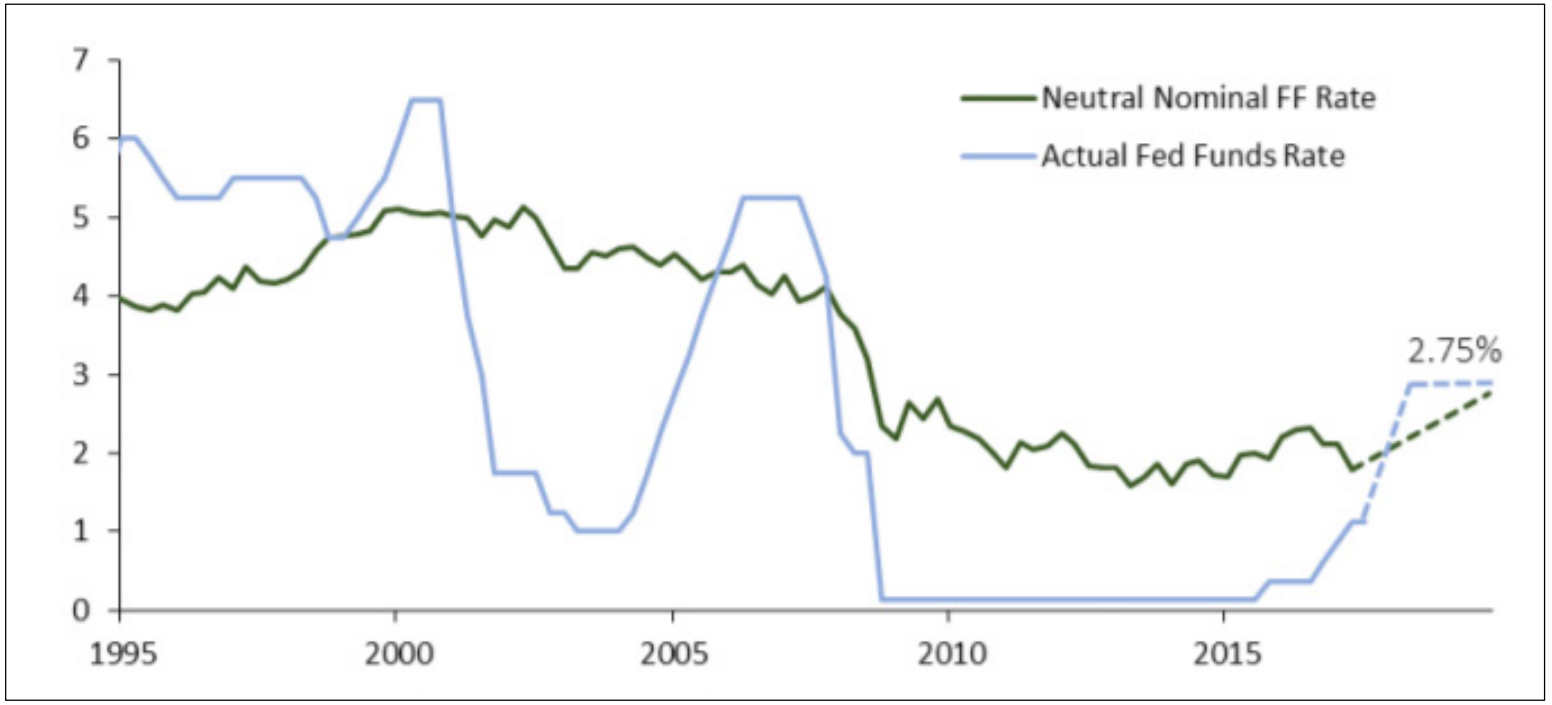
If productivity increases, as the Fed would probably like, then neutral rates increase to say 3%. This would require a significant increase in productivity trends.





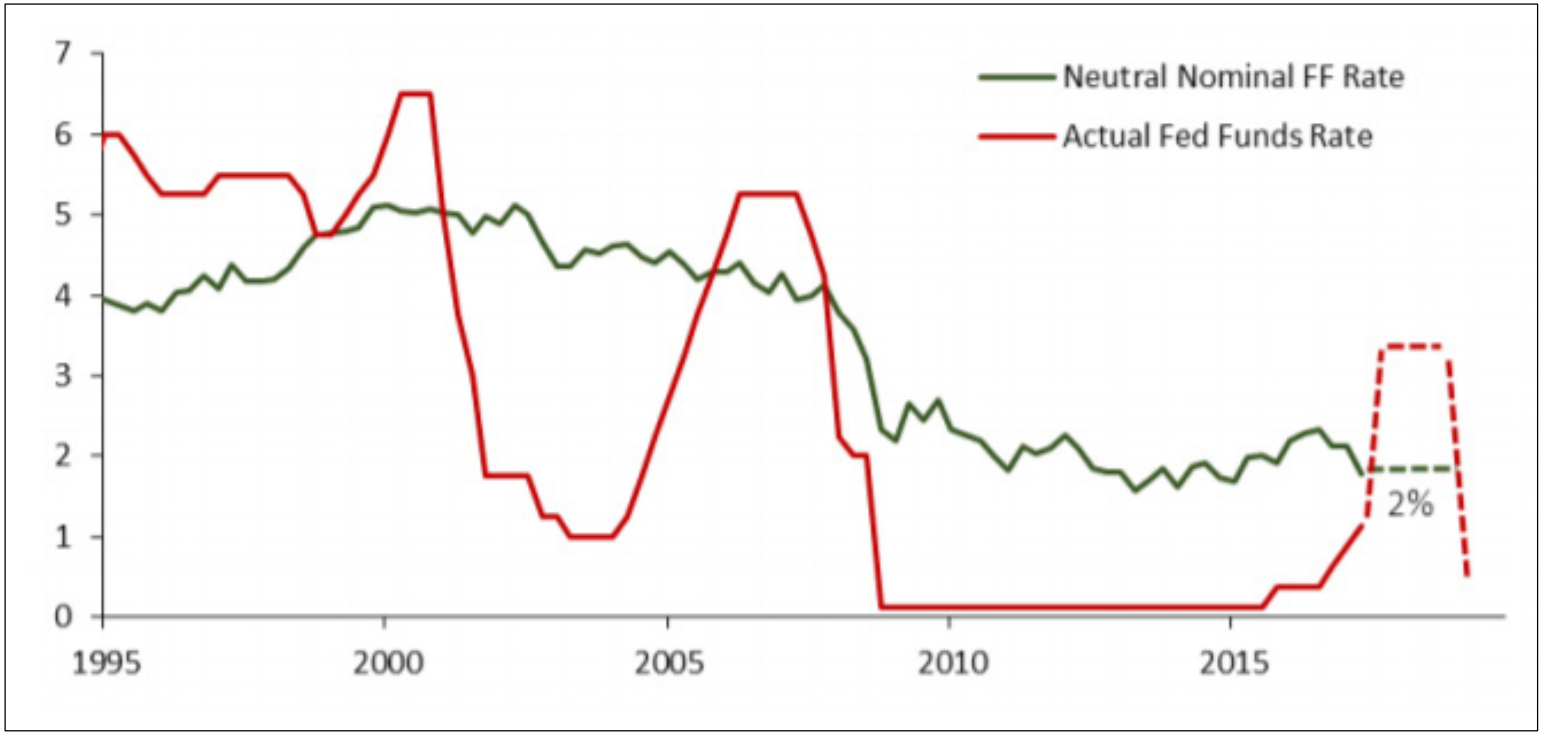
Source: Roberto Perli, Cornerstone Marco. As of 10/9/17.

Fiscal policy outcomes could alter the scenario. A healthy tax reform would be supply-side oriented leading to higher productivity, thereby bringing up the neutral rate.



Source: Roberto Perli, Cornerstone Marco. As of 10/9/17.

If tax reform devolves more to tax cuts, stimulating demand in the short run, it is likely there is no productivity increase and neutral rates remain unchanged. But, then the Fed may be forced to respond by overshooting.



Source: Roberto Perli, Cornerstone Marco. As of 10/9/17.

Part Two: Decomposing US Treasuries

US Treasury Decomposition

Nominal Yield = Real Yield + Breakeven Inflation

The nominal and real yield is readily observable. Breakeven inflation is simply the nominal yield minus the real yield.

Real Yield = Term Premium + Growth Expectations

The real yield is readily observable and can be decomposed into a term premium and growth expectation. A good estimate of the term premium is the ACM Term Premium. The term premium is the premium investors demand for holding longer dated securities relative to shorter dated.

Growth Expectations = Real Yield - Term Premium

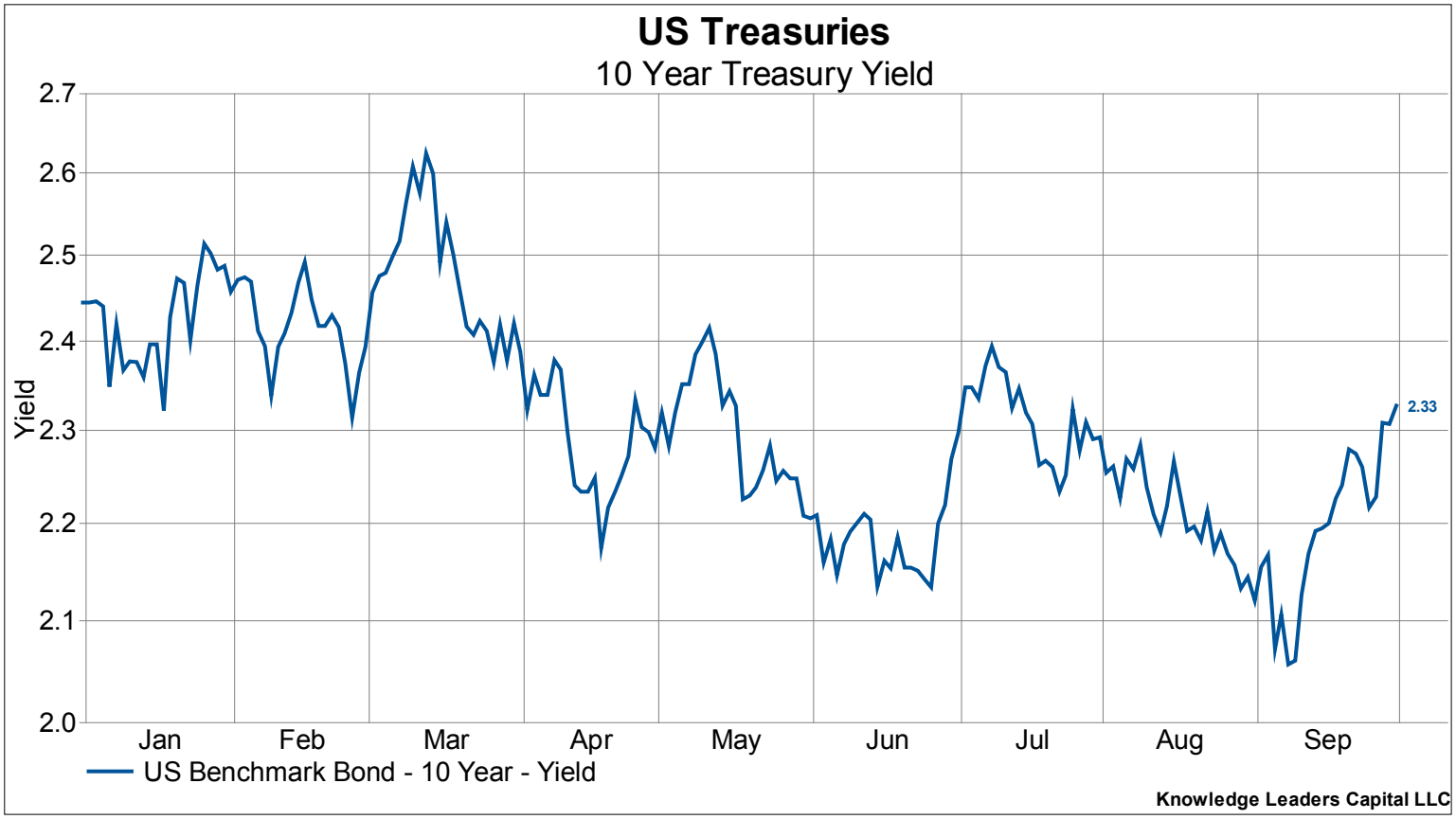
Growth expectations embedded in Treasury rates are not readily observable, but can be inferred. By subtracting the term premium from TIPS yields, we can infer the growth expectations.

Nominal Yield = Term Premium + Growth Expectations + Breakeven Inflation

By combining the terms above we arrive at this way of expressing the movements in bond yields.

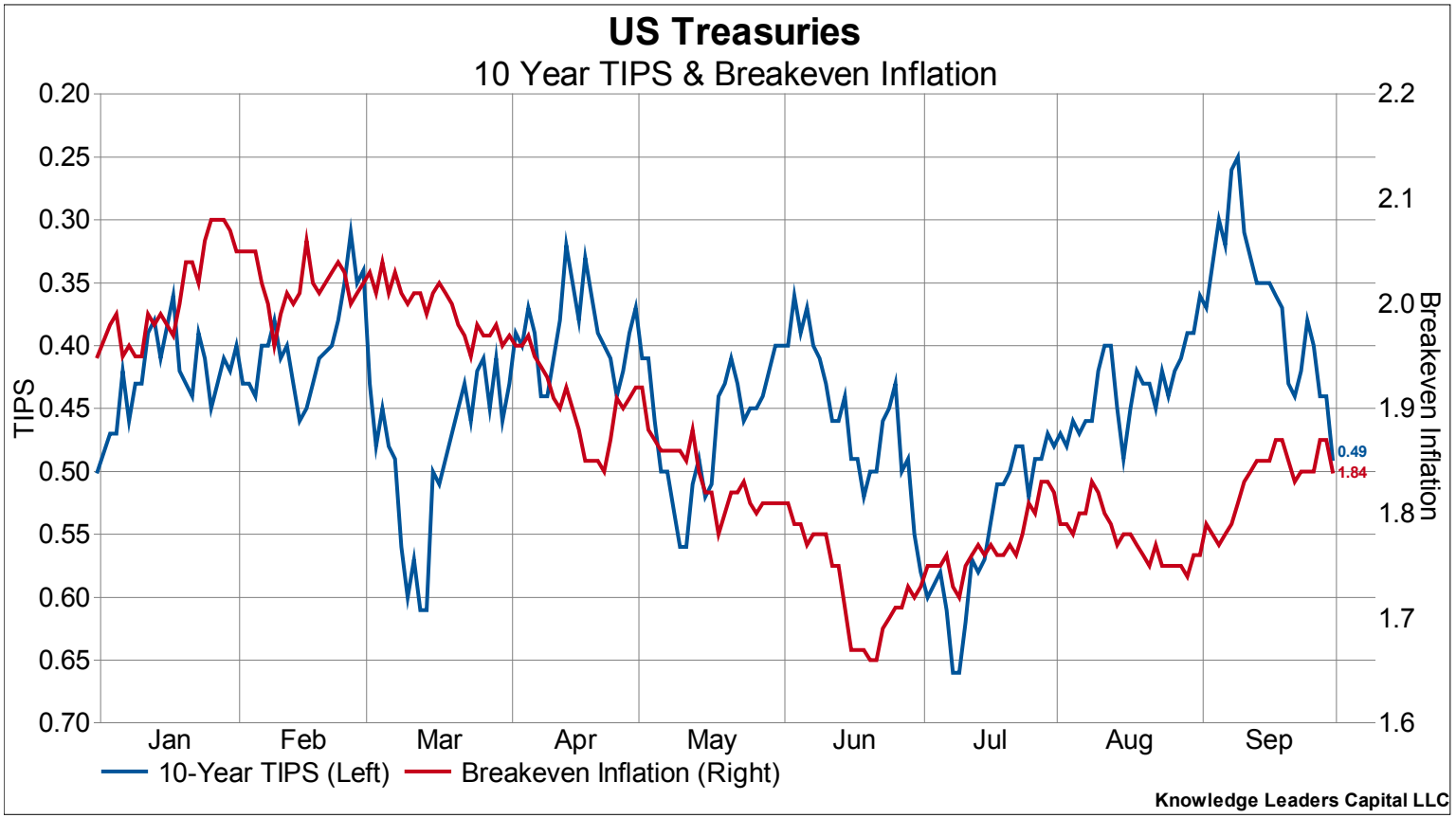
Source: Roberto Perli, Corenerstone Macro

Nominal yields have fallen a bit this year, making lower highs and lower lows. Between mid-March and early September, rates fell over 50bps.



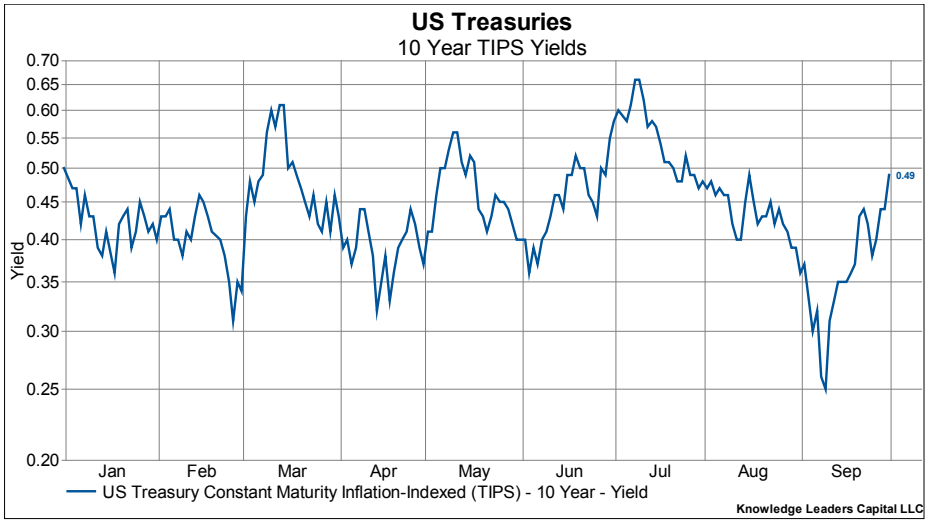
Source: Factset. As of 10/9/17.

Real yields and breakeven inflation tend to move inversely. When inflation expectations rise, this negatively impacts real rate expectations.



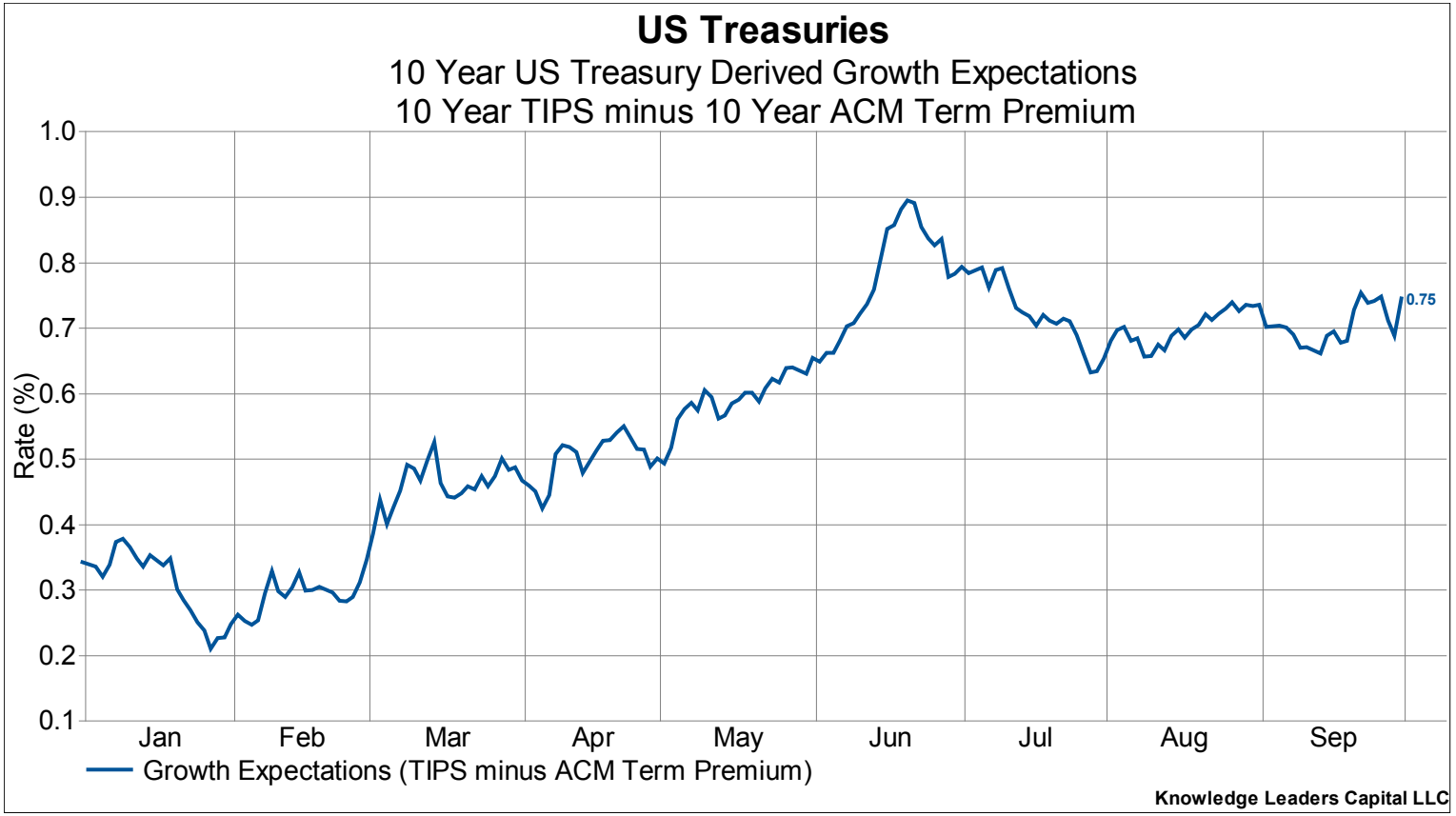
Source: Factset. As of 10/9/17.

Real rates have moved in a fairly tight range of 30-60bps this year. The term premium has declined significantly this year, falling 40bps YTD.



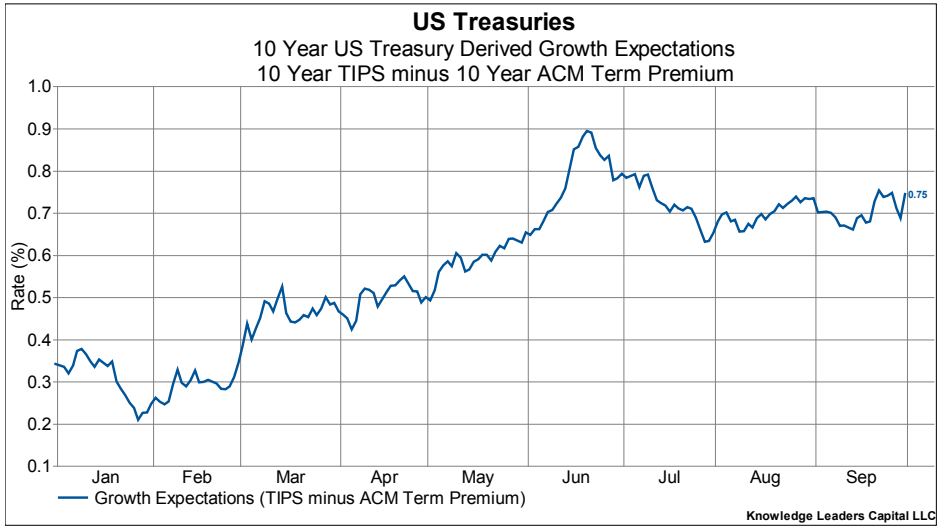
Source: Factset. As of 10/9/17.

Resulting growth expectations (based on ACM Term Premium minus 10 Year TIPS) have steadily risen this year, though have retraced some ground since peaking in June.



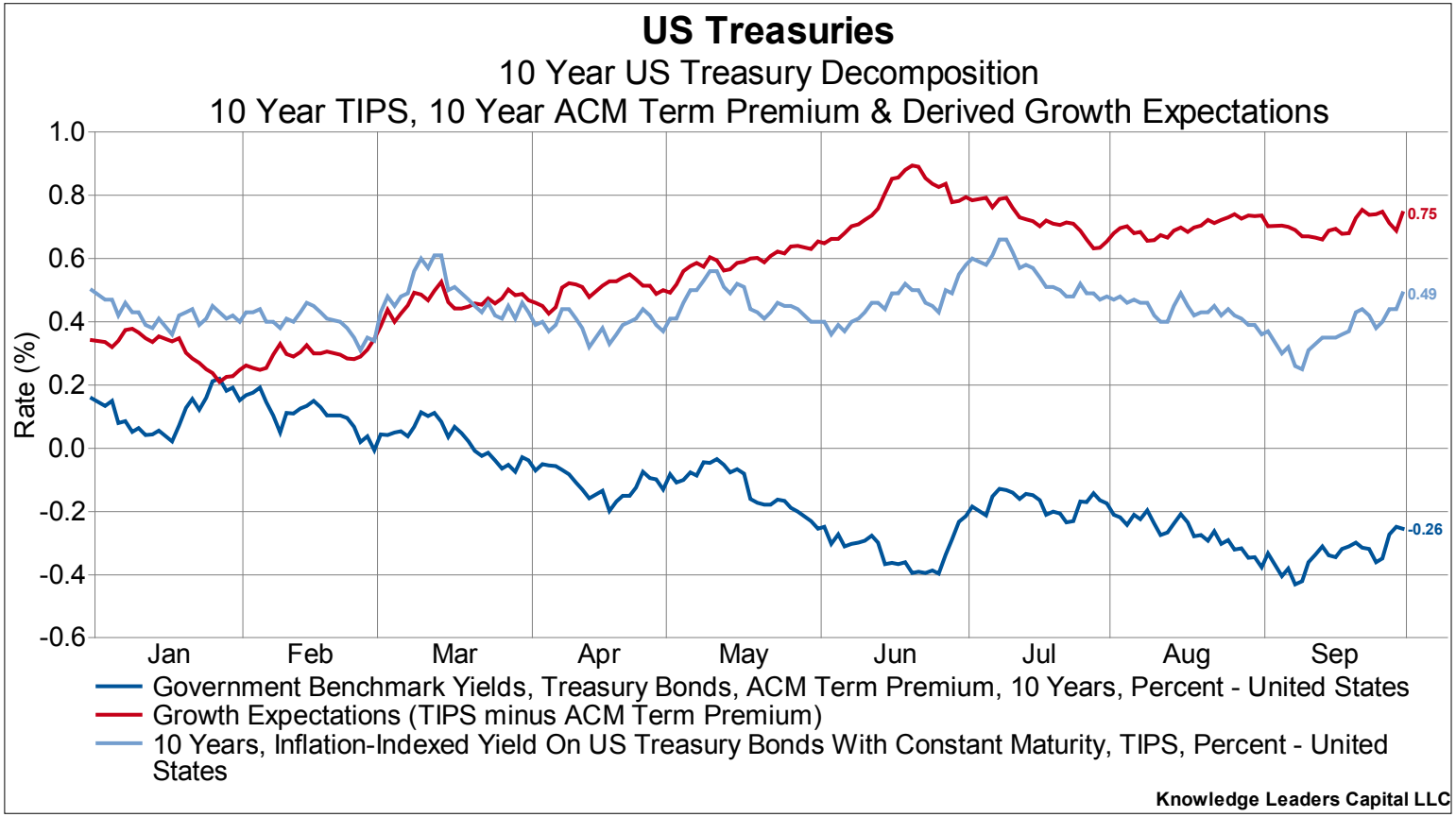
Source: Factset. As of 10/9/17.

So, in the end, while real rates have been mostly sideways, the underlying trends driving those yields have been quite dynamic.



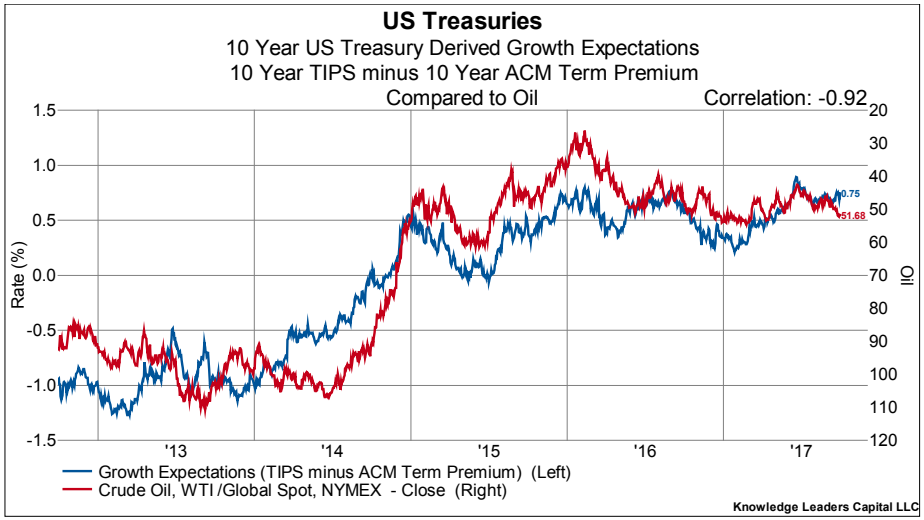
Source: Factset. As of 10/9/17.

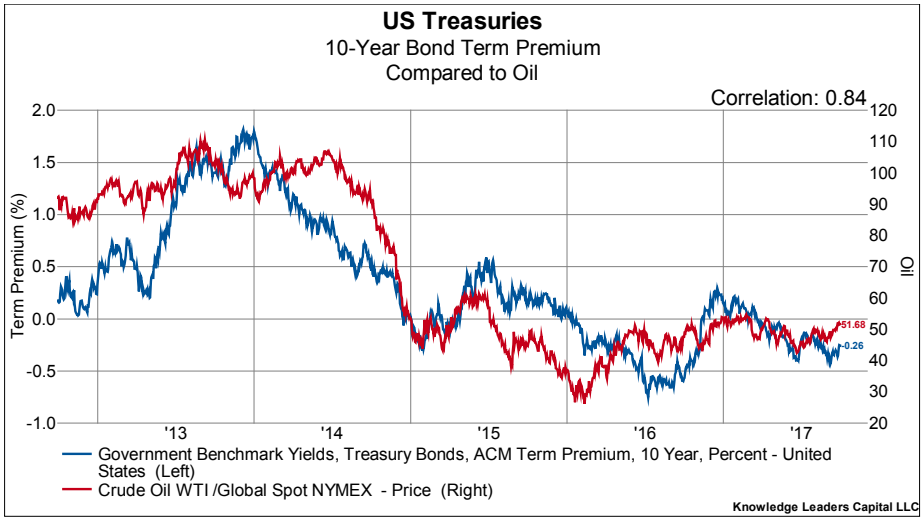
Bringing together TIPS yields, the ACM Term Premium and derived growth expectations, we can see how the term premium and growth expectations have really diverged this year.



Source: Factset. As of 10/9/17.

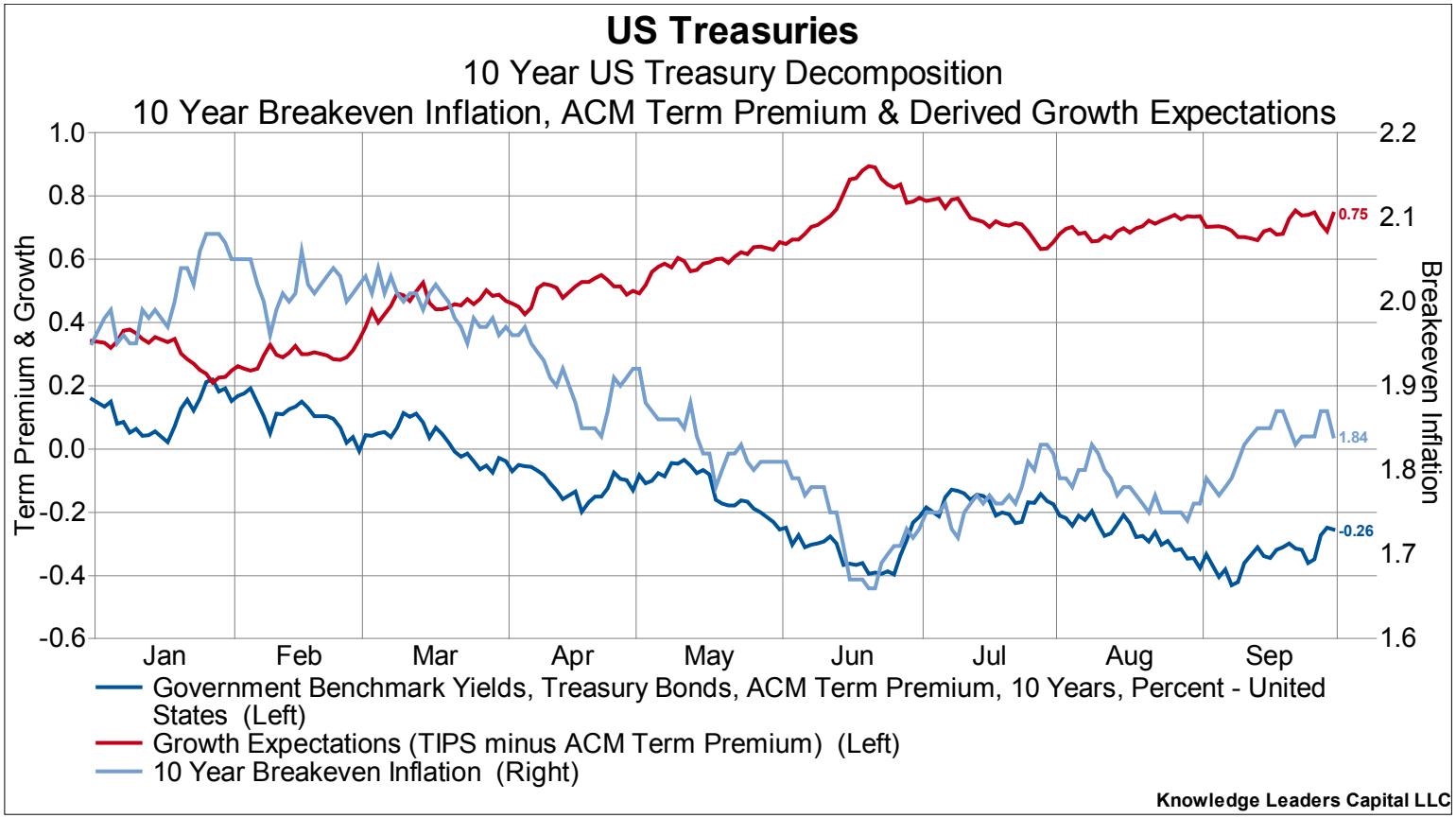
This divergence can be explained by oil prices. The fall in oil prices has caused the term premium to drop and growth expectations to expand.





Source: Factset. As of 10/9/17.

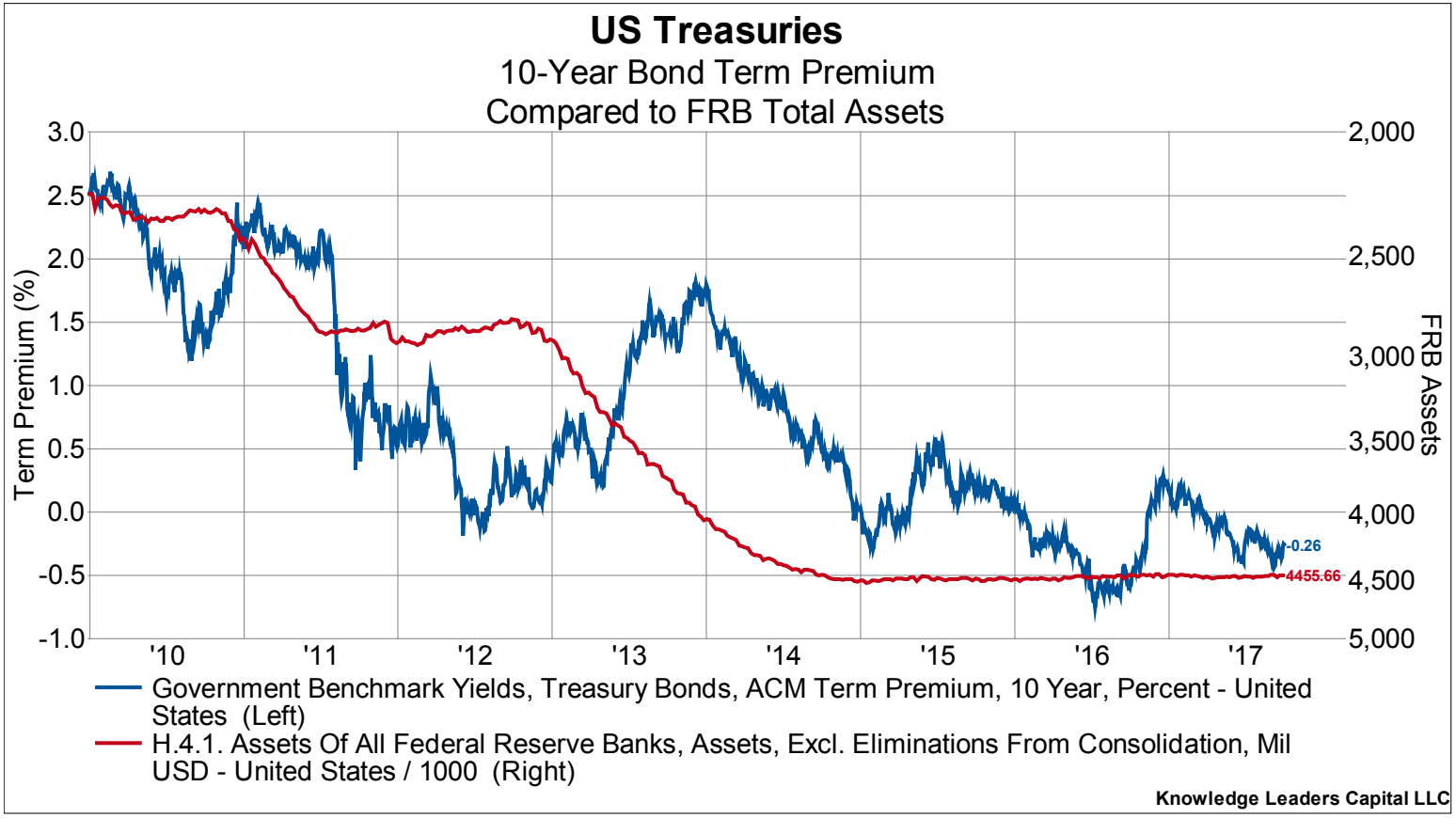
Blending in all three components of nominal yields, it is easy to see how the drop in inflation expectations and the term premium have kept rates down. This is very much a goldilocks scenario… no wonder stocks have risen.



Source: Factset. As of 10/9/17.

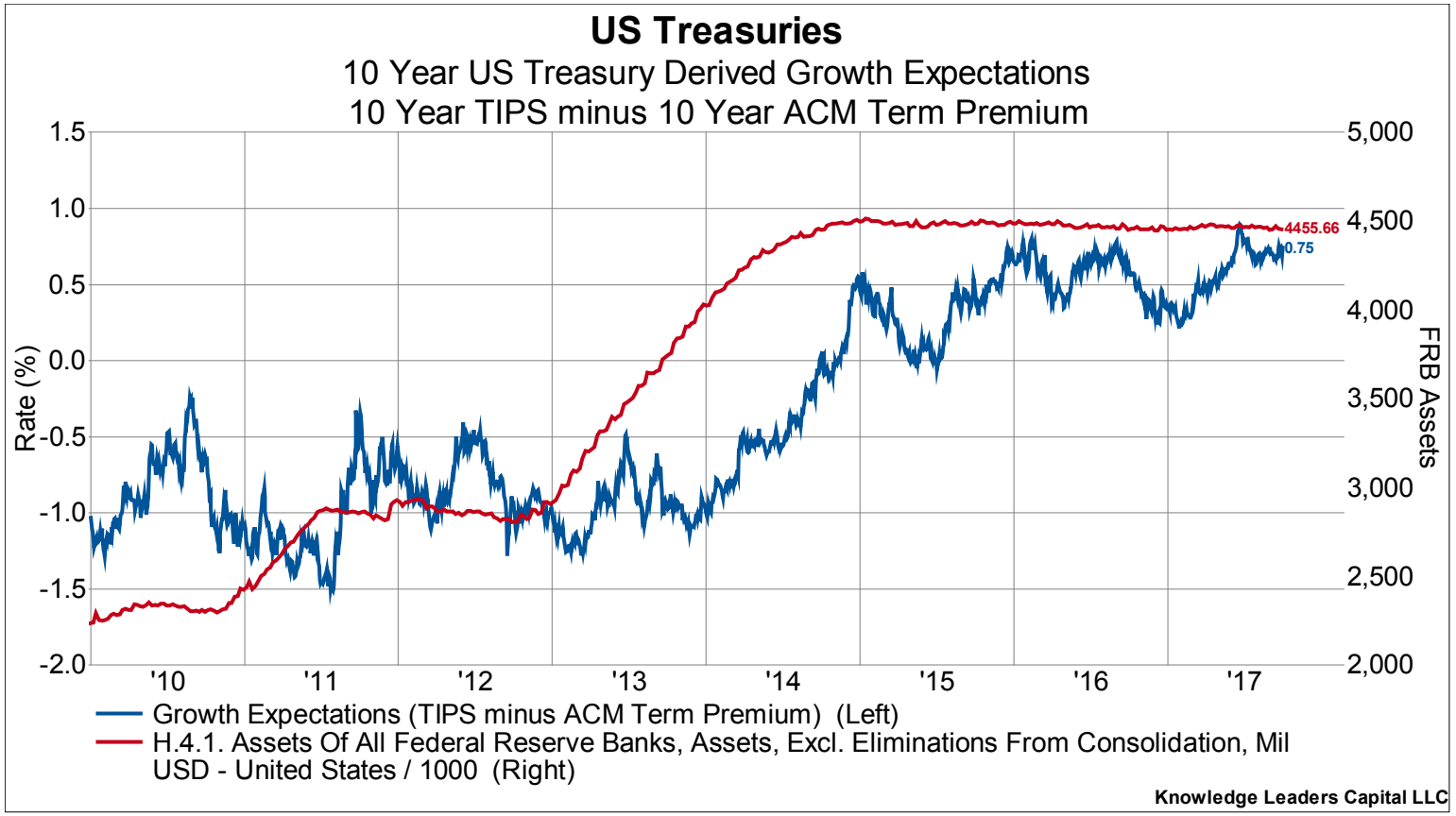
Part Three: End of Quantitative Easing

Quantitative easing (QE) has significantly lowered the ACM Term Premium. This has been the most important channel of monetary policy.



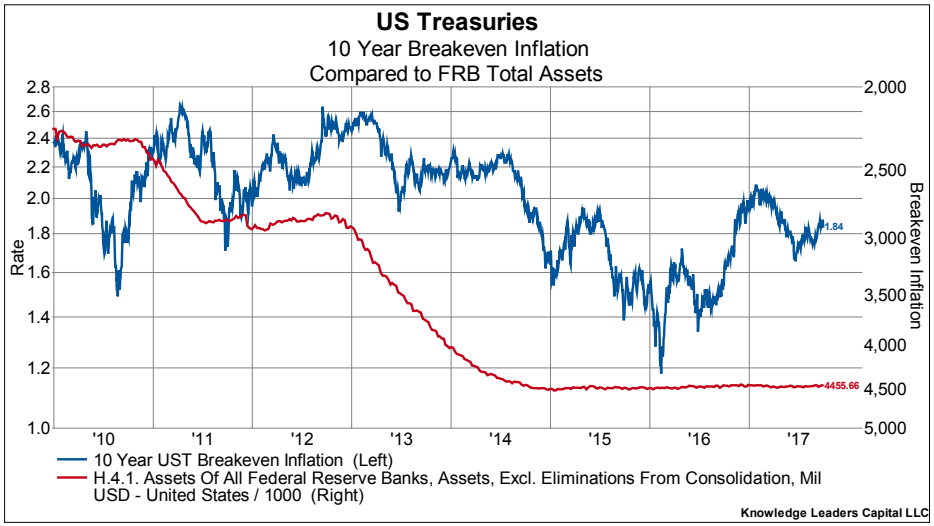
Source: Factset. As of 10/9/17.

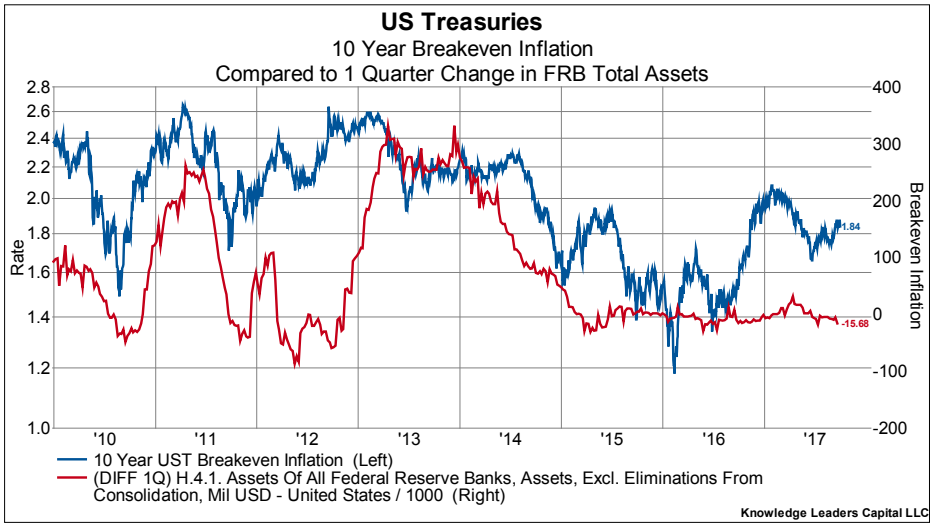
At the same time, QE appears to have bolstered growth expectations in the US.



Source: Factset. As of 10/9/17.

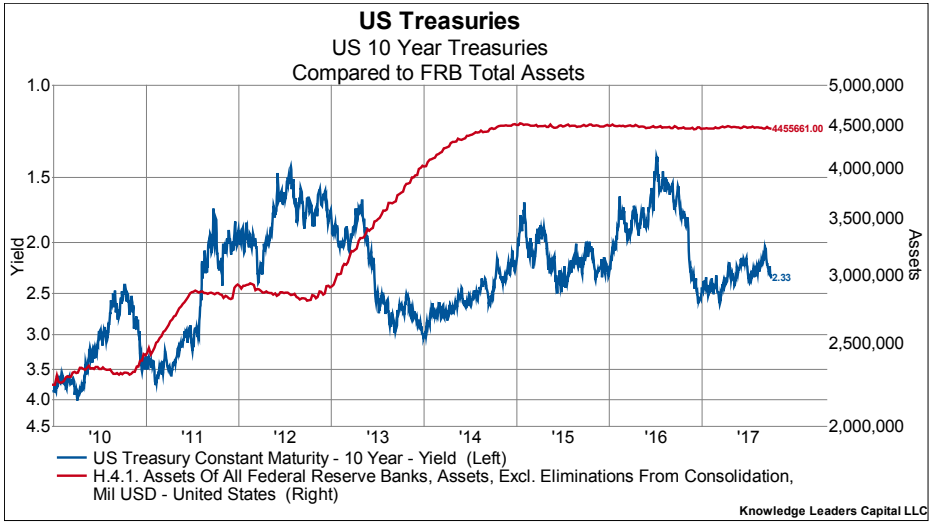
The impact of QE on inflation has been less clear. Changes in the pace of purchases appear to be correlated to changes in inflation expectations.

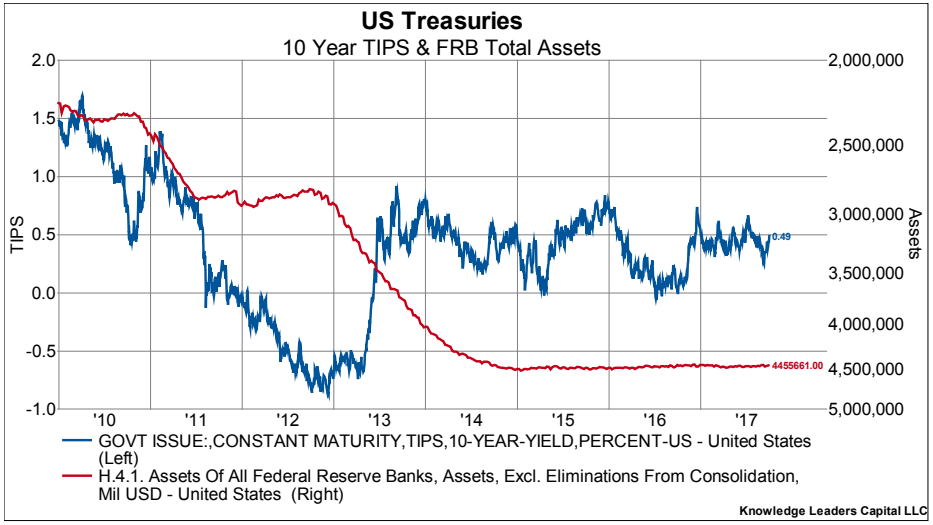




Source: Factset. As of 10/9/17.

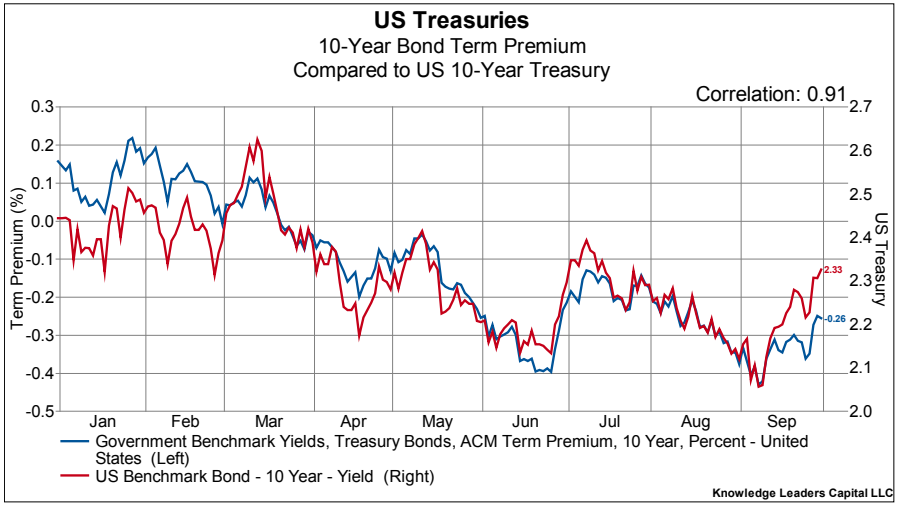
It is hard to debate that the Federal Reserve has had an impact on interest rates, but QE has impacted certain components that offset each other (term premiums and growth expectations).

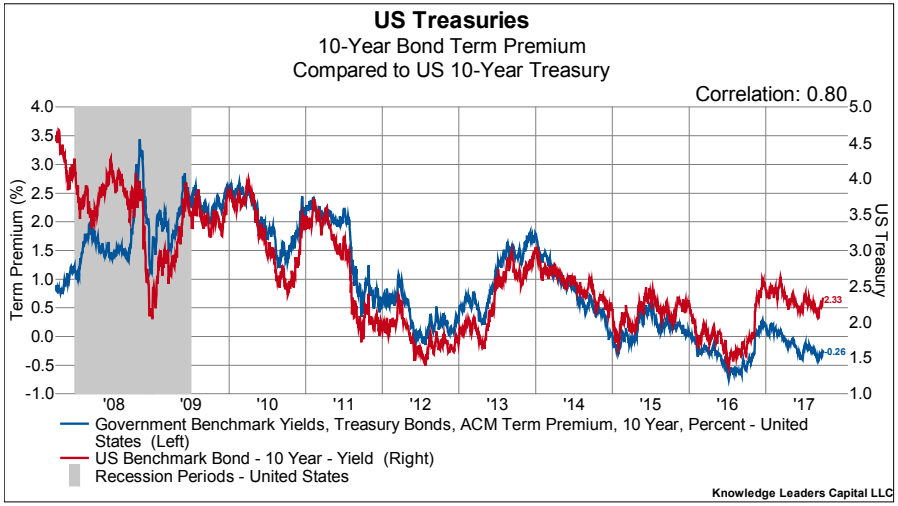




Source: Factset. As of 10/9/17.

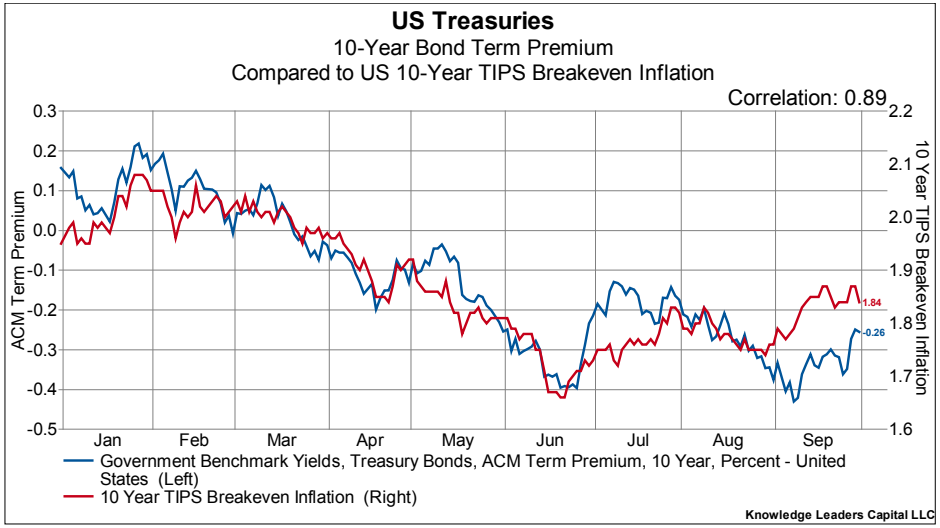
The path to higher interest rates is clearly through the term premium. It is likely the most important driver of interest rates going forward.

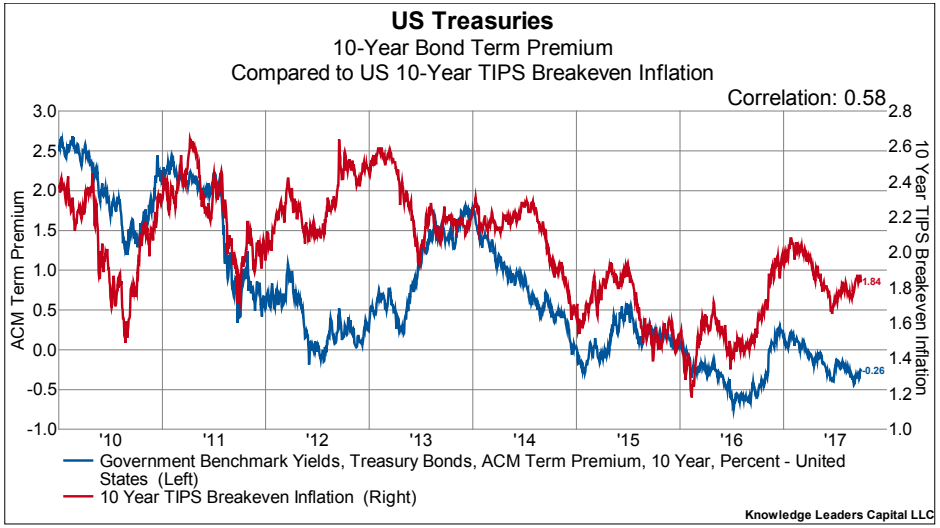




Source: Factset. As of 10/9/17.

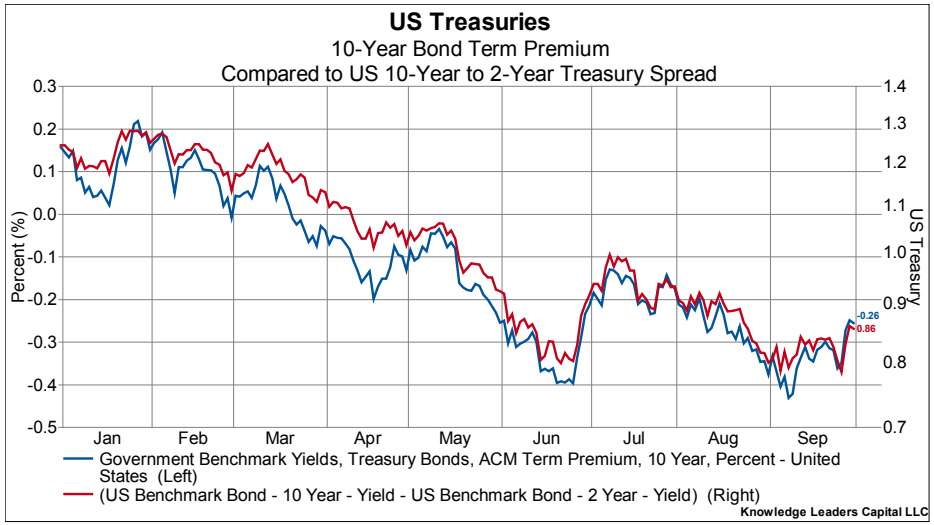
Term premiums are highly correlated with inflation, so if inflation takes off, there are two paths that could really drive rates higher.

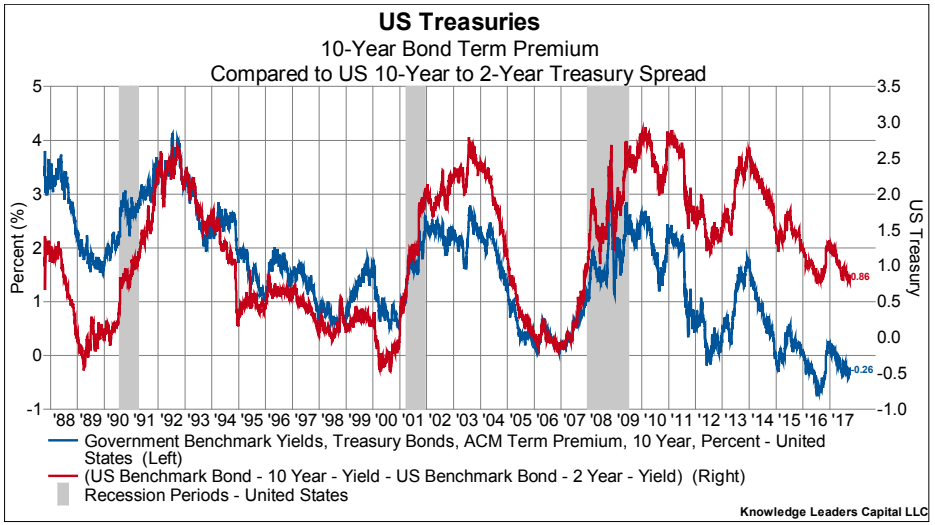




Source: Factset. As of 10/9/17.

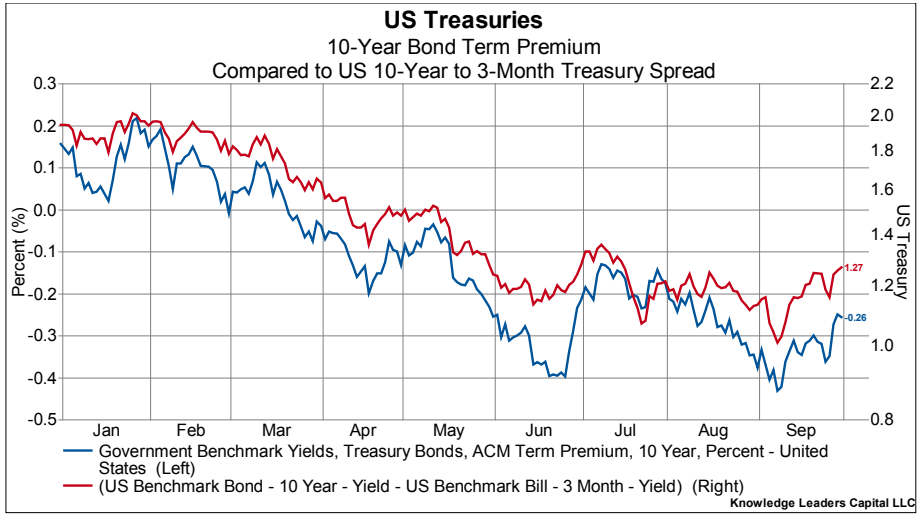
Term premiums generally track the slope of the yield curve. Generally, a few quarters before a recession, the curve inverts and term premiums bottom.

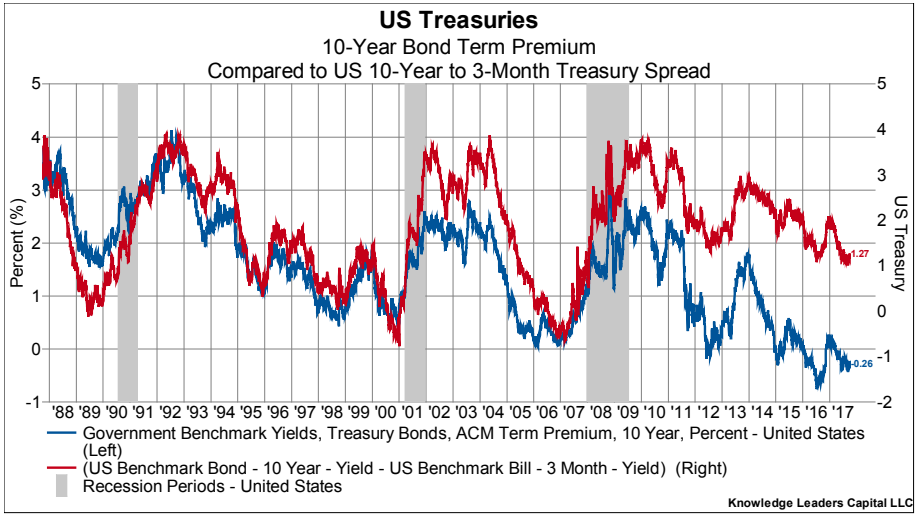




Source: Factset. As of 10/9/17.

Using different maturities illustrates the same concept. Perhaps we shouldn't worry too much about term premiums until the curve inverts?

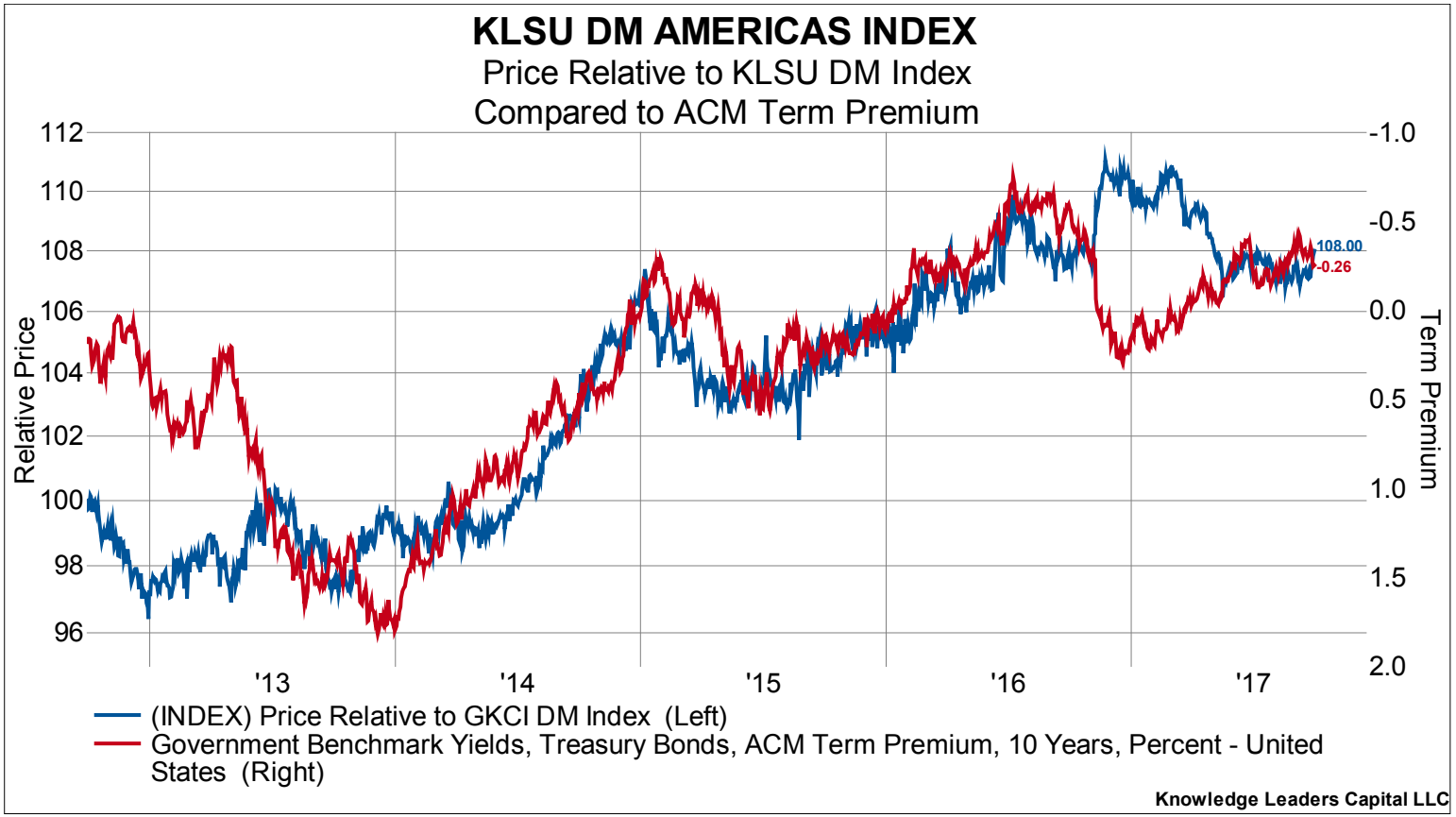




Source: Factset. As of 10/9/17.

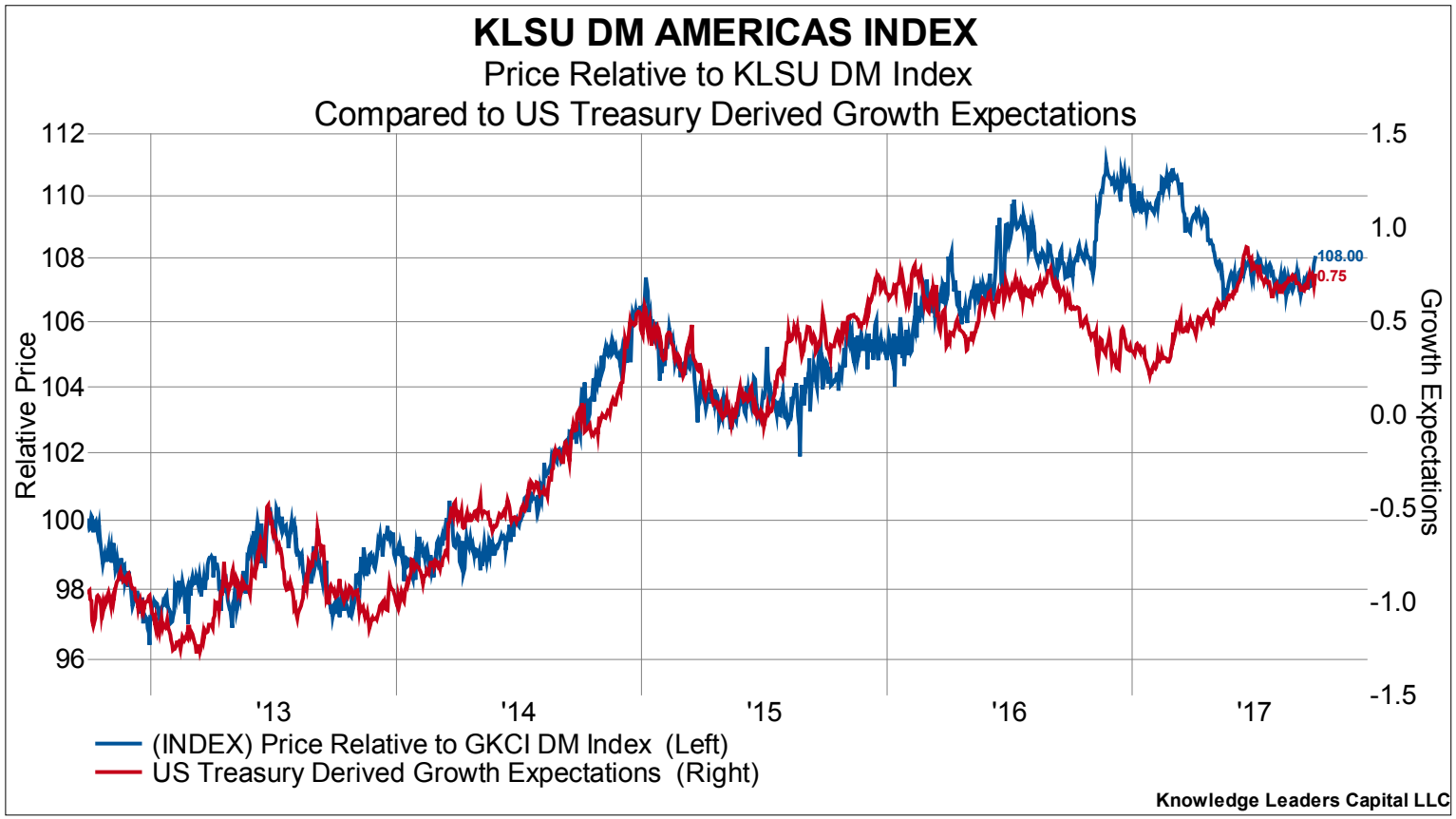
Part Four: Global Equities

US stocks tend to outperform when the ACM Term Premium is falling.



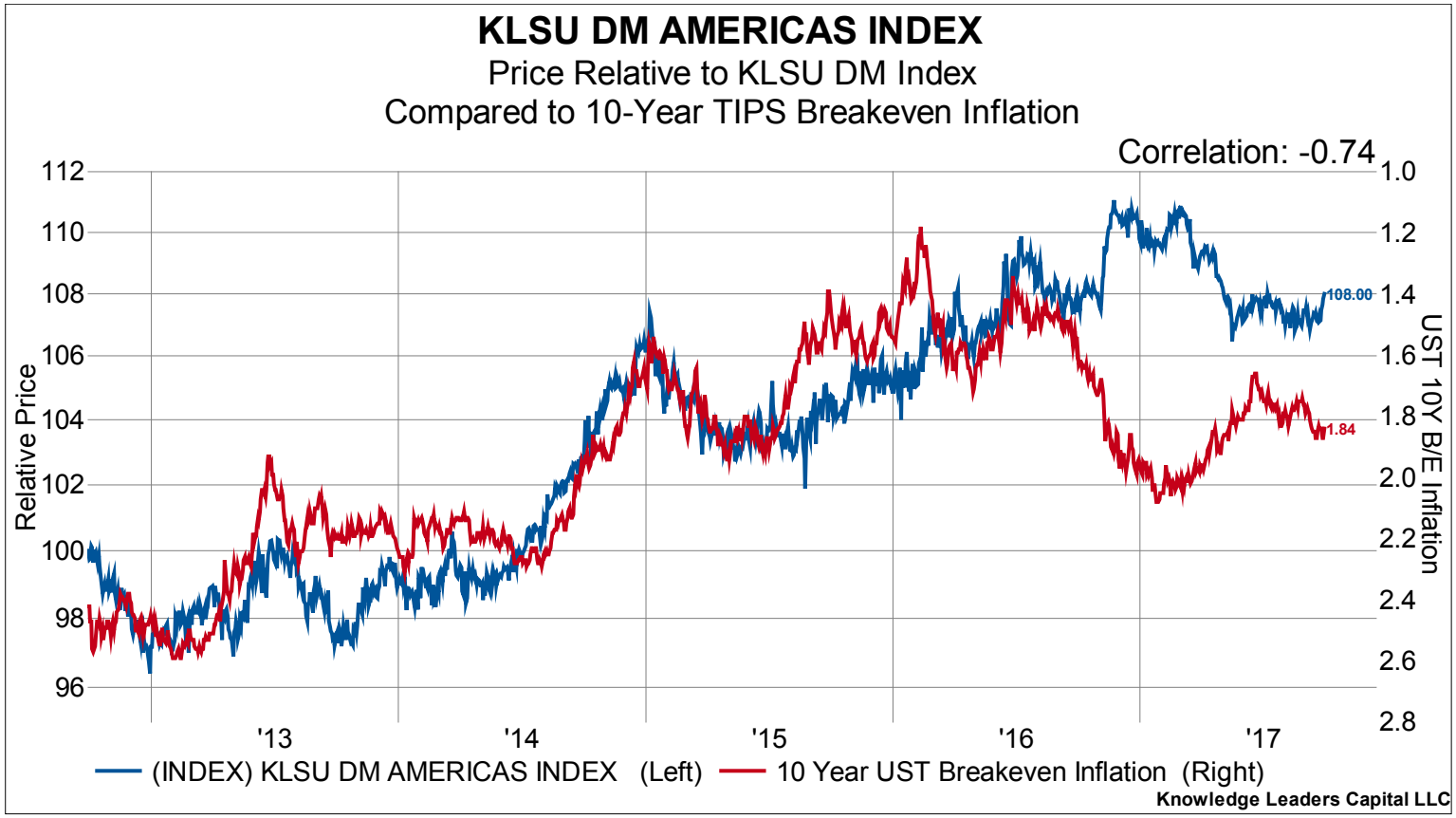
Source: Factset. As of 10/9/17. An investor cannot invest directly in an index.

US stocks tend to outperform when growth expectations are rising too.



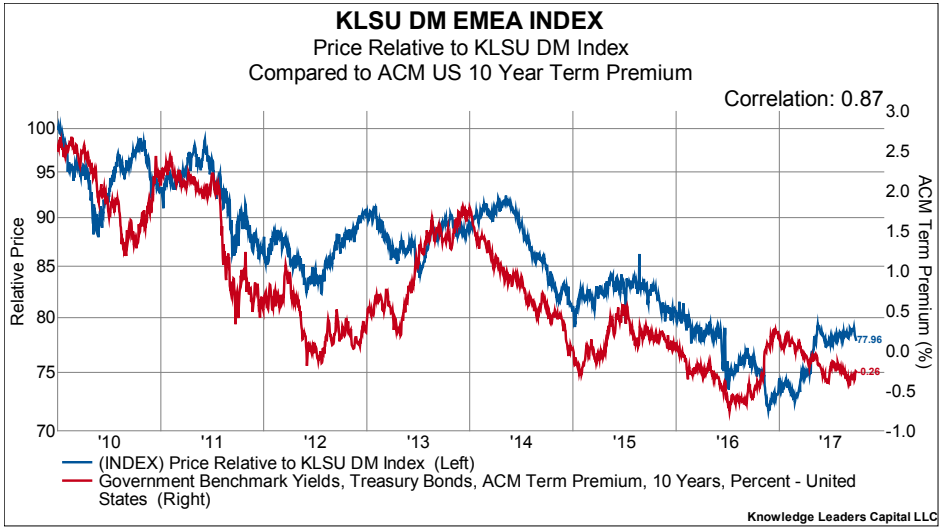
Source: Factset. As of 10/9/17. An investor cannot invest directly in an index.

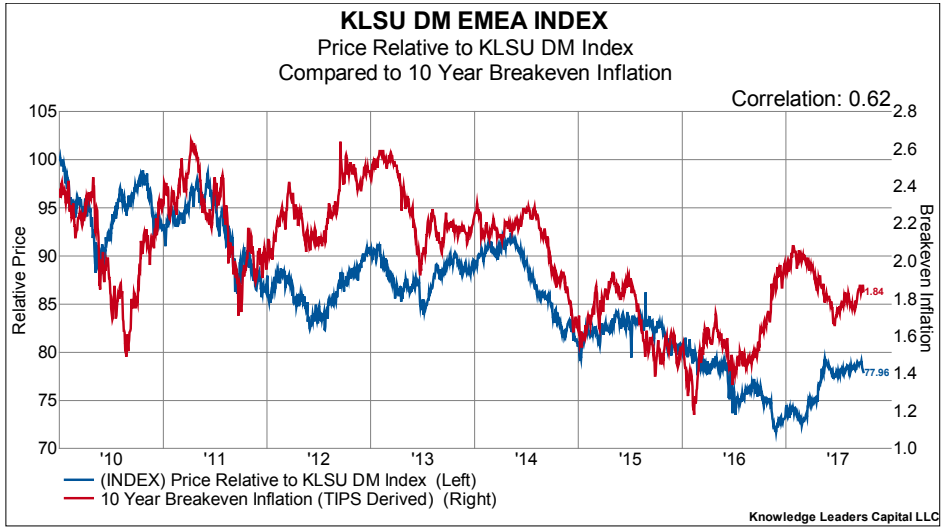
Rising inflation could threaten the outperformance of the US, especially given the high correlation to term premiums and inverse correlation to growth expectations.



Source: Factset. As of 10/9/17. An investor cannot invest directly in an index.

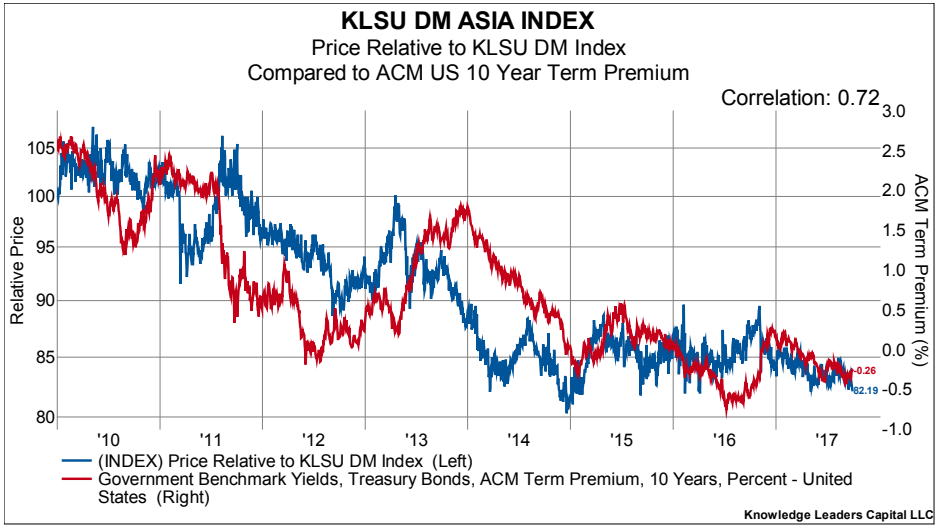
Developed Europe has underperformed while the ACM Term Premium has contracted. A reversal could be good for European outperformance.

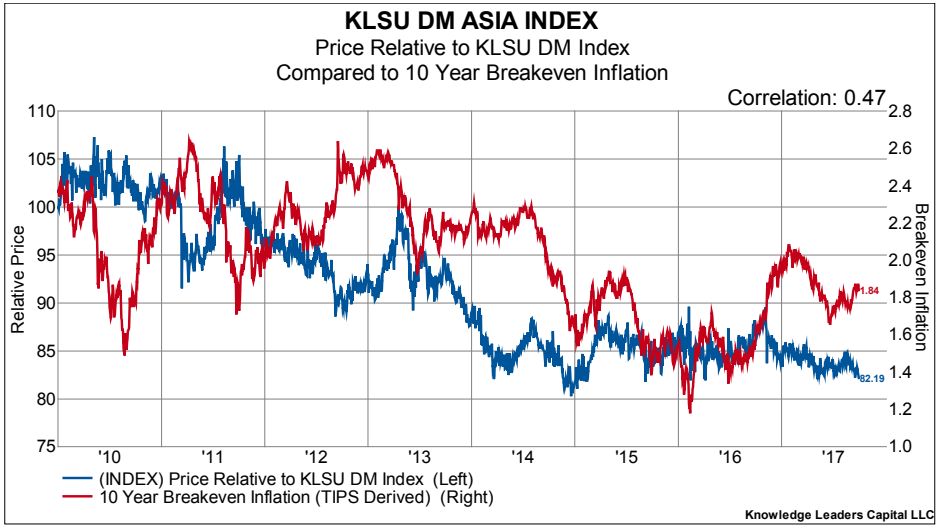




Source: Factset. As of 10/9/17. An investor cannot invest directly in an index.

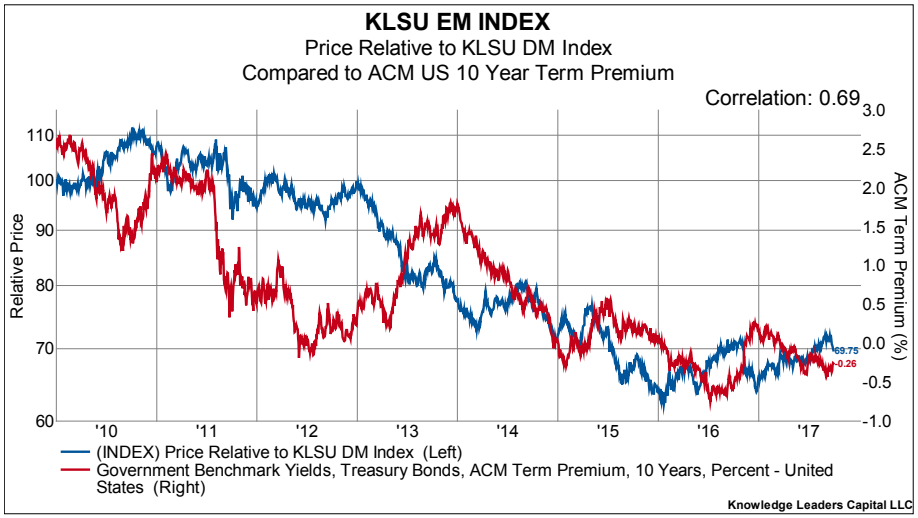
Relative performance in Asia should improve if term premiums and inflation expectations rise.

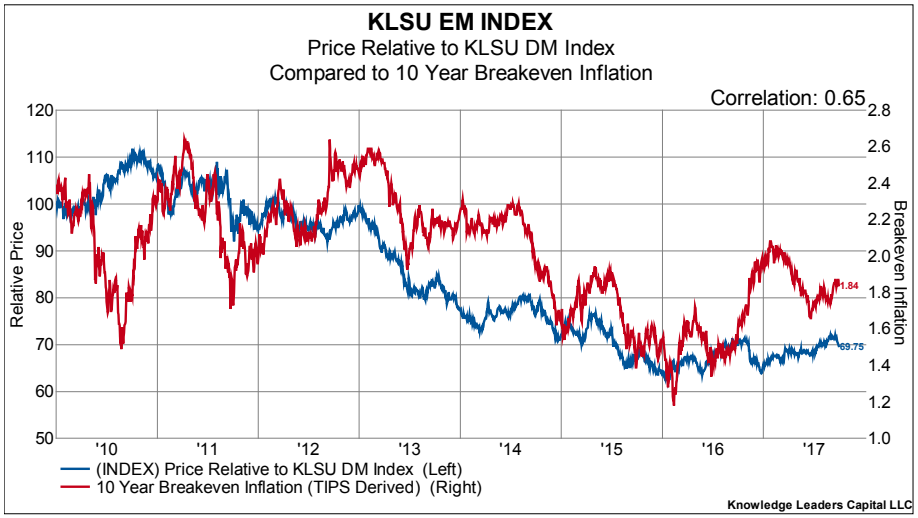




Source: Factset. As of 10/9/17. An investor cannot invest directly in an index.

The emerging markets are also likely the place to be if one anticipates rising term premiums and inflation expectations.

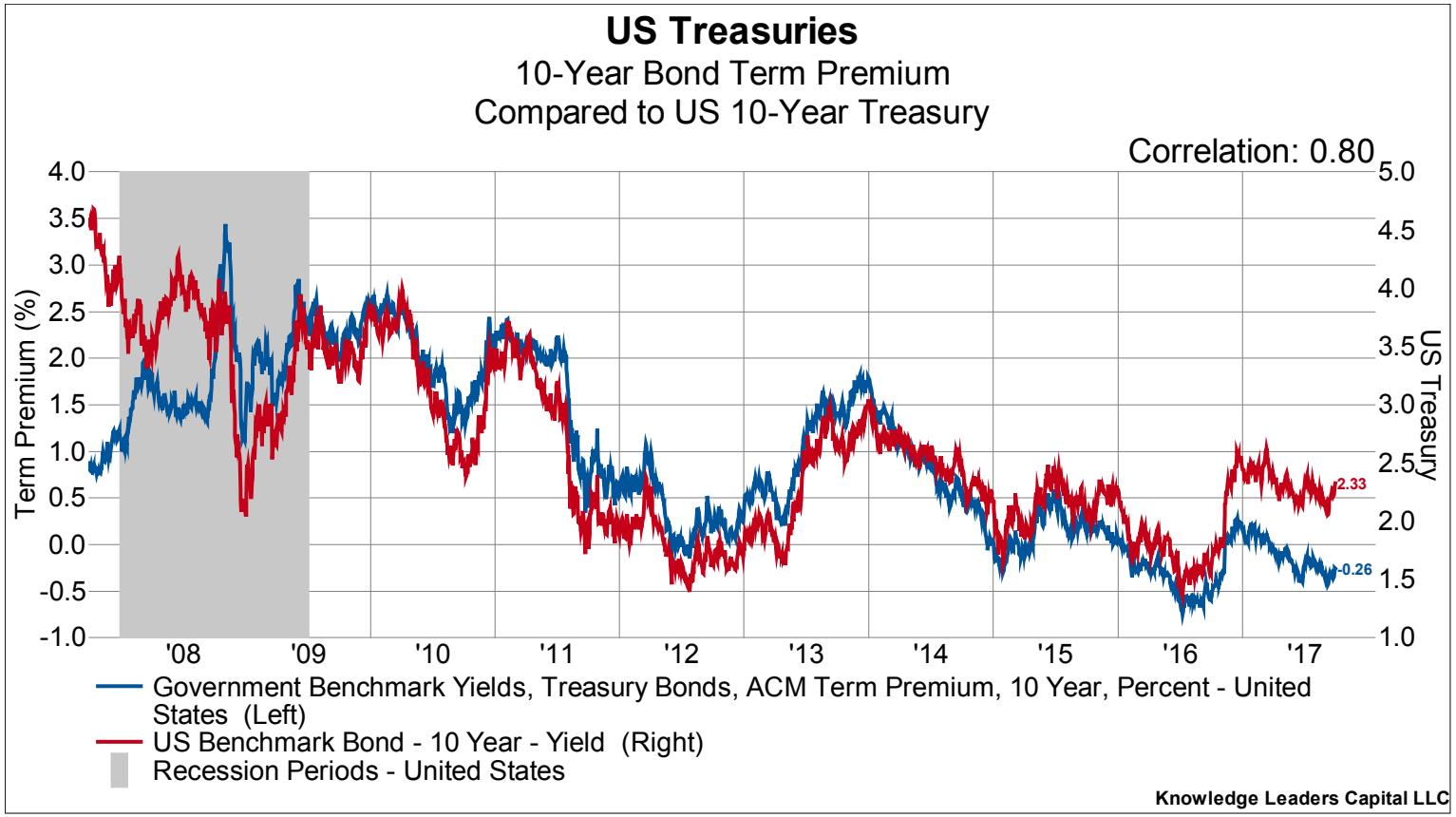




Source: Factset. As of 10/9/17. An investor cannot invest directly in an index.

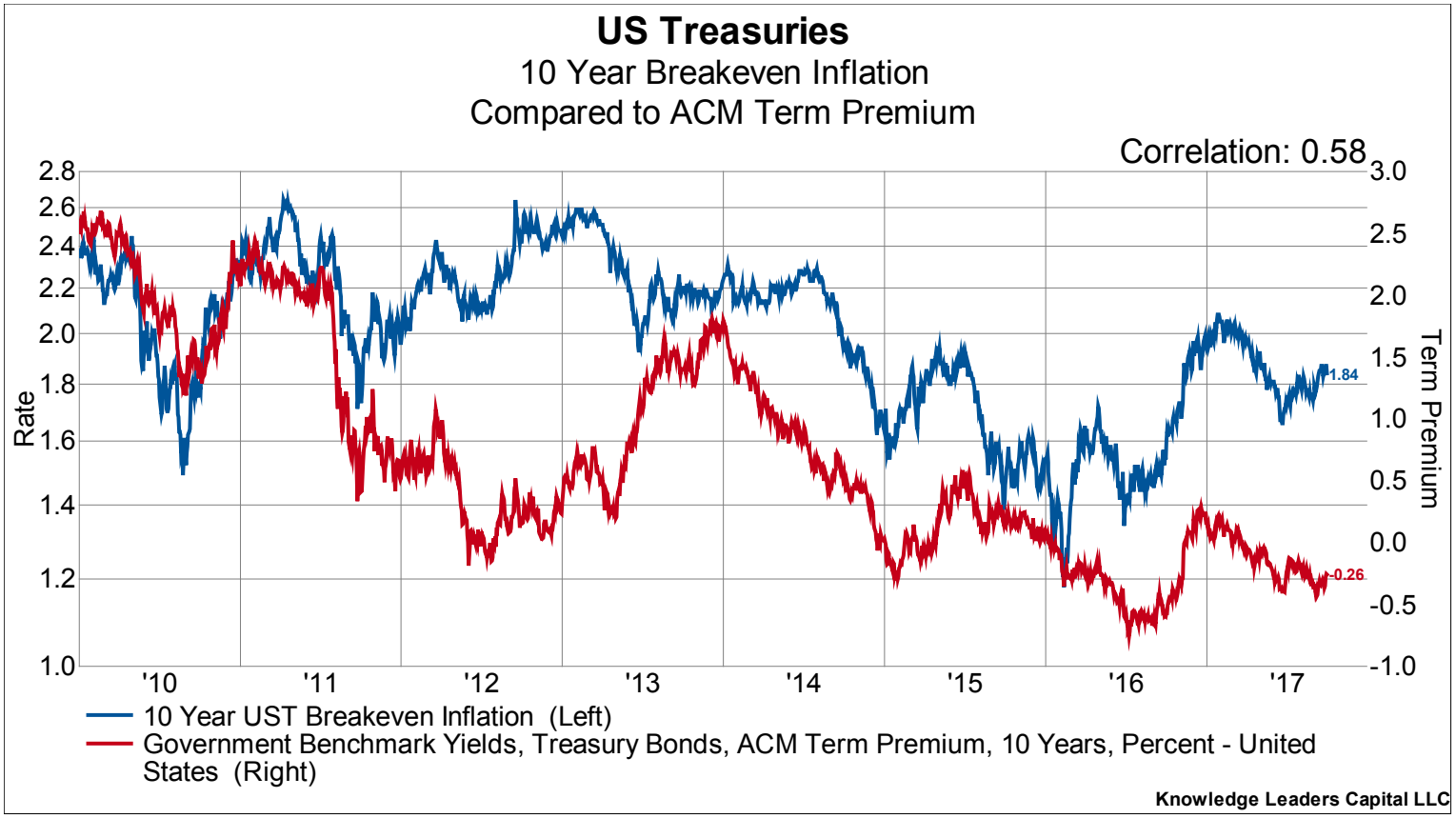
Part Five: US Treasury Bonds

Nominal 10 Year Treasuries are highly correlated to the ACM Term Premium. There appears to be room for term premiums to increase without negatively impacting nominal yields.



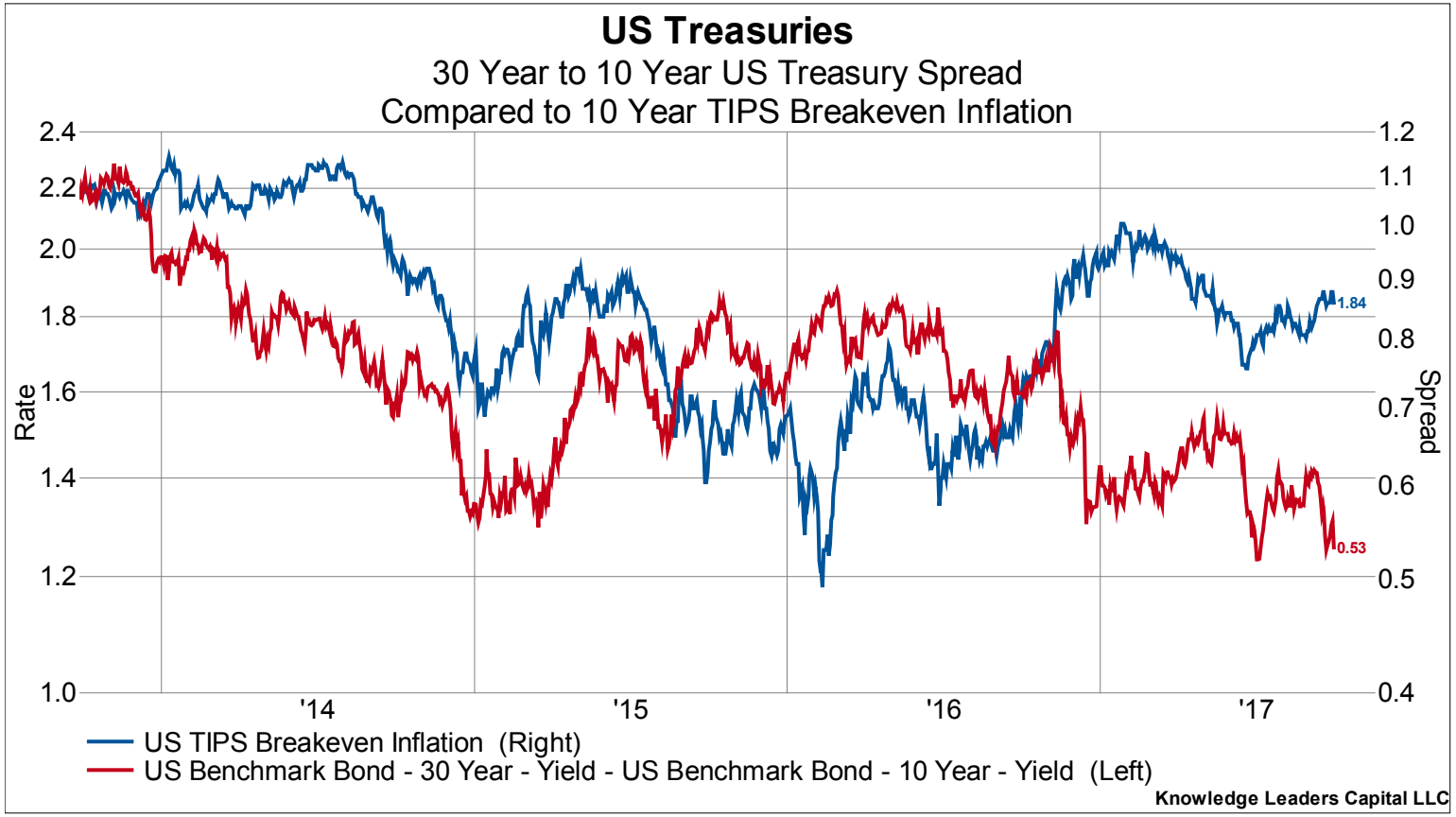
Source: Factset. As of 10/9/17.

Breakeven inflation and the ACM Term Premium are fairly well correlated and suggest room for inflation expectations to move lower all else equal.



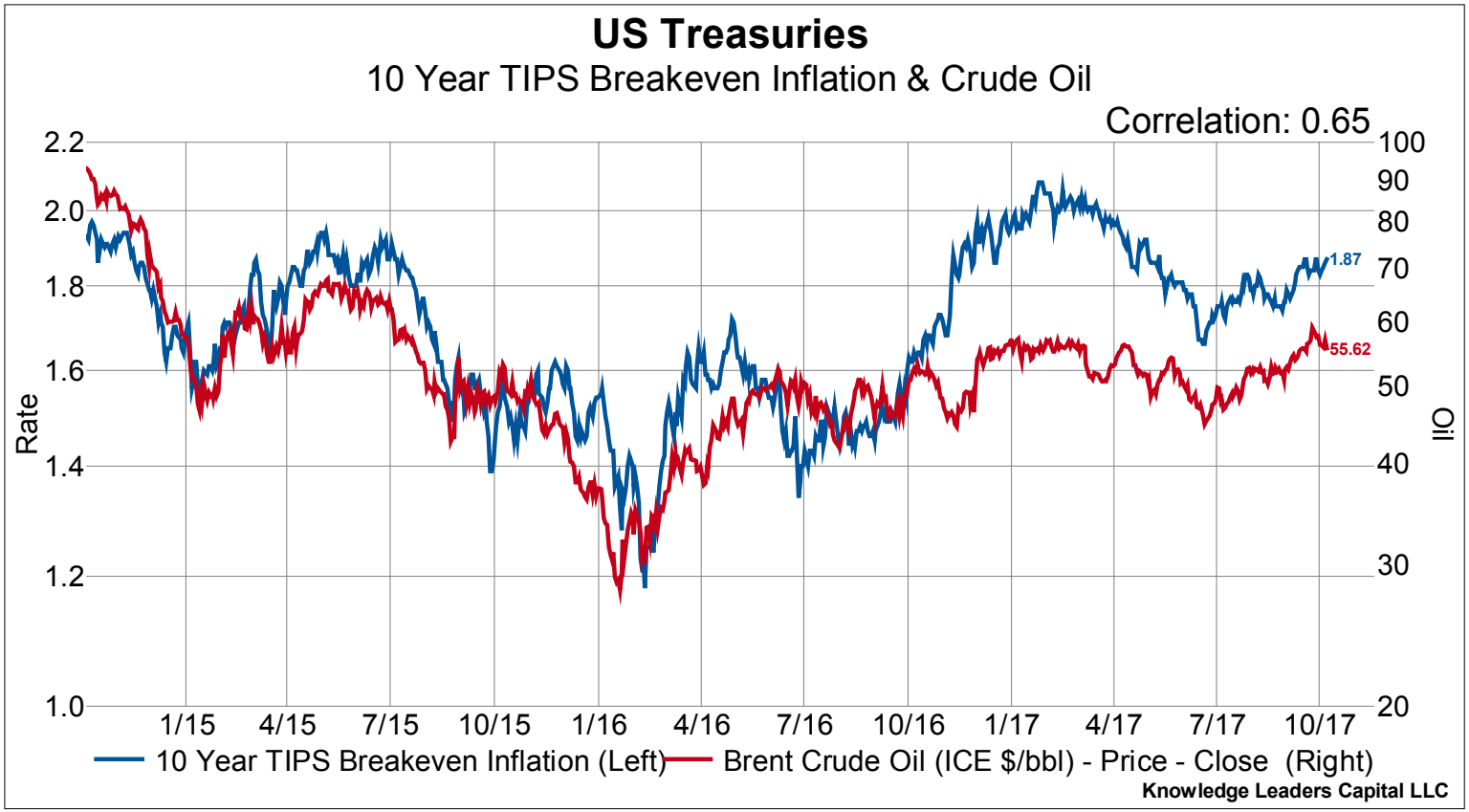
Source: Factset. As of 10/9/17.

The persistent flatness of the yield curve suggests that inflation expectations have some room to work lower.



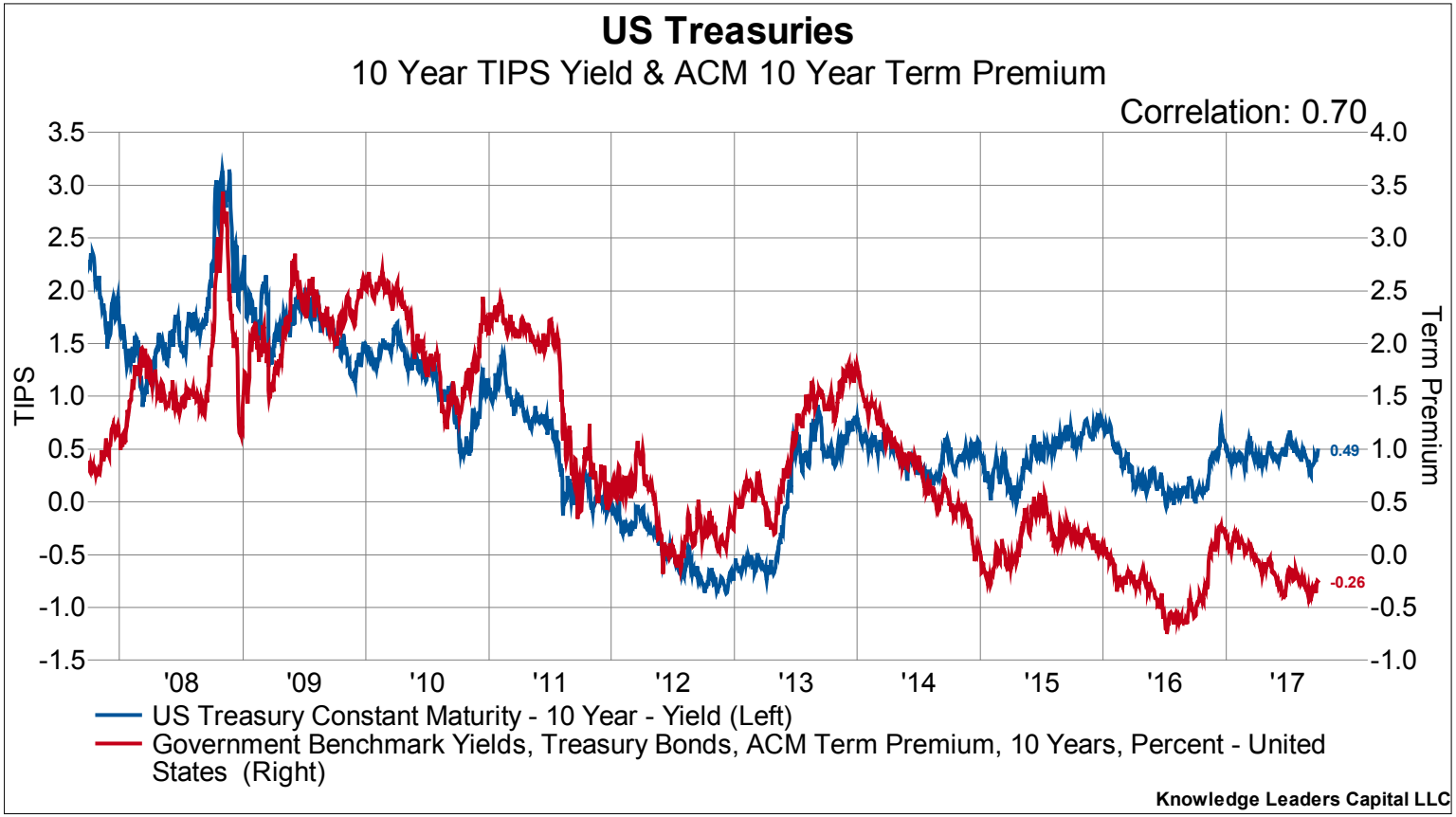
Source: Factset. As of 10/9/17.

Oil at $50 suggests lower breakeven inflation.



Source: Factset. As of 10/9/17.

While the ACM Term Premium is historically well correlated to real rates, the relationship has broken down since 2013.

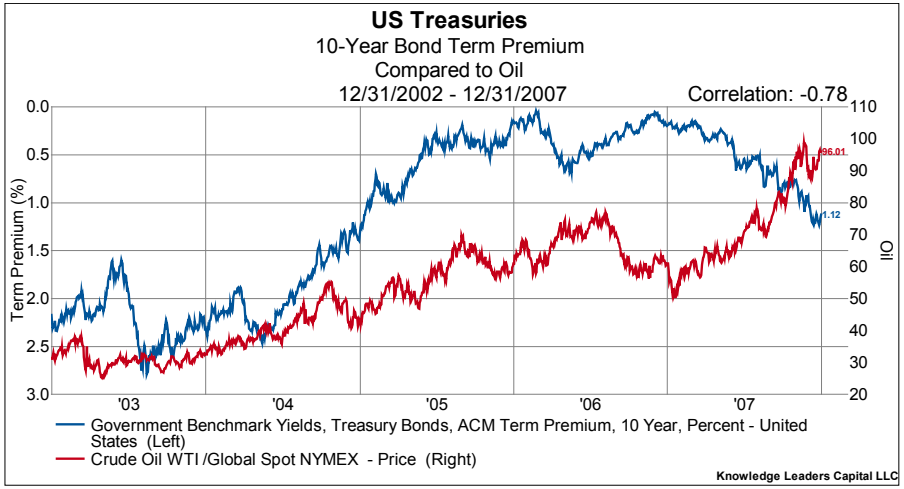


Source: Factset. As of 10/9/17.

Given the inverse relationship between the term premium and growth expectations, any increase in the term premium will likely subtract from growth expectations.

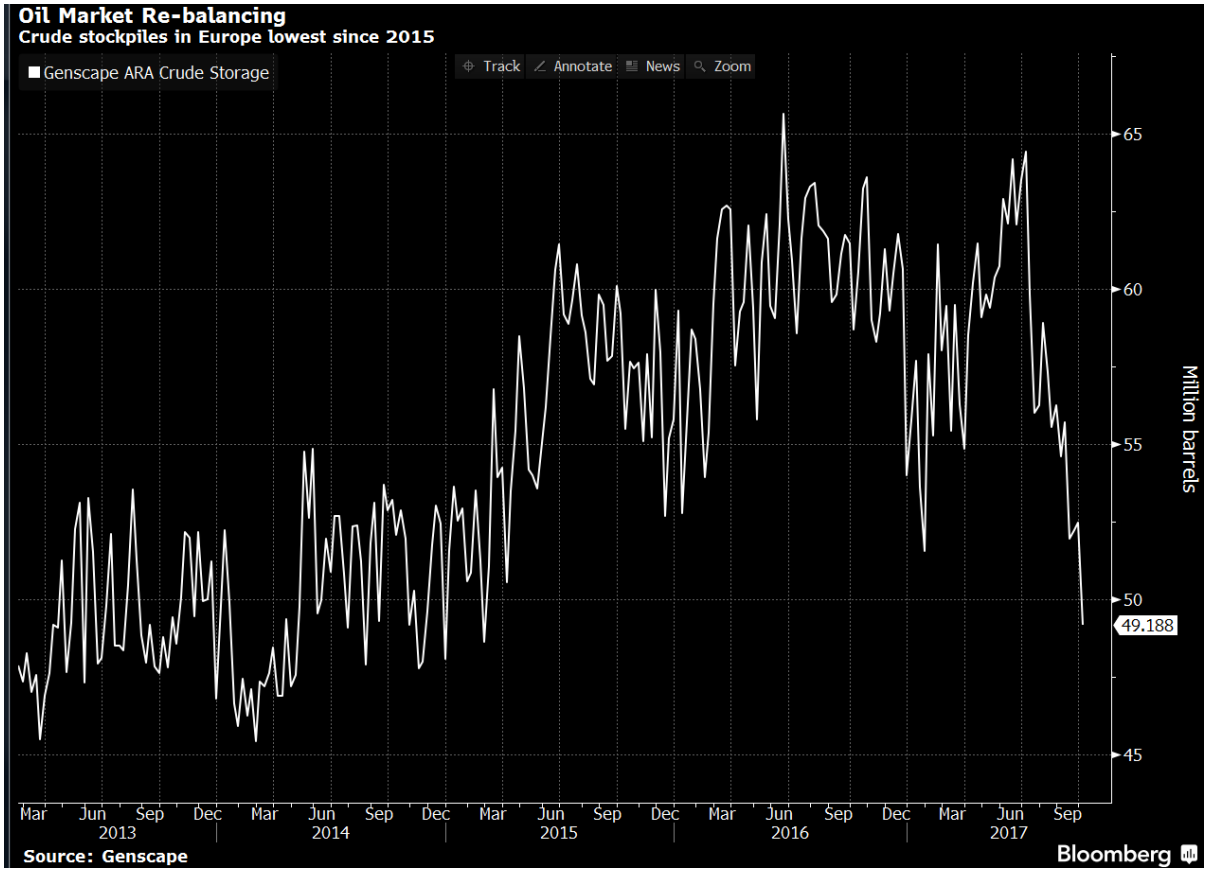
Source: Factset. As of 10/9/17.

If oil prices rise, as we expect, on the back of an inventory normalization, the underlying components of US Treasuries could change. When prices broke $70 in 2007, growth expectations fell over 1.5% while the term premium widened by about 1%.



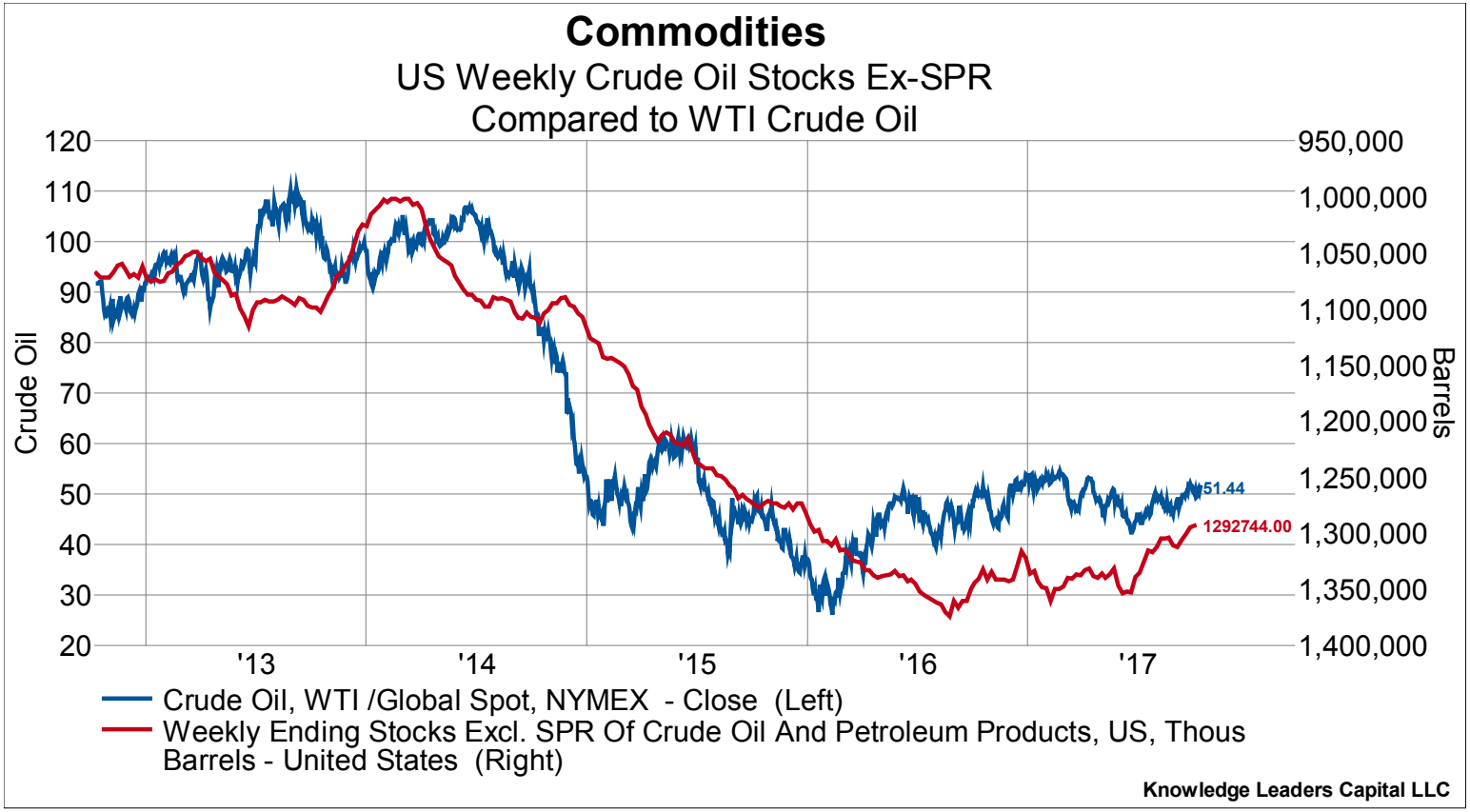
Source: Factset. As of 10/9/17.

The crude oil market is coming back into balance. Inventories in Genscape ARA Index (Amsterdam, Rotterdam and Antwerp) are back to 2014 levels.



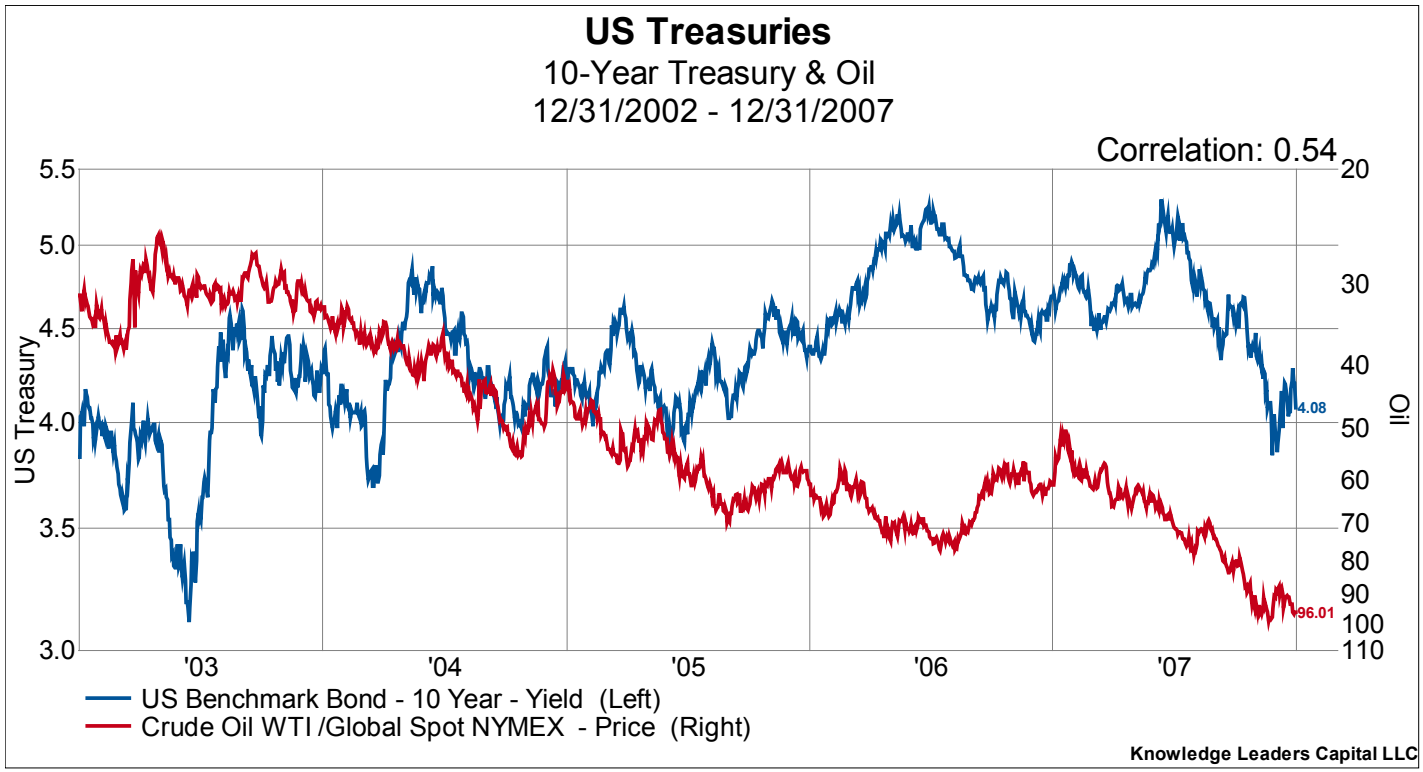
Source: Factset. As of 10/9/17.

Crude oil prices should gradually rise over the next few years as inventory normalizes while global demand remains robust.



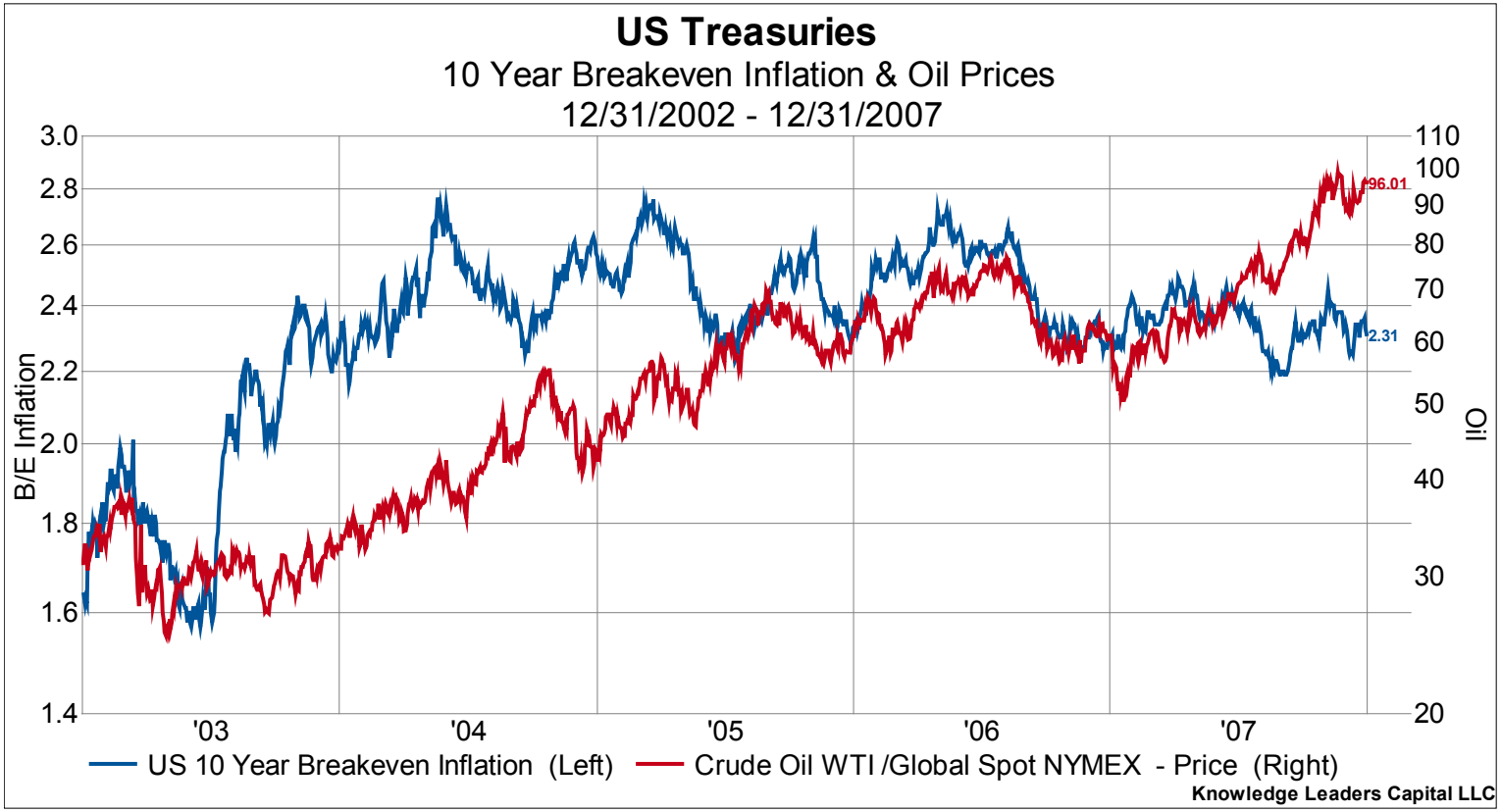
Source: Factset. As of 10/9/17.

As the underlying components were changing, nominal US Treasury bonds were dead flat while oil prices tripled in 2003-2008. Probably not a bad template for today, where oil prices ultimately don't cause higher nominal interest rates but do cause a rotation in the equity market and fixed income markets.



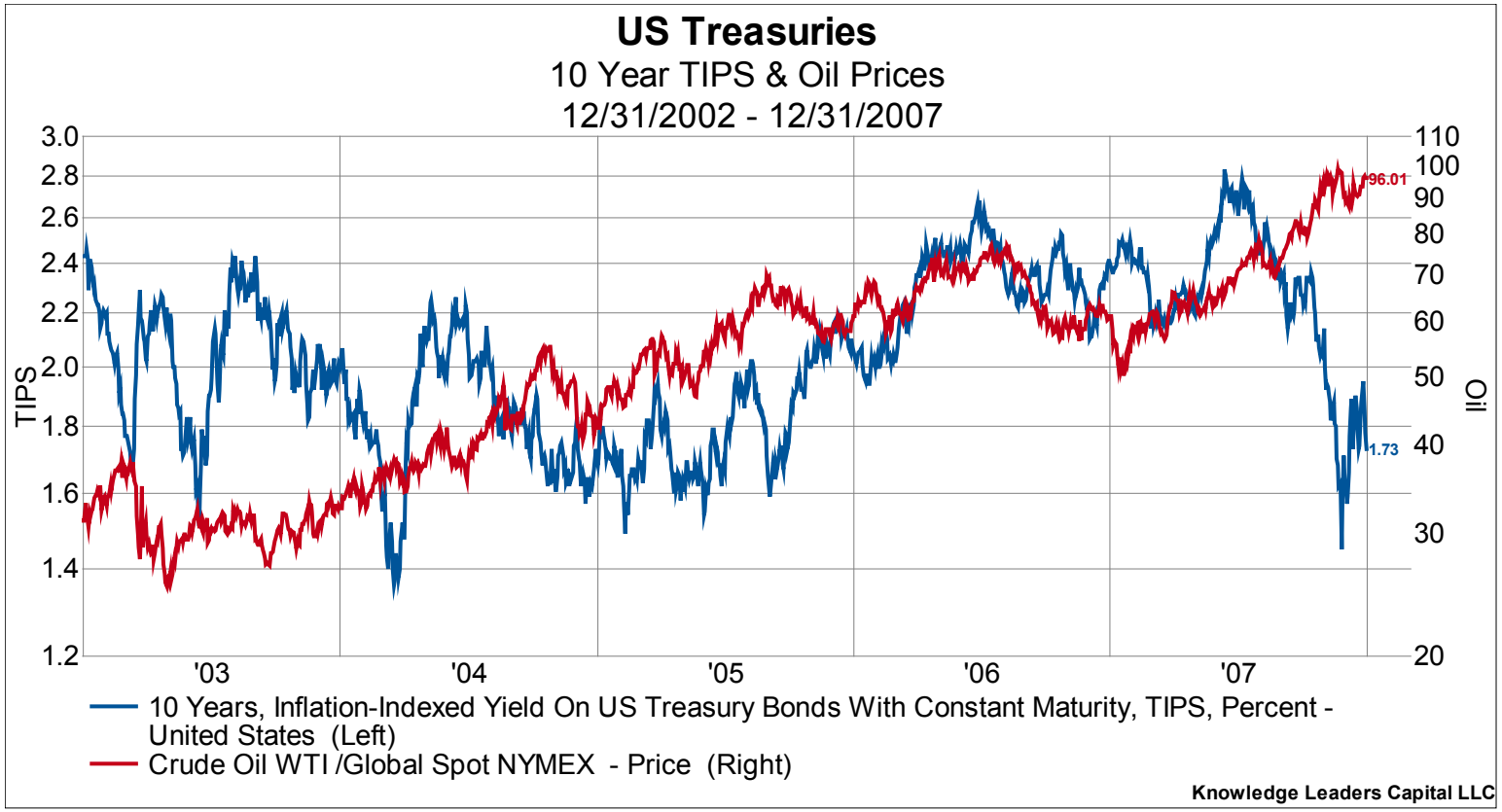
Source: Factset. As of 12/31/16.

Breakeven inflation moved up over the 2003-2008 period but very early. It jumped by 1% when oil climbed from $25/bbl to $40/bbl. Over the entire 2003-2008 period, it rose roughly 70bps. If oil starts to rise, we would expect breakeven inflation to follow, making nominal UST less attractive.



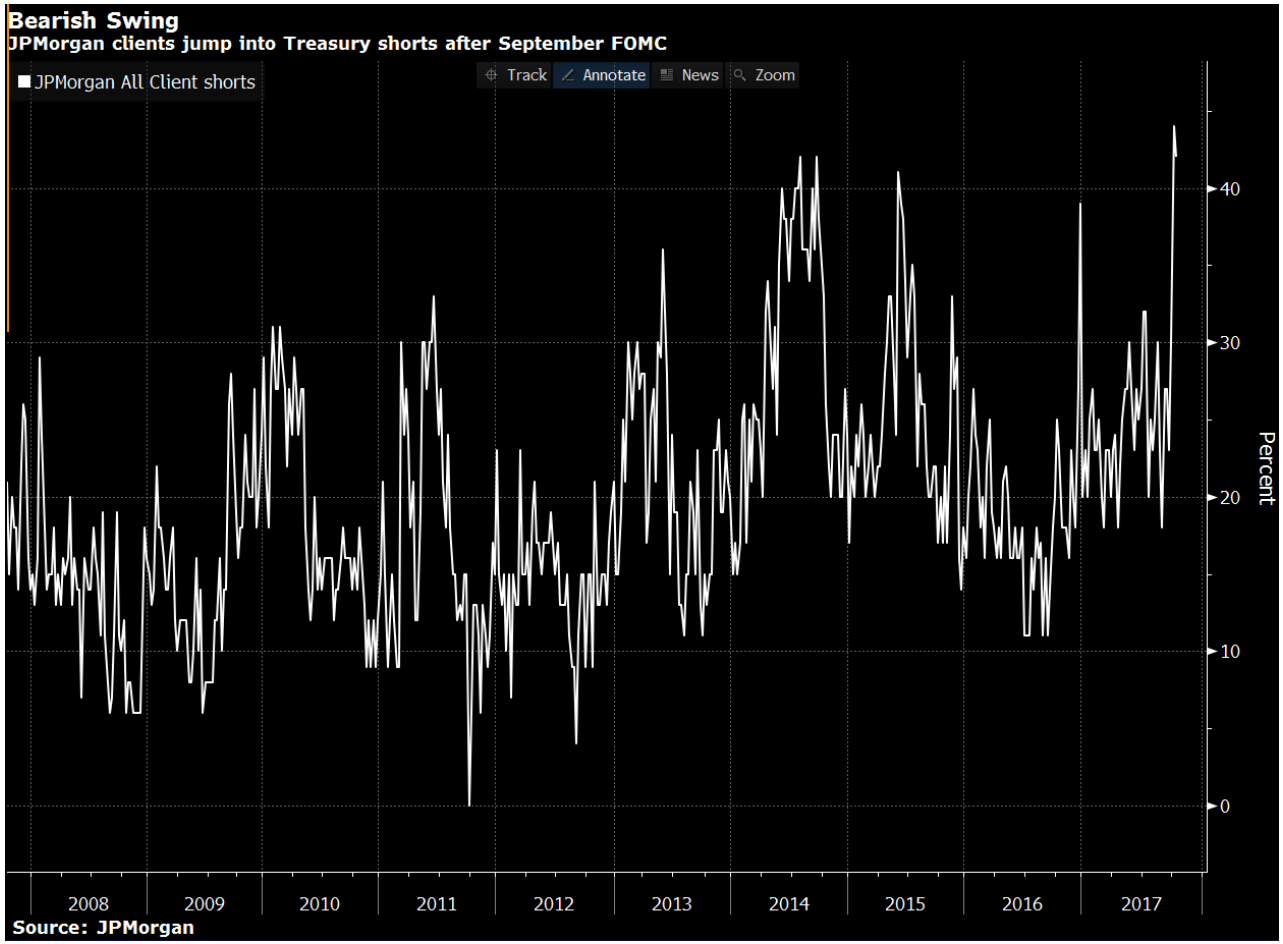
Source: Factset. As of 12/31/07.

TIPS yields declined over the 2003-2008 period by roughly 70bps, completely offsetting the rise in breakeven inflation for nominal US Treasuries. For this reason we are beginning to favor TIPS over nominal US Treasury bonds and view TIPS as a call option on higher oil.



Source: Factset. As of 12/31/07.

Current sentiment on US Treasury bonds is the most negative since the financial crisis of 2008.



Source: Bloomberg. As of 10/9/17.

Bonds yields fell 92% of the time in the 6 months following the top 25 bearish sentiment readings of the past 10 years.

Change In Yields After Elevated Readings Of Bearish Bond Sentiment

Rank	Date	Sentiment	Start	End	6m Chg
1	Oct-02-17	44	2.34	??	??
2	Jul-28-14	42	2.49	1.79	-0.70
3	Sep-15-14	42	2.59	2.13	-0.46
4	Jun-01-15	41	2.18	2.24	0.06
5	Jun-02-14	40	2.53	2.26	-0.27
6	Jul-14-14	40	2.55	1.94	-0.61
7	Jul-21-14	40	2.47	1.90	-0.57
8	Sep-01-14	40	2.34	1.98	-0.36
9	Jun-08-15	39	2.38	2.14	-0.24
10	Dec-12-16	39	2.47	2.15	-0.33
11	Jun-09-14	38	2.60	2.29	-0.31
12	Jun-16-14	38	2.60	2.21	-0.38
13	Jun-30-14	38	2.53	2.26	-0.27
14	Jul-07-14	38	2.61	2.19	-0.42
15	Sep-22-14	38	2.56	2.05	-0.51
16	Jun-15-15	38	2.36	2.22	-0.14
17	May-27-13	36	2.01	2.71	0.70
18	Aug-04-14	36	2.48	1.82	-0.66
19	Aug-11-14	36	2.43	1.79	-0.64
20	Aug-18-14	36	2.39	2.00	-0.40
21	Sep-08-14	36	2.47	2.12	-0.35
22	May-26-14	35	2.53	2.32	-0.22
23	Sep-29-14	35	2.48	1.87	-0.60
24	Jul-13-15	35	2.45	2.24	-0.22
25	Apr-21-14	34	2.72	2.20	-0.52

Source: Francois Trahan, Cornerstone Macro. As of 10/9/17.

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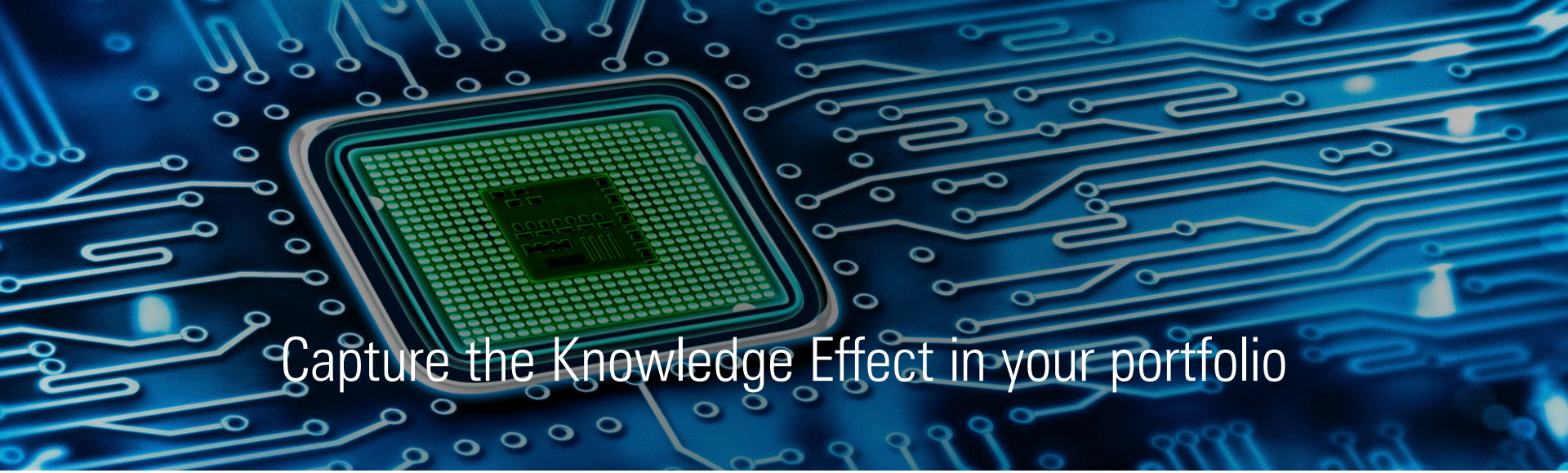
PAST PERFORMANCE IS NOT NECESSARILY INDICATIVE OF FUTURE RESULTS.

The ACM model estimates yields and expected average short-term rates for the same set of maturities.



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