As described in several recent emails (appended at the end of this document), I've been focused recently on the efficacy of safe haven yields – US Treasuries and German Bunds, principally – as a proxy for market perceptions of systemic risk. This is a critical question for many reasons, but my interest as a long/short equity manager is focused on the fact that, per the stellar work of Jeff deGraaf of Renaissance Macro Research, over the past two years the S&P 500 is more highly correlated with Bund yields than virtually any other asset class or macroeconomic indicator, including some (such as ISM data) which have had a very strong relationship prior to the Great Recession.

As I've dug more deeply into the correlation between the S&P 500 and safe haven yields, however, I've unearthed what I think are some important distinctions and dynamics in the data. That's what I'd like to share in this extended note, because they lead me to what I believe is a novel way of understanding markets today.

First, as Graph 1 shows, the UST 10-yr and the Bund 10-yr have moved in almost perfect lock-step for the past two years. In subsequent graphs I am plotting the S&P 500 against Bund yields, because Bunds are at ground zero of the systemic risks plaguing the world for the past two years, but in every case you could plug in UST's and get essentially identical results.

Graph 1: UST 10-yr yield (blue) vs. Bund 10-yr yield (yellow), 9/30/2010 – 8/30/2012

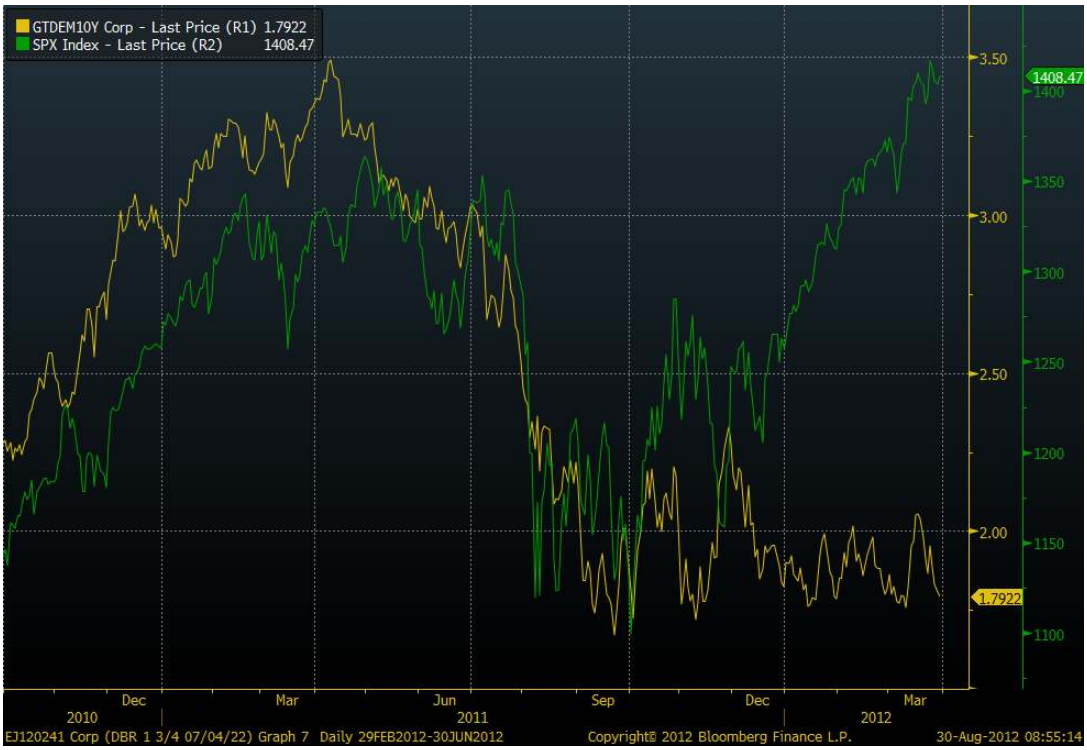
In Graph 2, you see how movement in the S&P 500 over an entire year, 9/30/2010 – 9/30/2011, tracked almost exactly movement in 10-yr Bund yields. As you might expect, this is a phenomenally strong correlation, unprecedented in the data that I've examined, going back decades. I suspect, however, that you would see something similar during periods of the 1930's. Also, you can substitute pretty much any asset class you please for Bund yields or the S&P 500 and get very similar looking graphs. This co-movement across asset classes is at the heart of the risk-on / risk-off phenomenon which has bedeviled traditional investment strategies.

Graph 2: S&P 500 (green) vs. Bund 10-yr yield (yellow), 9/30/2010 – 9/30/2011

Now let's add six months to the time series. As Graph 3 shows, you have two breaks in the close relationship between Bund yields and S&P 500 levels over these additional two quarters.

The first break, a short-lived one, occurred in late October and early November of 2011, corresponding exactly to the much bally-hooed Euro Zone heads of state conference of October 26th where the EFSF was approved. Although the Bund market quickly soured on the announcement, with yields plunging not more than a week afterwards, the broad US equity markets maintained a giddy confidence that Europe had made a meaningful policy step forward. That confidence came crashing back to reality with an 8% decline in the S&P 500 from November 11 to November 25.

The second break, a much more meaningful one, occurred in mid-December with the ECB announcement of the LTRO program. Bund yields quickly soured on this policy announcement, as well, reflecting skepticism that the massive liquidity injection into the Euro banking system would either alleviate the underlying solvency problem of the Spanish banks or see new lending pass through into the real economy of the periphery. From an equity market perspective, however, systemic risk in Europe was now off the table as the ECB had stepped up with a bold new policy initiative. As a result, Q1 of 2012 generated the best quarterly performance in decades for equity markets in both the US and Europe.



Graph 3: S&P 500 (green) vs. Bund 10-yr yield (yellow), 9/30/2010 – 3/31/2012

In March, however, two critical domestic political events occurred in Europe that placed renewed pressure on periphery debt. First, Spanish PM Rajoy announced that the country would not be able to hit the deficit reduction targets agreed upon in prior Euro Zone summits. Second, Italian PM Monti was unsuccessful in passing labor reform laws that were a cornerstone of his promises to Brussels and Berlin. Ultimately a labor reform bill passed, but it was a sharply watered-down version. Also, economic data in both countries continued to deteriorate, as almost none of the funding made available through the LTRO filtered down into lending to the real economy in Spain or Italy.

In Q2 of 2012, S&P 500 performance returned to an almost tick for tick duplication of Bund yield movement. As Graph 4 shows plainly, whatever it was that the ECB's LTRO program did to create an equity market dynamic separate from the safe haven bond market dynamic, that phenomenon had run its course by the end of Q1 and the two market dynamics were once again in almost perfect sync.

However, the remarkable move up in equity markets from December 15, 2011 through March 31, 2012 meant that although equity markets and safe haven bond markets might be moving to the beat of the same drummer again in Q2 2012, equity markets were enjoying their dance from a significantly higher level than in prior periods of strong co-movement. I think this is an important point. Whatever is happening in this shift from one equity market dynamic to another, it does not seem to be linked to any particular price level. There is no "memory" of prior price levels here, as you might expect if the dynamic were driven by market fundamentals such as aggregate earnings, cash flows, etc. You had, by definition, a valuation multiple expansion in the market advance of Q1, but that multiple expansion was not reversed when the environment reverted to one of strong co-movement and synchronization. Instead that expanded valuation multiple became the new starting point for subsequent co-movement. This suggests to me that there is very little grounding in fundamentals for where this equity market can go. I believe that it can truly trade anywhere, and that whether the S&P 500 goes up, down, or sideways will be determined by whatever dynamic is being described in these graphs, not market fundamentals.

Graph 4: S&P 500 (green) vs. Bund 10-yr yield (yellow), 3/31/2012 – 6/30/2012

So what has happened since the end of Q2? Graph 5 (which I've expanded to show the prior six months to give a better perspective), suggests to me that we are once again seeing a break in the co-movement relationship between safe haven bond yields and equity market levels. First, in early July Bund yields start to decline as the bond market almost immediately lost confidence in the policy initiatives promised by the heads of state meeting at the very end of June. Not so the S&P 500, which in choppy fashion continued to grind higher throughout the month. Second, in mid-August Bund yields rolled over again as expectations of immediate ECB bond buying were shown to be overly optimistic across just about every dimension, but equity markets have stayed elevated with continued confidence that "the ECB has got your back".

Graph 5: S&P 500 (green) vs. Bund 10-yr yield (yellow), 2/28/2012 – 8/30/2012

Now for all I know, the S&P 500 may come slamming back to Earth (which would be 1310 or thereabouts), in a repeat of the demise of the first break in co-movement patterns of October / November of 2011, shown in Graph 3. And if the source of the changed dynamic were solely the EZ heads of state meeting at the end of June, that would be my guess, in a duplication of the short-lived dynamic change after the EZ heads of state meeting at the end of October 2011. But I believe that the current break in co-movement between safe haven yields and equity market indices is driven far more by equity market confidence in the ECB, in a pattern that seems to duplicate the long-lived dynamic change after the launch of LTRO in December 2011. If that's the case, then equity markets can certainly continue to grind upwards regardless of whatever renewed systemic fears are shown by the recent movement down in safe haven bond yields.

The fact is, without a theory for <u>why</u> and <u>how</u> announcements by the ECB or the Fed or Merkel or Monti impact the trading pattern of equity markets, all I'm doing is guessing. We have an N of 3 here, which does not allow for much confidence in inductive conclusions! Without a theory, I'm just eyeballing the patterns here.

But I do have a theory. As most of you know, I was a political science professor for more than a decade, and my research focused on applications of econometrics and game theory to social science puzzles. I believe that a relatively little-known class of games called Common Knowledge (CK) games explains what is happening here. If I'm right, then not only should we be able to gauge the likely duration and path of the current divergence from safe haven co-movement, but also it should be possible to anticipate the market impact of this statement or that statement from this person or that person. That would be … interesting, to say the least.

The basic structure of a CK game is usually illustrated with some variation of the following story:

On the Island of the Green-Eyed Tribe, blue eyes are taboo. If you have blue eyes you must get in your canoe and leave the island at dawn the morning after you learn of your curse. But there are no mirrors or reflective surfaces on the island, so no one has actually ever seen the color of his or her own eyes. It is also taboo to talk or otherwise communicate with each other about eye color, so if anyone saw that you had blue eyes he wouldn't tell you. Similarly, if you saw a fellow tribe member with blue eyes, you wouldn't be allowed to tell him of the awful truth. It's a small island, so each of the tribe members knows the eye color of everyone else, but not, of course, his or her own eye color.

A missionary comes to the island one day and announces (credibly) to everyone, "At least one of you has blue eyes." What happens?

Let's take the simple case of only one tribe member having blue eyes. He has seen everyone else's eyes, and he knows that everyone else has green eyes. That means … oh, no! he must be the one with blue eyes … so the next morning he gets in his canoe and leaves the island.

But now let's take the case of two tribe members having blue eyes. The two blue-eyed tribe members have each seen each other, so each thinks, "Whew! That guy has blue eyes, so he must be the one that the missionary is talking about." But because neither tribe member believes that he has blue eyes himself, neither one gets in his canoe the next morning and leaves the island. The next day, then, each of the two blue-eyed tribe members sees that the other is still on the island. At which point each thinks, "Wait a second … if he didn't leave the island, it must mean that he saw someone else with blue eyes. And since I know that everyone else has green eyes, that means … oh, no! I must have blue eyes, too." So on the morning of the second day, both tribe members with blue eyes get in their canoes and leave the island.

The generalized answer to the question, then, is that for any N tribe members with blue eyes, they all leave simultaneously on the Nth morning after the missionary's statement.

The unique aspect of CK games, and what makes them applicable to market dynamics today, is that *it is the public statement of privately held knowledge that forces the action*. It's the "publicness" of the knowledge that makes all the difference. Everyone on the island already knows that at least one person has blue eyes (in every case save when only one person has blue eyes, and even then everyone but that one person already knows it), but no one is forced to evaluate himself or to take action until the information is stated publicly. It's not enough that everyone knows something. Behavior changes when everyone knows that everyone knows something. Once the information is stated publicly the game solves itself with zero coercive action by any of the participants.

In the equity market today, the private information is "don't fight the Fed" (or the ECB, or the Chinese government, or … to a lesser extent … the IMF, or the European heads of state, or the BOJ, etc.). Even if you believe that, in truth, whatever the Fed does will not amount to much, or, in truth, the ECB is highly constrained and will not take large-scale unilateral action … it doesn't matter. So long as you believe that everyone else believes in "don't fight the Fed", your only rational course of action is to capitulate in whatever you are doing that would be considered fighting the Fed. But here's where the CK game comes into play. You have no reason to capitulate in your Fed-fighting ways until a credible public statement is made that the Fed will be acting soon and, thus, you will be fighting the Fed. Until

that public statement is made, you have no reason to think that others are evaluating their market behaviors on the "don't fight the Fed" common knowledge. But once that public statement is made, you know that others are evaluating their market behaviors in this light, and so you must also evaluate your market behavior in this light. If you don't, you will be crushed. Or you think you will be crushed, which is the same thing from a game perspective. Knowing for sure that everyone knows what you know (private facts transformed into common knowledge) forces behavior into conformity with the implications of that common knowledge. In fact, if the common knowledge is pervasive and powerful enough (and I would argue "don't fight the Fed" certainly is), then very quickly ALL market behaviors are interpreted almost solely through the lens of this common knowledge.

I think this is a very accurate description of what is driving market behaviors today. I don't know anyone who enjoys contemplating how forthcoming Fed actions may impact the market. Or ECB actions, etc. In fact, everyone I know is exhausted by this contemplation and enormously frustrated by it. Even those of us who fancy ourselves as having a pretty good understanding of top-down or structural dynamics in the political and macroeconomic spheres are left scratching our heads at what seem to be a crazy market reactions to a stray comment from this politician or that central banker. But we all believe that we have no choice but to focus intently on every word uttered publicly, because these statements clearly matter. In fact, most of the time it feels as if these statements are the <u>only</u> thing that matters. We just don't understand how or why they matter.

If you look at the equity market through the lens of CK game theory, these market reactions to public statements are no longer crazy. They follow a well-defined logic. They are predictable.

I've spent the past few days sketching out a formal specification of the equity market as a CK game, and it's already yielded what I think are some interesting hypotheses regarding the importance of who makes a statement and what words are used, as well as the importance of subsequent media narrative and the words used there, too. I think that I understand now what happened on Friday, August 3rd, when the disastrous market reaction to Draghi's Thursday press conference made a 180-degree turn. I think that I understand why the non-synchronized equity market dynamic following the LTRO announcement worked for so long, and what brought it to an end. I have a strategy for Bernanke's Jackson Hole speech tomorrow morning, and I'll let you know if it works.

What I don't know yet are the limits of CK game theory for making specific investments. It's valuable enough if it helps me navigate the Jackson Hole market reaction tomorrow, or if it helps me understand what to look for (and when) in judging whether or not equity markets are going to share bond market perceptions of systemic risk. But what's even more intriguing is that this game specification lends itself to detailed empirical analysis. I think that it's possible to collect a historical database of statements and associated conditions, run this data through the CK model, and generate a likelihood function for market reaction to any future statement and associated conditions. If that works … well, as I wrote earlier, that would be very interesting.

I think that I'm onto something important here. Please give me a call if you'd like to hear more or discuss further. – Ben

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Prior Emails on Safe Haven Yields

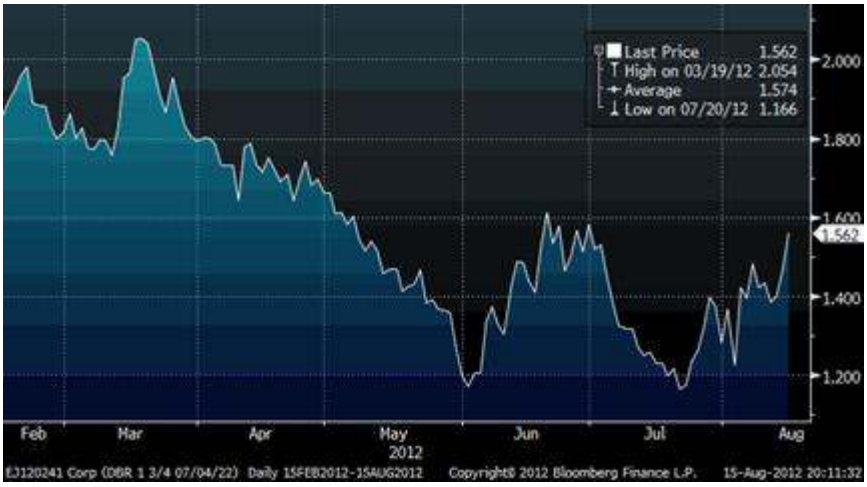
From: Ben Hunt
Sent: Wednesday, August 15, 2012 10:10 PM
To: Ben Hunt
Subject: FW: safe haven yields

10 days ago I wrote about the importance of August 3rd's "Day After" rally in global equity and credit markets, as the Powers That Be orchestrated a 180-degree reversal from the fiasco that was Draghi's August 2nd press conference. Now that the ECB is squarely and publicly on the other side of the short Europe trade (in all of its manifestations), this is an extremely difficult trade to maintain. The reality of the crisis in Europe is no better (worse, in fact, as banking system fragmentation accelerated significantly in July), but the reality of the ***trade*** changed enormously. It's a simple message – "The ECB has your back" – but it's the message markets were desperate to hear. Moreover, it's the only thing that markets ***will*** hear until events occur that are outside the ECB's purview … namely, regime change in Spain or Italy that initiates the political end-game for the Euro system as it is currently constituted.

What does it mean to say that the ECB has your back? Or that the Fed has your back? It means that these central banks can and will prevent a big, bad tail event. It means, in the words of market strategists everywhere post-Bear Stearns, that "systemic risk is off the table." But here's the thing. If you believe that, then you can't possibly buy German and Swiss bonds with negative nominal yields. You can't possibly buy UST's with negative real yields. The only reason to pay someone for the privilege of taking your money is if you think disaster is imminent and the counterparty who is taking your money is certain to return your capital. If disaster is no longer imminent, then we should see massive selling pressure on these safe haven securities, and a similarly massive back-up in their yields.

Now let's look at what's actually happened over the past few days in 10-yr Bunds and 10-yr UST's.

Here are German 10-yr yields over the past 6 months. Note the two bottoms of 1.17% on June 1st and again in July right before Draghi's London speech, with an intervening high of around 1.60% as people got all excited about the Euro leaders' summit at the end of June. Since Draghi's speech and the Day After rally, yields have backed-up in an almost identical fashion to what we saw in June.



Here are UST 10-yr yields over the same span. You've got the same general double-dip in late May and late July, and the "Draghi effect" on UST 10-yr yields looks more pronounced than the effect on Bunds because you didn't have the same back-up in UST rates in June. But as a percentage move from the pre-Draghi low, the most recent move in Bund yields (33%) is almost identical to the move in UST yields (32%).

So here's what I'm looking for. If German 10-yr yields top out at 1.60% or thereabouts, then all we've done is move back to the late June assessment of systemic risk. Which is to say, some good things are happening and we're not in the depths of despair, but no one is ringing the "all clear" bell. We're back to a muddle-through world punctuated by moments of terror. But if Bund yields break through those late June levels, then the new narrative around the ECB is even more powerful than I had suspected. We could have a significant leg up in all risk assets as money moves violently out of the safe havens into … something, anything other than Bunds and USTs.

I think we are all aware of the once-in-a-lifetime money flows over the past 3 years into safe haven assets, despite a ferocious effort on the part of every central bank in the world to fight this. I mean, the whole point of financial repression – all of the QE, all of the Twists, all of the SMP, etc. etc. – has been to force investors and savers away from safe havens and into risk assets. But despite all of the trillions spent on financial repression, there is no yield too low if the fear of a systemic crash is too high. UST 10-yr yields are not low because of Twist or QE, they're low because Europe might blow up. But if Europe is "saved" by the ECB, or if that's the perception du jour, then the money flow out of safe haven assets could be a tsunami, and the back-up in yields could be staggering in its velocity and power.

And God forbid we get even a whiff of global growth as this break-out in safe haven yields takes place. If we get a narrative of "growth is just around the corner" combined with the narrative of "systemic risk is off the table" … well, Katy bar the door.

A melt-up in UST yields would, of course, be a disaster for the US fiscal situation, not to mention the Fed's balance sheet. And Europe is, in truth, far from saved. So there's sure to be a crisis before too long which will force everyone back into the warm embrace of safe haven assets. But it could sure be a wild ride in the meantime!

From: Ben Hunt
Sent: Thursday, August 16, 2012 11:16 PM
To: Ben Hunt
Subject: more on safe haven yields

As with almost anything market-related, movement in UST yields is over-determined, which is a silly academic way of saying that there are lots of reasons, all of which are partially right. Here are four "explanations" I saw just this morning for the back-up in UST yields over the past two weeks.

WSJ: "Investors' waning confidence that the Federal Reserve will start another fresh round of bond-buying next month is damping the market appetite for U.S. Treasurys."

CRT Capital: "This is not about QE whatsoever. This is about a summer illiquidity selloff."

FT: “US Treasury 10-year yields rose to three-month highs ahead of what is expected to be a set of positive new-home construction housing figures.”

Bloomberg: “Treasury 10-year yields touched the highest in more than three months as U.S. economic data pointed to improvement in the U.S. economy, curbing demand for the relative safety of U.S. sovereign debt.”

I am happy to stipulate that all of these reasons are correct. Yes, a Fed retreat from additional UST purchases will hurt demand. Yes, liquidity is terrible in this market, for both credit and equities. Yes, US macro data of late has been a little stronger (I suppose, although you sure can’t see that in the regional Feds or the ISM). But these aren’t the drivers for the move up in rates.

The correlation between 10-yr UST’s and 10-yr Bunds over the past few years is 90%+, and the recent move in UST yields has been in lock-step with the back-up in Bund yields. I don’t think anyone is mistaking the rise in Bund yields for any of the explanations above. Bund yields are up so sharply because the world believes that the ECB can prevent a tail event in Europe. If the risk of disaster has abated, you’re not going to pay disaster prices for safe haven assets, especially if the safe haven counterparty is on the hook for whatever costs must be paid to avert disaster!

German Bunds are ground zero for whatever disaster pricing is taking place in global debt markets, so I’m ascribing more signaling power to them than to UST’s. Bund yields ticked down today, btw, and are still shy of the levels of late June. So we haven’t (yet) seen a break-out in Bund yields that would signal a (greater) sea change in risk appetites than we’ve already experienced. But it bears close watching. It’s also possible that UST’s can diverge from the strong correlation of the past and take on a dynamic of their own. This also bears close watching.

All of this exposition is far from some theoretical exercise. It’s critically important for the Procella portfolio, and it’s critically important for any long/short equity portfolio. Why? Because the current correlation of the S&P 500 to Bund yields is about 85%. The long-term median correlation is half that. Yes, please read that again. If you want to know if the SPX is going up or down, the only question you need to answer right now is whether Bund yields are going up or down. A few years ago that would not have been terribly useful information. On the other hand, the long-term median correlation of the S&P 500 to the ISM survey results is about 65%, a very useful piece of information. But the current correlation is less than 50%, not very useful at all.

Tip of the hat to Jeff DeGraaf at Renaissance Macro Research for this correlation information. Great work, as always.

These correlations are at the core of why today’s investing environment is so foreign and uncomfortable to every traditional strategy, whether that strategy is based on company fundamentals or macro indicators. The old patterns and drivers don’t work very well anymore, and what does work is basically a systemic risk indicator that responds only to whatever Draghi or Bernanke or Merkel or Monti said last. My belief is that this brave new world started with QE1 in March 2009, and it’s not going to end until central bank financial repression is a thing of the past. Good times!

When I look at the calendar for Europe over the next three weeks, I see nothing that has a reasonable potential of providing a risk-off catalyst, nothing to slow down the dominant narrative of “the ECB has your back”. The path of least resistance is for Bund yields to continue to climb, for UST yields to continue to climb, and the equity markets to climb. Perhaps explosively if UST selling begets UST selling.

Is this a stable move up in UST yields? Not a chance. But could we have a crazy couple of weeks until either the back-up in yields creates its own crisis or Europe provides the next freak-out moment later in September? Absolutely.

From: Ben Hunt
Sent: Wednesday, August 22, 2012 10:38 PM
To: Ben Hunt
Subject: still more on safe haven yields

So let me get this straight. The Fed minutes come out today with “the strongest signal yet that QE3 is coming soon” (to quote several prominent media publications), and the S&P 500 is up … 4 basis points? Not 104 basis points? Hmmm.

I direct your attention to German Bund 10-yr yields, down 10.5 bps today (a 6.7% decline in yield, +90 bps in price). Obviously this entire move down in yield happened hours before the Fed minutes came out (and wouldn't be impacted by Fed buying in any event). Here is the six month chart.

I think that German Bund yields remain the best indicator of perceived systemic risk (ie, Europe risk), and they remain very highly correlated (85%+) to the S&P 500. If Bund yields are coming down, it means that perceived systemic risk is going up, which makes it very hard for the US equity market to go up.

I also think it's very hard to look at this chart and not suspect that Bund yields are rolling over. Maybe I'm wrong, and it will be up, up, and away over the next few days and weeks. But I'm less net long today than I was yesterday, because it looks to me like perceived systemic risk is either staying at these levels or going up (Bund yields flat to down).

We also had a 10 bps decline in UST yields today, from 1.80 to 1.70. Notably, most of the decline (6 bps) occurred before the Fed minutes came out. My point is that I continue to believe that the primary driver of UST yields is market perception of systemic risk, not the form or likelihood of QE, and not the supposedly stronger macro data in the US over the past few weeks.

I have six or seven active trades in the portfolio right now. A few (defense stocks are the best and largest example, healthcare is another) will work (or not) regardless of perceived systemic risk coming out of Europe. These tend to be low beta exposures. My exposure to these trades will stay the same no matter what happens with Bunds. Other trades, though, which tend to have higher betas, are very sensitive to Europe risk even if they have little or nothing to do with Europe directly (US financial stocks, for example, or energy stocks). These are the exposures that I'm going to adjust as Bund yields move significantly up or down.

As for the Europe trade itself, nothing has changed in my view as described in recent emails. Now that the ECB is on the other side of the trade, I think it's a mistake to manage the trade in the same way as I've managed it over the past three years. I will go all-in when domestic regime change begins in either Spain or Italy, but until that catalyst occurs (against which the ECB is powerless) my short exposure will be limited to non-financials with high exposure to consumption or capex in the periphery. The only difference that Bund yields make in managing the trade is that I'm certainly not covering any of these shorts if Bund yields are headed down. If Bund yields start backing up again, especially if they break through the June levels, then I could see going long European financials as a short-term trade. Otherwise, no way.