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Falling Bond Yields Are A Sign Of Easier Monetary Conditions?

This commentary is dedicated to the memory of Robert Laurent, who passed away all too suddenly and prematurely on June 30th. I had the privilege and good fortune of working with Bob for 13 years at the Chicago Fed. The education I received from him is priceless. Although Bob could have presented the arguments below more succinctly and eloquently, I think he still would approve of the commentary. You will be missed, Bob, but never forgotten.

In recent months there's been a lot of ink devoted to the issue of whether the decline in bond yields since the Fed starting pushing up short rates a year ago is a sign of easier or more restrictive monetary conditions. Let's run a little thought experiment to help us answer this question. Suppose that half of the households in America woke up tomorrow morning with the intent to cut their purchases of goods, services and tangible assets by an extra 10% of their income, and the other half of households woke up with no change in their intended spending plans. To make things simple, let's assume that the half of households that intended to cut their purchases of goods, services and tangible assets decided to invest their "saving" in fixed-income securities. If so, downward pressure would be exerted on the interest rate structure. Would this decline in the structure of interest rates lead to a speed up in the growth of aggregate demand for goods, services and tangible assets compared with the day before? No. At best, it would leave growth in aggregate demand unchanged. At worst, it would reduce growth in aggregate demand. But in no way would this decline in the structure of interest rates *increase* the growth in aggregate demand.

Let's explain the "no change" case. The decline in the structure of interest rates would induce the half of households that had *not* intended to change their spending plans to, in fact, change them in the direction of more spending. The lower structure of interest rates means that households are not being rewarded as much for deferring spending. So the group of households that, at the original structure of interest rates, had no intention of changing its spending plans will now, at the lower structure of interest rates, desire to spend more because of the decreased compensation for deferring spending. The increased spending by these households, induced by the lower structure of interest rates, will offset the reduced spending from the half of households actually responsible for the decline in the structure of interest rates. In effect, one group of households has *transferred* purchasing power to another group. So, on net, growth in aggregate demand does not change.

Now let's explain the "reduced growth" case. For growth in aggregate demand to be reduced as a result of half of households desiring to cut their spending, there must be some force that prevents the structure of interest rates from falling to a level low enough to induce others to increase their spending. In the context of today's credit markets, that impediment is the central bank, specifically the Fed in the case of the U.S. The Fed is a price-fixer. It fixes the price of short maturity credit. Because the equilibrium structure of interest rates is always changing, it would only be by coincidence that the Fed's target funds rate level would equal the equilibrium level determined by free market forces. The Fed achieves its target funds rate level by creating (figuratively, out of thin air) credit or eliminating credit. If the free market forces of the supply and demand for credit were to establish an equilibrium funds rate *above* the Fed's target, the Fed would have to *create* an additional supply of credit to bring the funds rate back down to its target level. Conversely, if free market forces of the supply and demand for credit were to establish an equilibrium funds rate *below* the Fed's target, the Fed would have to *eliminate* some credit to bring the funds rate back up to its target level.

Returning to our example, with half the households waking up with a desire to spend less of their income, the free market supply of credit has increased, implying a decline in the equilibrium structure of interest rates. But let's assume that the Fed is in the process of raising the funds rate and has signaled to market participants that it will continue to raise the funds rate for some time. Not only would the Fed, then, be preventing the funds rate from falling to its new lower equilibrium level, it would actually be pushing it farther above its new equilibrium level. This would discourage the increased borrowing and spending by other households that would have otherwise offset the increased saving/decreased current spending by the first group. Long-term rates would still fall, but not by as much as would have been the case had the Fed not intervened. The reason that long-term rates would not fall as much is that long-term interest rates reflect expectations of future short-term interest rates. With the Fed signaling that it intends to keep raising the funds rate, these expectations will become incorporated in the levels of longer-maturity interest rates, keeping them higher than they otherwise would have been. So, if the equilibrium structure of interest rates has fallen because of decreased desire of some households to spend out of current income and the Fed prevents the actual structure of interest rate from falling to its new lower equilibrium level, then growth in the aggregate demand for goods, services and tangible assets will slow. That is, under these circumstances, falling long-term interest rates will be an indication that monetary conditions are becoming tighter, not easier.

In the current environment, it seems as though *at least* half of American households woke up this morning wanting to spend *more* of their current income on goods, services and tangible assets rather than spend less, as assumed in the example above. So, it is not increased household saving that accounts for the decline in U.S. bond yields from year ago. But U.S. corporations uncharacteristically seem to have a desire to spend less relative to their income. And more importantly, foreign entities seem to have an increased propensity to save more in dollar-denominated assets relative to their purchases of U.S.-produced goods and services. It does not matter to the analysis the country of residence of the "savers." All that matters is a net decrease in the desire on the part of some entities to spend on U.S.-produced goods/services and U.S.-located tangible assets, and a corresponding increase in their desire to purchase dollar-denominated bonds. The result is the same – a decline in the equilibrium level of the structure of

interest rates. If the Fed frustrates the decline in the structure of interest rates to the new lower equilibrium level, then monetary conditions will have become tighter.

That's the logic or theory. Now, let's do some empirical testing to see whether bond yields, the fed funds rate or the two in combination do a better job of explaining growth in aggregate demand. We will give you a preview of the results. The bond yield, by itself, does least well in explaining the behavior of aggregate demand. When the bond yield is *combined with* the fed funds rate, the best explanation of aggregate demand growth is obtained. But as important, when the bond yield is combined with the fed funds rate, that is, when we control for the behavior of the fed funds rate, we find a *positive* relationship between the bond yield and aggregate demand growth. That is, we find that a *decline* in bond yields tends to be associated with a *slowing* in aggregate demand growth. This is inconsistent with those who are currently arguing that falling bond yields represent an easing in monetary conditions.

Firstly, we will run a linear regression between the year-over-year percent change in real GDP and the 4-quarter moving average of the 10-year Treasury bond yield, lagged by 2 quarters. The results of this regression are shown below.

Dependent Variable: RGDPYY
Method: Least Squares

Sample(adjusted): 1955:4 2005:1
Included observations: 198 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
T10MA(-2)	-0.174696	0.063917	-2.733174	0.0068
C	4.517796	0.461669	9.785794	0.0000
R-squared	0.036714	Mean dependent var		3.342020
Adjusted R-squared	0.031799	S.D. dependent var		2.396224

Where RGDPYY is the year-over-year percent change in real GDP,
T10MA (-2) is the 4-quarter moving average of the 10-year Treasury bond yield lagged by 2 quarters and C is a constant.

The coefficient on the Treasury bond yield is statistically significant and it has the "right" sign. That is, the negative sign on the coefficient indicates that a decline in bond yields is associated with a rise in real GDP growth. Notice that with an adjusted R-squared of 0.03, the bond yield is not explaining much of the variance in real GDP growth.

Secondly, let's run the regression with the 4-quarter moving average of the fed funds rate lagged 2 quarters, FFMA(-2).

Dependent Variable: RGDPYY
Method: Least Squares

Sample(adjusted): 1955:4 2005:1
Included observations: 198 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FFMA(-2)	-0.290682	0.048482	-5.995636	0.0000
C	5.044257	0.324402	15.54942	0.0000
R-squared	0.154982	Mean dependent var		3.342020
Adjusted R-squared	0.150670	S.D. dependent var		2.396224

As was the case with the bond yield, the coefficient on the fed funds rate is statistically significant and has the right sign. Notice that with an adjusted R-squared of 0.15, the fed funds rate explains more variance in real GDP growth than does the bond yield.

Now, let's run the regression with *both* interest rates included as independent variables – the bond yield *and* the fed funds rate. By including both interest rate variables in the regression, we are determining what the effect of the bond yield is on real GDP growth *given* the level of the fed funds rate.

Dependent Variable: RGDPYY
Method: Least Squares

Sample(adjusted): 1955:4 2005:1
Included observations: 198 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
T10MA(-2)	0.777866	0.125700	6.188279	0.0000
FFMA(-2)	-0.857455	0.101800	-8.422968	0.0000
C	3.127933	0.429312	7.285924	0.0000
R-squared	0.293689	Mean dependent var		3.342020
Adjusted R-squared	0.286445	S.D. dependent var		2.396224

The coefficients on both interest rate variables remain statistically significant. But notice that **when we control for the effect of the fed funds rate, the *sign* on the bond yield coefficient flips from minus to plus**. A plus sign on the bond yield coefficient means that a *decrease* in the bond yield is associated with a *decrease* in real GDP growth. This contradicts the argument that the decline in bond yields in the past year is an indication of easier monetary conditions. The adjusted R-squared of 0.29 is higher than that of either of the two prior regressions.

I have attempted to demonstrate both logically and empirically that a falling bond yield in the face of a steady or rising fed funds rate indicates a tightening of monetary conditions, *not* an easing of conditions. If the Fed continues to push up the funds rate and the bond yield continues to fall, the Fed will be flirting with the disaster of a recession in 2006.

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