Although less prevalently talked about today many economists assume that while the central bank has control over the short-term rate of interest, the long-term rate of interest is set by the market. When Post-Keynesians make the case that when a country issues its own sovereign currency the rate of interest is controlled by the central bank and that the government never faces a financing constraint some economists deny this and point to the long-term rate of interest which they claim is under the control of the market. They say that if market participants decide to put the squeeze on the government they can raise the long-term rate of interest.

Keynes himself was wholly convinced that the central bank had full control over the long-term rate of interest. In a 1933 open letter to US President Franklin Roosevelt Keynes wrote:

> The turn of the tide in great Britain is largely attributable to the reduction in the long-term rate of interest which ensued on the success of the conversion of the War Loan. This was deliberately engineered by means of the open-market policy of the Bank of England. I see no reason why you should not reduce the rate of interest on your long-term Government Bonds to 2½ per cent or less with favourable repercussions on the whole bond market, if only the Federal Reserve System would replace its present holdings of short-dated Treasury issues by purchasing long-dated issues in exchange. Such a policy might become effective in the course of a few months, and I attach great importance to it.

What Keynes was advocating was what has since been referred to as Operation Twist. This was a policy that was first initiated in the US during the Keynesian heyday under President John F. Kennedy. The Wikipedia page provides a nice overview of how it worked — note how it is identical to Keynes' suggestion in his 1933 letter:

> The Fed utilized open market operations to shorten the maturity of public debt in the open market. It performs the 'twist' by selling some of the short term debt (with three years or less to maturity) it purchased as part of the quantitative easing policy back into the market and using the money received from this to buy longer term government debt.

The policy basically did nothing. Below are the interest rates of the era.

10year1960s

As we can see the long-term treasury yield responded to the lowering of the Fed funds rate in 1960 but we can detect no change between the spread of the short-term and the long-term yield in 1961. The spread begins to close in 1962 but this is as a result of the increases in the Fed funds rate.

Recently the Federal Reserve Bank of San Francisco released a study claiming that the program had actually worked. I won't get into the methodology of the study but I think its basically rubbish. The fact is that the stated aim of the program did not come to pass in any meaningful way. But the reason that the Fed probably commissioned the study was because they tried Operation Twist again once more in 2011. The Fed described the program thus after it had been completed:

> Under the maturity extension program, the Federal Reserve sold or redeemed a total of $667 billion of shorter-term Treasury securities and used the proceeds to buy longer-term Treasury securities, thereby extending the average maturity of the securities in the Federal Reserve's portfolio. By putting downward pressure on longer-term interest rates, the maturity extension program was intended to contribute to a broad easing in financial market conditions and provide support for the economic recovery.

So, did it work? Not unless the Fed were lying about when they started the program. The press release at the time dates the program to September 21st 2011. Keeping that in mind let's look at the long-term interest rates in that period. (We do not bother showing the short-term interest rates here because, as everyone knows, they are basically zero throughout the period).

Do you see that significant drop in long-term interest rates of about 1%? Well, that occurs in July 2011 and reaches its bottom in September 2011. This opens the possibility that the Fed actually undertook the program two months before they announced it. Unfortunately, there is no hard evidence of this and unless such evidence emerges we must assume that the second attempt at Operation Twist was indeed a failure.

Does this mean that Keynes was wrong and that the central bank does not control the long-term rate of interest? No. Keynes was actually confusing two distinct things in his letter to Roosevelt; namely, whether the central bank controlled the long-term rate of interest and whether it controlled the spread between the short-term and the long-term rate of interest. There is no evidence that the central bank has any meaningful control over the latter — although I am open to being proved wrong on this front should it ever turn out that Operation Twist II was actually initiated in the summer of 2011. But if we zoom out it is quite clear that the central bank has full control over the long-term rate of interest.

On the left I have graphed all the interest rates together. The pattern should be clear to the reader. But in order to be concrete I have also included a regression of the the Fed funds rate on the ten-year bond yield. As we see the relationship is positive and quite statistically significant. It is quite clear that the central bank controls the long-term rate of interest through its short-term interest rate policy. Indeed, the fact that the regression does not produce a perfect fit is mainly due to the fact that the spread between the long-term rate and the short-term rate widens whenever the Fed drops the short-term rate significantly — this can be seen quite clearly in the graph on the left.

Some will claim that the long-term interest rate is actually tracking inflation. That is, when inflation rises the long-term interest rate would rise. Then the central bank merely reacts to this inflation by raising the short-term rate thus giving the statistical illusion of control. But this is not the case. If you look at the data carefully it is clear that it is the short-term rate driving the long-term rate and not inflation. There are many ways to illustrate this but perhaps the easiest is to run a regression of the long-term interest rate against the CPI which I have done below.

10 year and inflation

As we can see the fit is far less statistically significant than when we ran the regression of the short-term interest rate against the long-term interest rate. This shows quite clearly that, although the short-term rate may be raised by the central bank in response to inflation, it is clearly the short-term rate that is driving the long-term rate and not the rate of inflation.

So, does the central bank control the long-term interest rate? Yes. Does it control the spread between the long-term rate and the short-term rate? There is no evidence to confirm this and the evidence that we do have — taking the Fed at its word — suggests that they do not. But regardless, next time some economists tells you that the markets control the long-term rate of interest you can safely tell them that they have absolutely no idea what they are talking about.