TIPS And Pseudo-Real Rates

Somewhere in your distant past you learned about the commutative property of equality, that little ditty about X+Y = Y+X. It kind of made sense, so you filed it away and never thought about it again until now. You also learned how to rearrange things algebraically and became confident of such truisms as if Z = X+Y then X = Z-Y.

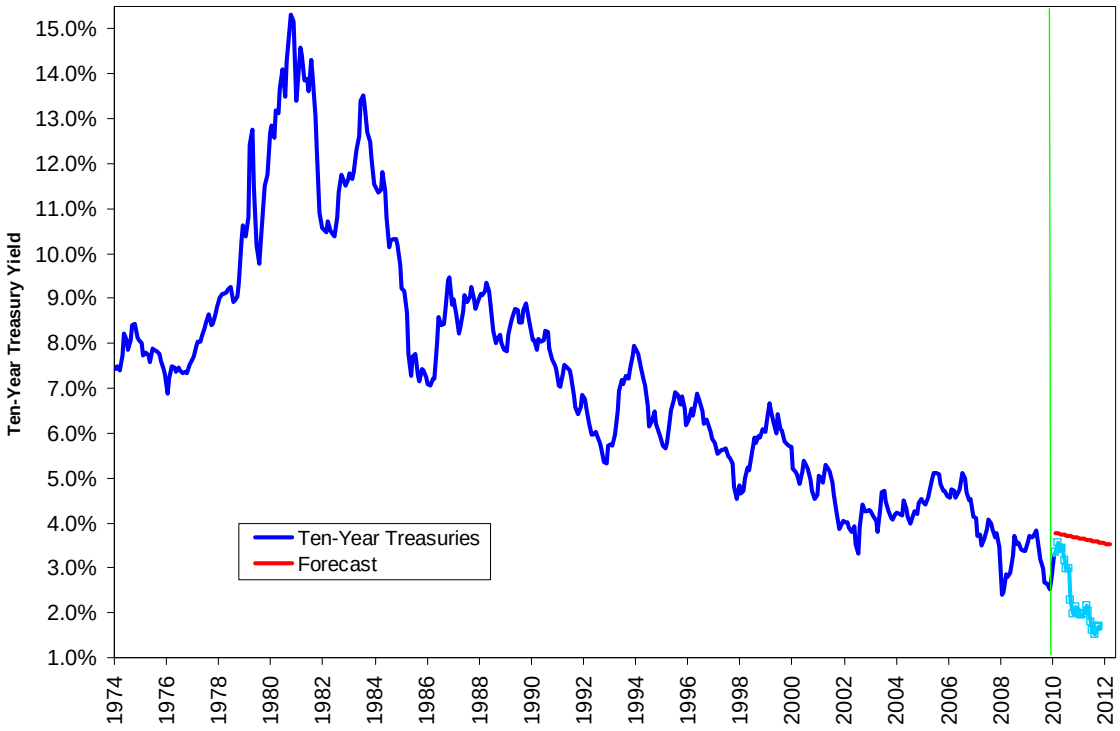
Now let's try to apply these simple relationships to the Treasury Inflation-Protected Securities (TIPS) market and to Fisher's Law, which holds nominal interest rates = the real interest rate plus the expected rate of inflation. Economists could cluck about this for years without fear of empirical retort as there was no direct measure of expected inflation. However, as we have had inflation-linked bonds in the U.S. since January1997, we can infer some of the expectations for the All-Urban Consumer Price index, not seasonally adjusted (CPI-U), the basis for the TIPS' payoff. Please note the phrase, "some of the expectations;" the reality is TIPS are heavily option-embedded, are linked to a very imperfect backward-looking measure of consumer inflation and are affected by crisis insurance-related flights into and out of nominal Treasuries (see "TIPS, Treasuries and Insurance," May 2008).

Reconstructing The Past

Econometricians joke about "forecasting the past with ever-greater accuracy." This is not as off-base as it may sound as part of the process is specifying a model over part of the historic data and see how well it could forecast the known remainder of the available data. The real answer in modeling is not "$Y = \alpha + \beta X$," but rather "$Y = \alpha + \beta X + \varepsilon$," where the error term 'ε' is where all the action is.

Even though economists have a tough time forecasting the past, they constantly are called upon to forecast the future, a task immeasurably more difficult as reality does not like conforming to models. As a long-ago colleague once stated in regards to copper prices, "How come the past always looks like this," he said drawing a squiggly line in the air, "but the forecast always looks like this," drawing a smooth curve? Please contemplate a long-term history of ten-year Treasury yields through December 2010 and then a simple time-series forecast generated therefrom as an illustration. The point is not that an out-of-sample forecast made in December 2010 was too high; any forecaster understands they will be correct only by chance, but that the variance of the forecast is minuscule compared to reality as it unfolded.

Reality Is Noisy. Forecasts Are Clean



The TIPS Backcast

An inquisitive money manager once asked whether it would be possible to reconstruct what TIPS breakeven rates would have looked like prior to their introduction in 1997, particularly during the inflationary 1970s; the purpose was to create a hypothetical track record for a mutual fund. As an aside, you should assume the simulated track record would have shown superior returns to its benchmark; that simply is the nature of the beast.

An intellectually honest answer was given, which surely shocked the manager. First, the environment of the 1970s was truly ancient history. There were no financial instruments available to defend against inflation directly. Currency trading was in its infancy, energy trading was wholesale-only and done mostly for operational purposes, stock index futures did not exist nor did the swap market.

Second, as all of these instruments and more exist today, the environment wherein TIPS live is different; it is like one of those science fiction time-travel staples about returning to the past and affecting your parents' lives before you were born.

Finally, TIPS are a total return instrument with unusual properties. For us to know how this fund would have performed more than thirty-five years ago, we would have to know what the coupon payments on the bonds would have been as these coupons' reinvestment form a significant part of the bonds' total return stream.

Pseudo-Real

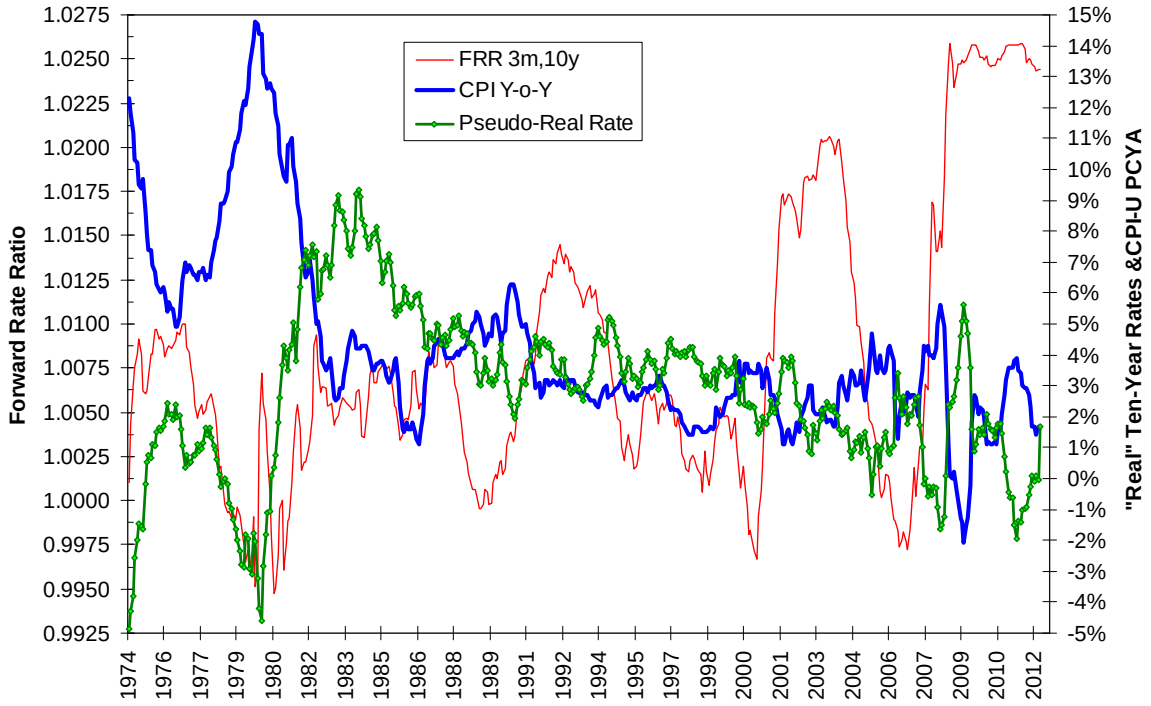
Now we come to the problem of what is real in terms of interest rates. Fisher's Law uses expected interest rates, but too many analysts are content to use the backward-looking year-over-year change in the CPI as the measure of inflation to subtract from nominal interest rates and obtain real interest rates. They want that commutative property of equality to work, regardless of the facts.

Let's dub the difference between nominal interest rates and the CPI's year-over-year changes the "pseudo-real" interest rate and set about taking a look at some of the economic variables purported to drive it. The author, ever in search of a straw dog, has seen five-factor models including the then non-existent futures on crude oil, business loan growth lagged twelve months, ten-year Treasury rates themselves, the trade-weighted dollar index and the yield curve spread between three months and ten years. A five-factor model such as this suffers from correlation (collinearity) between the independent variables; while there are techniques such as principal component analysis to adjust for this, the best course of action is to admit the obvious: Throwing the kitchen sink into a single equation results in over-fitting and produces a very non-robust model useless for forecasting or backcasting.

Two of the variables, the crude oil futures and business loan growth, should be dismissed out of hand. The former did not exist, and the latter has undergone a world of change with the growth of non-banking sources of financing. With this in mind, let's take a look at how well the three remaining variables explain the pseudo-real rate.

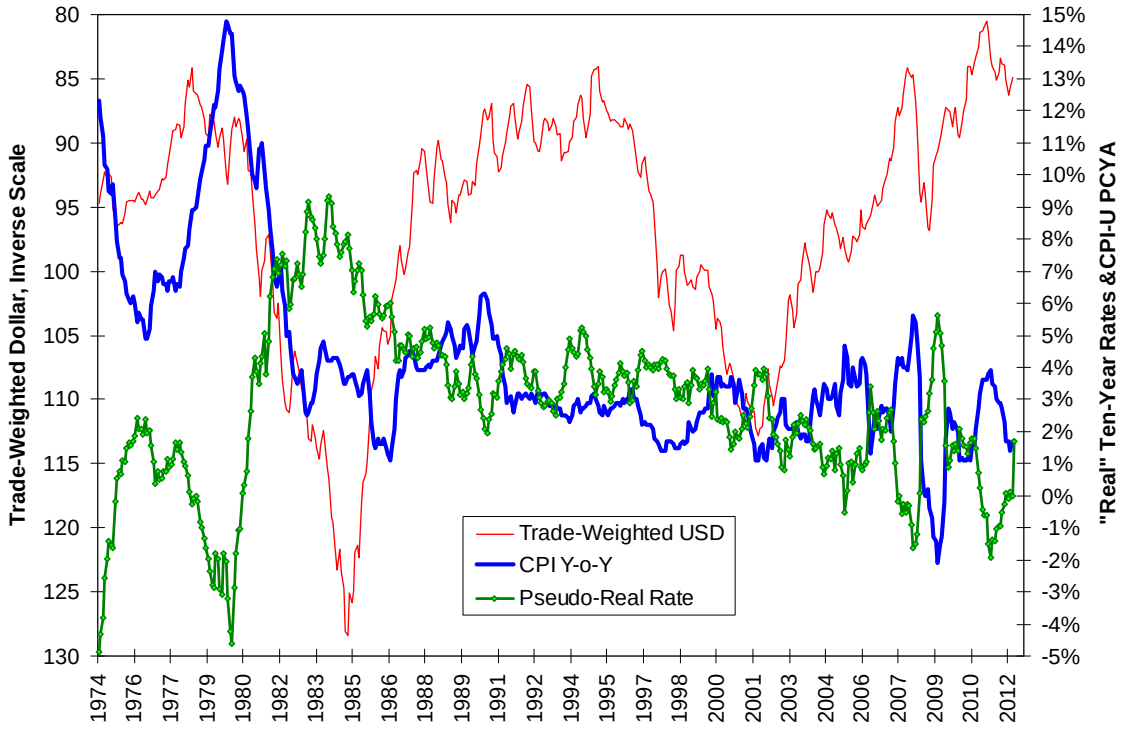
First, let's look at the yield curve spread between three-month and ten-year Treasury yields as measured by the forward rate ratio between them. This is the rate at which we can lock in borrowing for 9.75 years starting three months from now, divided by the ten-year rate itself. The more this FRR exceeds 1.00, the steeper the yield curve. The huge swings in the yield curve after 2001 had no effect whatsoever on either the pseudo-real rate or the year-over-year change in the CPI.

Contemporaneous 3-Mo. - 10-Yr. Yield Curve Not Obvious Contributor
To Reported Inflation Or Pseudo-Real Rates



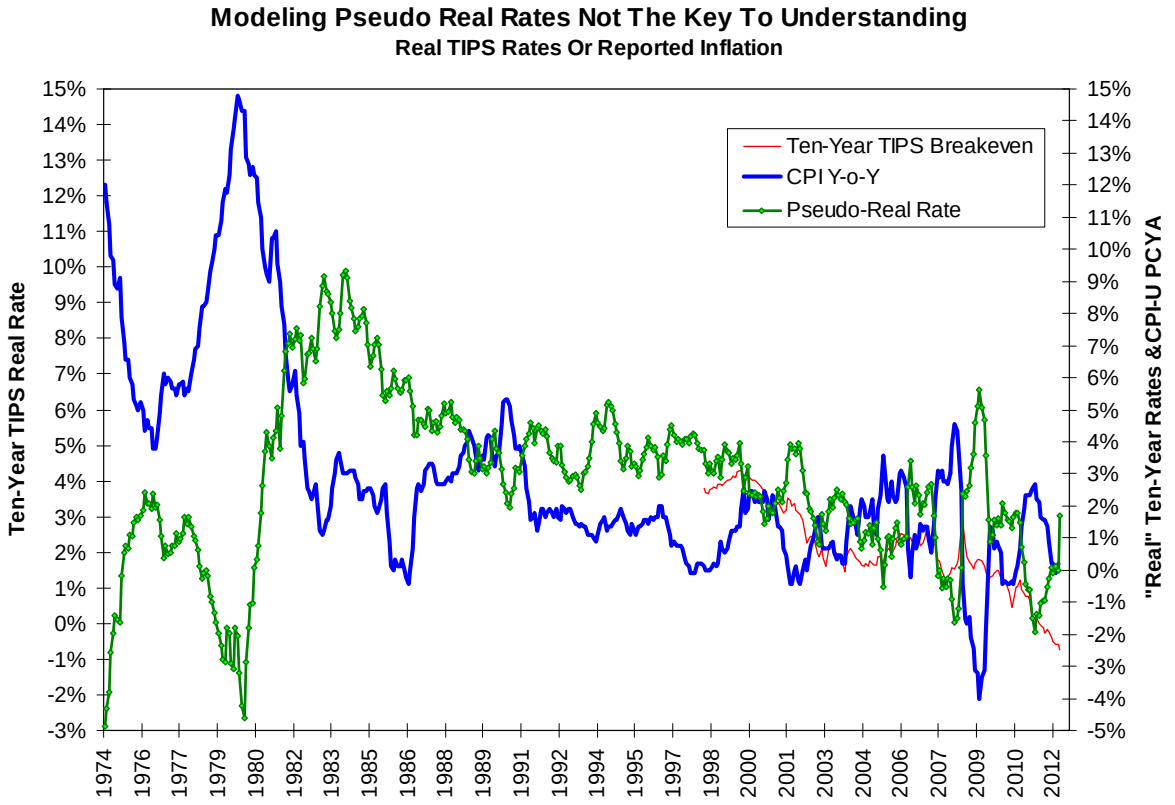
We can reach the same conclusion by comparing the trade-weighted dollar index to the CPI and the pseudo-real rate; once again wild swings in a purported independent variable have no effect on either rate measure.

Trade-Weighted Dollar Not An Obvious Contributor To
Pseudo-Real Rates Or Reported Inflation



Now let's ask the most telling question of them all: Is the ten-year TIPS breakeven rate, which is a forward-looking measure, correlated very well to either pseudo-real rates of to backward-looking year-over-year changes in the CPI?

The answer appears to be a strong "No" since the January 1997 inception of TIPS. This tells us modeling expected inflation, measuring reported inflation and trying to derive Fisher's Law backwards is an ill-conceived exercise doomed to fail.



What should you do as a trader or as investor when confronted with a product whose performance is based on an ability to insure against inflation as reported via TIPS? The answer is given by the Prospectus: Past performance does not predict future results.

TIPS are incapable of providing direct insurance against expected inflation, only against future realized changes in the CPI-U greater than current expectations; anyone making a claim otherwise is telling you sellers of inflation insurance are underpricing their product systematically. No market could survive with the sellers acting so foolishly; they can survive by a continuously replenished stream of buyers acting foolishly and over-paying for insurance claims. The trick for you is to avoid being in this latter category and to remember if something can be modeled on a related but dissimilar concept in the past, that is no guarantee at all it will work in the future.