

FRBSF ECONOMIC LETTER

Number 2005-08, April 29, 2005

The Long-term Interest Rate Conundrum: Not Unraveled Yet?

In congressional testimony on February 16, 2005, Federal Reserve Chairman Greenspan characterized the recent behavior of long-term interest rates as a “conundrum.” Typically, long-term rates tend to rise as monetary policymakers raise short-term rates. But not in the current episode. Despite steady monetary tightening beginning in the middle of 2004, the yields on long-term U.S. Treasury securities actually have declined since then by about 50 basis points. As a consequence, the current level of long-term interest rates seems to be well below what one would expect on the basis of economic fundamentals.

A number of explanations of the “conundrum” have surfaced, and this *Economic Letter* will focus on one in particular, namely, the tremendous increases in purchases of U.S. Treasury securities by foreign central banks (especially by those in East Asian countries). Some estimate that during the past two years, such purchases have depressed the 10-year Treasury yield by as much as 40 basis points.

This argument, if true, implies risks to long-term interest rates and to the U.S. economy going forward. If foreign governments were to decide to “diversify” their foreign currency reserves (Koizumi 2005) and reduce their demand for U.S. Treasury securities, the yields on these and other long-term instruments, such as mortgages, would move up. This could have a negative impact on the economic outlook. In this *Economic Letter*, I examine this argument and find that it fails to account for a number of significant issues surrounding long-term rates and foreign official purchases of long-term U.S. Treasury securities. I then show that, given the structure of the market for U.S. Treasuries, a sharp hike in rates would be unlikely even if foreign governments were to reduce their purchases substantially.

What is wrong with a “simple” analysis of the conundrum

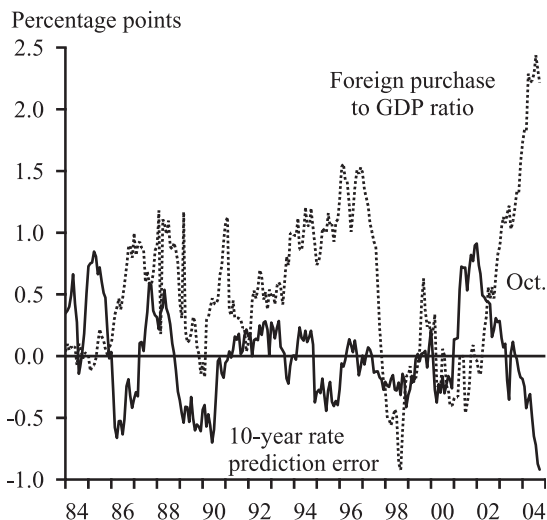
Long-term interest rates are closely linked to long-run inflation expectations and long-term real interest rates, which, in principle, are determined by macroeconomic fundamentals, such as long-run productivity growth and possibly fiscal deficits. Therefore, by regressing long-term interest rates on inflation expectations and macroeconomic fundamentals, one

can assess how far today’s long-term yields deviate from what the fundamentals suggest they would otherwise be.

The results from one such regression are shown in Figure 1. The solid line shows the difference between the actual 10-year Treasury rate and the rate predicted by this regression, that is, the prediction error. The significantly negative error in the most recent period points up the conundrum—the model predicts long-term interest rates that are noticeably higher than actual (other models also lead to qualitatively similar results). The dotted line in the figure plots net foreign official purchases of U.S. Treasuries (summed over 12 months) as a percentage of the U.S. GDP. A glance at just the current episode shows that the significantly negative prediction error for the 10-year rate coincides with a very rapid increase in foreign official purchases of U.S. Treasuries since 2002. Indeed, some analysts include foreign purchases in the regression and find results implying that the \$235 billion foreign official purchases of U.S. Treasuries in 2004 lowered the 10-year yield by about 40 basis points.

However, Figure 1 also shows that these two series do *not* always move in the opposite direction. Indeed, in most of 1980s and 1990s, they appeared to move

Figure 1
Regression results for the 10-year rate and foreign purchases



in the *same* direction. For instance, when net foreign purchases *declined* from about 1% of U.S. GDP in July 1988 to -0.14% in December 1989, the 10-year Treasury yield actually *dropped* by 120 basis points, about 90 basis points of which was unjustified by the macro fundamentals. Another striking example happened during the period from 1993 to 1996, when foreign purchases surged (from 0.5% to 1.5% of U.S. GDP), but the 10-year yield did not decline substantially. Indeed, the correlation between our measures of the 10-year rate prediction errors and the foreign purchases is 0.3 between 1987 and 2000, in contrast to the negative correlation since 2002. This clearly indicates an *unstable* relationship between them.

Moreover, the observations during the 1980s and 1990s also indicate an important but often overlooked econometric problem embedded in running simple long-rate regressions: causality can go either way. In other words, long-term yields may respond to foreign purchases, but foreign purchases also may respond to long-rate movements; for example, when long-term yields rise and long-term Treasuries become more attractive, foreign central banks may be more willing to purchase them. To evaluate the impact of foreign purchases on long-term yields, then, one needs a more sophisticated model than the simple (yet popular) single-equation regression model.

An alternative approach

Rather than running a regression, one can analyze the structure of the market for U.S. Treasury securities to help evaluate whether foreign official purchases might have a significant and persistent influence on it.

The hypothesis that foreign official purchases hold down yields on long-term U.S. Treasuries relies on two premises: (1) foreign official purchases (and holdings) of U.S. Treasuries must be predominantly concentrated in securities with long-term maturities (10-years and longer), so that a reduction in foreign official holdings would translate into a similar reduction in demand for long-term Treasuries; and (2) foreign official demand must account for a substantial part of the overall demand for long-term Treasuries. In addition, both premises assume that the long-term Treasury market is heavily segmented from the shorter-term Treasury market and from other financial markets such as the corporate bond market; only in that case will reduced demand from foreign central banks cause long-term rates to rise abruptly, because it creates a vacuum that *cannot* be easily filled by other investors in any of those markets.

As for the first premise, foreign governments' holdings are *not* concentrated in long-term Treasuries. As Chairman Greenspan (2004) pointed out, "... (foreign) central bank reserves are heavily concentrated in

short-term maturities." For instance, as of December 2004, foreign official institutions held \$1.173 trillion in U.S. Treasury securities, with \$245 billion, or 21%, in the form of Treasury bills whose maturities are less than one year. Moreover, the Treasury notes and bonds they bought in the past gradually mature (for instance, the 10-year Treasury bought nine years ago will mature next year), so the actual maturity of their Treasury portfolio is even shorter. As Figure 2 shows, as of June 2003, over half of foreign central banks' holdings of Treasuries would mature in two years or less, and only 27% had an actual maturity of five years or longer by then. In short, foreign central banks' U.S. Treasury portfolios are quite diversified and are not concentrated in long-term maturities.

To illustrate what this information about the structure of foreign central banks' portfolios of U.S. Treasuries implies, consider what happens when foreign central banks want to reduce their holdings of U.S. Treasuries by \$100 billion while keeping the same maturity structure as in Figure 2. They will not choose to reduce their holdings of *long-term* U.S. Treasuries by \$100 billion, because doing so will substantially shorten the average maturity of their Treasury portfolios. Rather, they will need to reduce their holdings of *both* long-term and short-term Treasuries proportionally. Thus the reduction in demand for long-term Treasuries will be much less than \$100 billion.

The second premise also is questionable. It is true that foreign official purchases have accounted for a substantial part of the newly issued Treasuries in the past two years. However, foreign central banks are not the only players on the field. Foreign *individual* investors are at least as active and important as their central banks (Figure 3). Thus, even if the foreign

Figure 2
Maturity structure of foreign official holdings of U.S. Treasury securities in June 2003

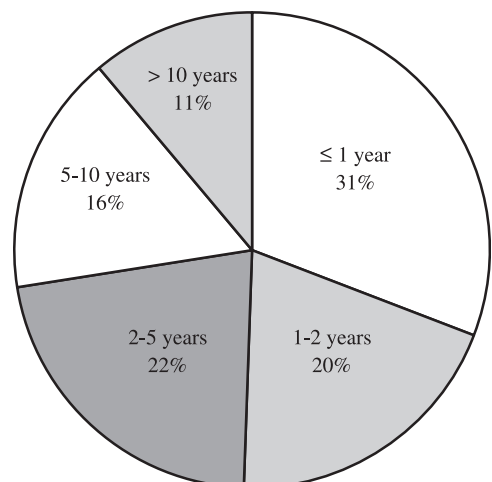
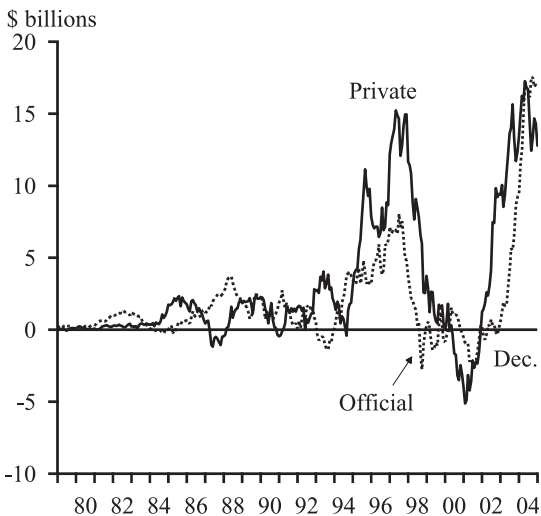


Figure 3
Net foreign purchases of U.S. Treasury securities

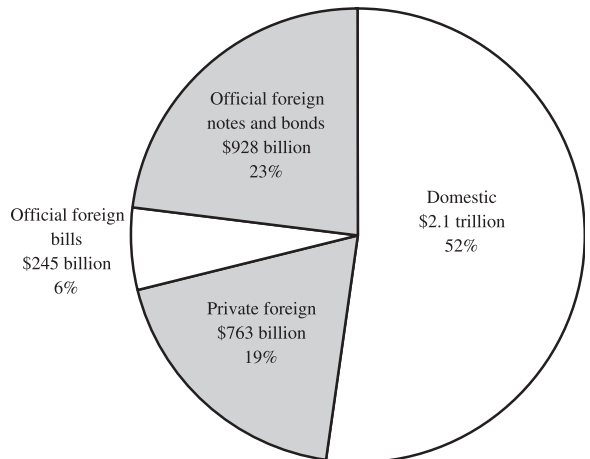


Note: Reported monthly; 12-month moving average.

official purchases of long-term Treasuries decline, the vacuum could well be filled by foreign individual investors in the first place. Moreover, even though U.S. investors' relative holdings have been declining, they are still the biggest holders of U.S. Treasuries (Figure 4). They would also be likely to step in once foreign central banks were to retreat.

Finally, we examine the assumption that the long-term Treasury market is heavily segmented from the short-term Treasury market and other financial markets, so that even when long-term Treasury prices decline and become relatively more attractive, investors from other markets will not be able to jump in and push them back up. There are reasons to question this assumption, too. The U.S. Treasury market is highly developed and very liquid, and numerous investors trade both short- and long-term securities every day for hedging and other purposes. Even if there is some degree of segmentation that isolates the long-term Treasuries, how much price discrepancy it can generate is still questionable. The short-term Treasury market is, in fact, much larger than the long-term Treasury market, and the corporate bond and equity markets are larger yet. Therefore foreign official purchases account for only a small fraction of the overall credit flow in the U.S., and any substantial misalignments in the asset prices caused by foreign

Figure 4
Total Treasury securities outstanding as of December 2004



Maturity definitions: bills ≤ 1 year, notes ≤ 10 years; bonds > 10 years.

official purchases will be quickly corrected by other kinds of investors. Notice that a 40-basis-point discrepancy in 10-year Treasury yield implies a 4% bias in the bond price (assuming zero coupons), and foreign official purchases do not appear to be large enough to induce such a bias and sustain it.

To sum up, this analysis suggests that there is more to solving the conundrum of the recent low long-term interest rates than pointing to the behavior of official foreign purchases of U.S. Treasury securities. Indeed, there is little solid evidence suggesting a persistent relationship between the two. Furthermore, the structure of the Treasury market does not support the projection of a rapid rate hike in the event that foreign central banks retreat from the U.S. Treasury market.

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Index to Recent Issues of *FRBSF Economic Letter*

DATE	NUMBER	TITLE	AUTHOR
9/17	04-26	Supervising Interest Rate Risk Management	Lopez
10/1	04-27	House Prices and Fundamental Value	Krainer/Wei
10/8	04-28	Gauging the Market's Expectations about Monetary Policy	Kwan
10/22	04-29	Consumer Sentiment and the Media	Doms
10/29	04-30	Inflation-Induced Valuation Errors in the Stock Market	Lansing
11/5	04-31	Reflections on China's Economy	Yellen
11/12	04-32	Does Locale Affect R&D Productivity? The Case of Pharmaceuticals	Kyle
11/19	04-33	Easing Out of the Bank of Japan's Monetary Easing Policy	Spiegel
11/26	04-34	Outsourcing by Financial Services Firms: The Supervisory Response	Lopez
12/3	04-35	October 6, 1979	Walsh
12/10	04-36	What Determines the Credit Spread?	Krainer
12/17	04-37	Productivity Growth and the Retail Sector	Doms
12/24	04-38	After the Asian Financial Crisis: Can Rapid Credit Expansion ...	Valderrama
1/7	05-01	To Float or Not to Float? Exchange Rate Regimes and Shocks	Cavallo
1/21	05-02	Help-Wanted Advertising and Job Vacancies	Valletta
2/4	05-03	Emerging Markets and Macroeconomic Volatility: Conference Summary	Glick/Valderrama
2/18	05-04	Productivity and Inflation	Yellen
3/11	05-05	Gains in U.S. Productivity: Stopgap Measures or Lasting Change?	Daly/Furlong
4/8	05-06	Financial liberalization: How well has it worked for developing countries?	Aizenman
4/15	05-07	A Tale of Two Monetary Policies: Korea and Japan	Cargill

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