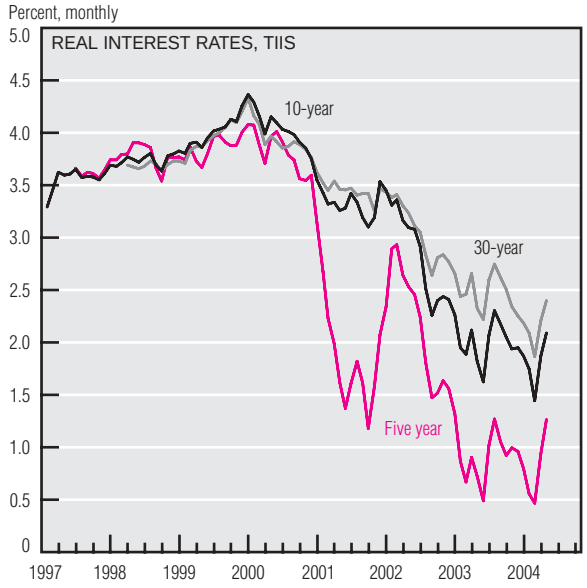
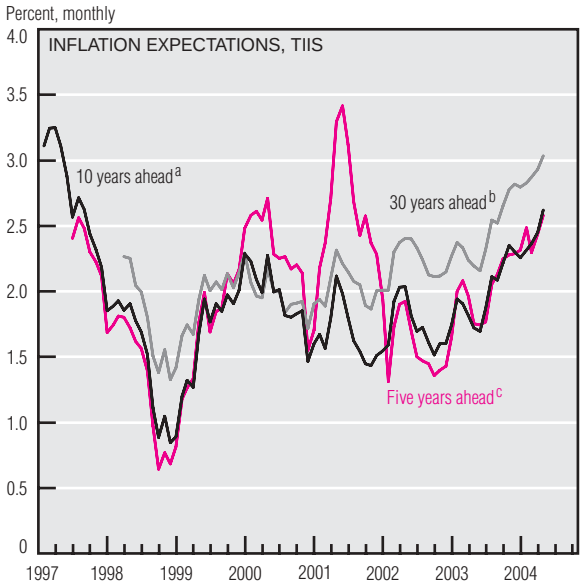
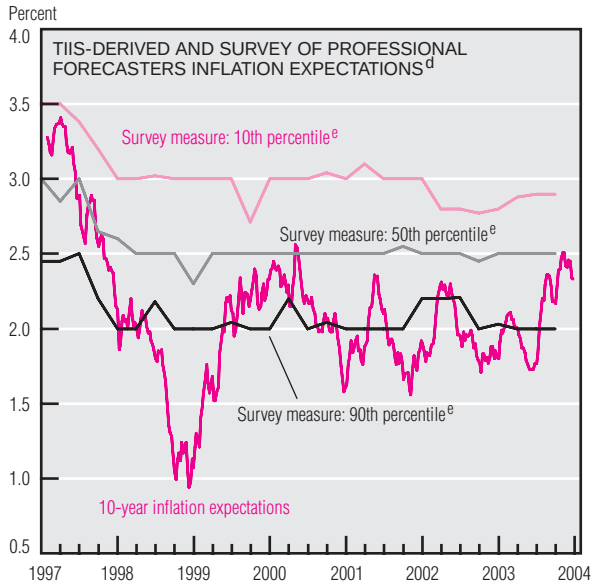
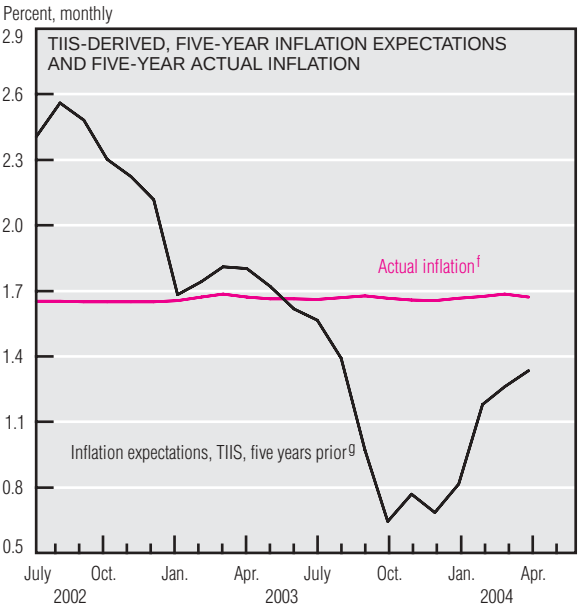
Treasury Inflation-Indexed Securities









a. Yield spread: 10-year Treasury minus 10-year TIIS.
b. Yield spread: 30-year Treasury minus 30-year TIIS.
c. Yield spread: five-year Treasury minus five-year TIIS.
d. Brian Sack and Robert Elsasser, "Treasury Inflation-Indexed Debt: A Review of the U.S. Experience," *Federal Reserve Bank of New York Economic Policy Review*, 2004: 47–63.
e. The survey measure is the expected 10-year consumer price index inflation.
f. Annualized five-year CPI inflation.
g. Plotted observations represent inflation expectations from five years prior.
SOURCES: Federal Reserve Bank of Philadelphia, *Survey of Professional Forecasters*; and Bloomberg Financial Information Services.

Today's monetary policy decisions focus on future inflation prospects. Treasury inflation-indexed securities (TIIS) give us market measures of real interest rates with maturities of five, 10, and 30 years. Subtracting these rates from nominal Treasury bills of the same maturity provides market-based measures of expected inflation over that period. These measures suggest that inflation is expected to drift up over time, averaging nearly 2.6 percent over the next five and 10 years. What may be more troubling is that this measure has increased 0.9 percentage point during the past year.

But how accurate are the inflation expectations derived from TIIS data? On average, 10-year inflation expectations derived from TIIS have been more than 50 basis points (bp) lower than those predicted by the *Survey of Professional Forecasters*. However, over the previous five years, actual inflation has averaged only 7 bp higher than forecasts based on TIIS data. Should we expect inflation derived from five- and 10-year TIIS data to be underestimated? Even if it is, is this bias constant? If the bias is constant, then movements in expected inflation will still reflect movements in actual inflation.

One reason that expected inflation derived from TIIS data might be underestimated is that the TIIS market is less liquid than other government bonds; consequently, bid–ask spreads for TIIS tend to be larger than for the others. Real TIIS returns contain a premium resulting from these transaction

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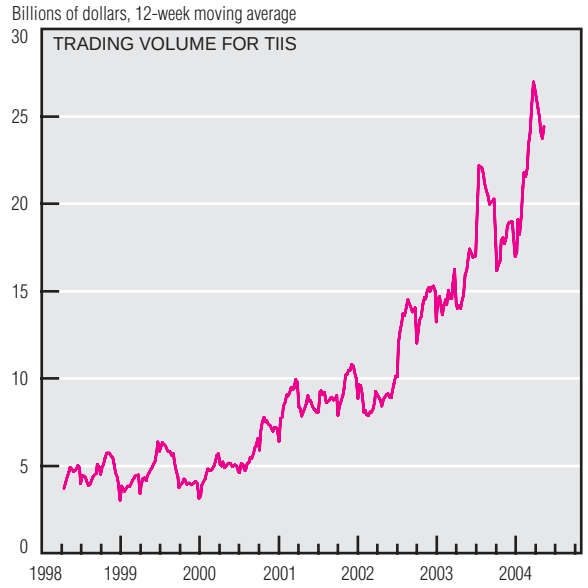
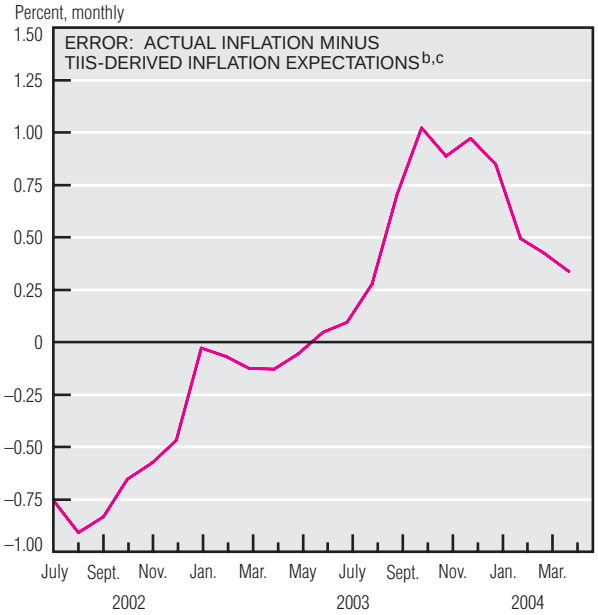
Treasury Inflation-Indexed Securities *(cont.)*



Typical Bid—Ask Spreads for Treasury Securities (1/32nds of price)[a]

Type	Maturities of five years or less	Maturities of five to 10 years	Maturities beyond 10 years
On-the-run nominal	1/4 to 1/2	1/2	—
Off-the-run nominal	1/2 to 1	1/2 to 1	2
Inflation-indexed	1 to 2	2	4 to 16



Predictability of the Sign of Next Month's Error

Current month's error size	Next month's error sign: Positive	Next month's error sign: Negative
Greater than 0.5	5	0
0 to 0.5	5	0
–0.5 to 0	1	5
Less than –0.5	0	5

a. Brian Sack and Robert Elsasser, "Treasury Inflation-Indexed Debt: A Review of the U.S. Experience," *Federal Reserve Bank of New York Economic Policy Review*, 2004: 47–63.
b. Annualized five-year CPI inflation.
c. Plotted observations represent inflation expectations from five years prior.
SOURCES: Board of Governors of the Federal Reserve System, "Selected Interest Rates," *Federal Reserve Statistical Releases*, H.15; Chicago Board of Trade; and Bloomberg Financial Information Services.

costs, so expected inflation calculated from TIIS will be underestimated. Transaction costs, however, can only account for around 6 bp of the 50 bp bias found in the 10-year TIIS data.

Another reason for a bias is that inflation variability makes the real return from holding non-indexed government bonds uncertain. By construction, the real return from holding a TIIS contract is known with certainty. If people dislike the uncertainty associated with holding non-indexed government debt, then these bonds will have a larger real return. This, however, would predict that expected inflation from TIIS data would overstate true expected inflation. The bias in inflation expectation derived from 10-year TIIS measures suggests that investors actually prefer this uncertainty.

Why might investors prefer the uncertainty associated with holding non-indexed government debt? Uncertainty concerns investors to the extent it affects the variability of their consumption. If realized real returns are negatively associated with consumption, then these risky securities may actually reduce consumption variability. In fact, the Phillips curve suggests that inflation and consumption may be positively correlated; thus real returns and consumption may be negatively correlated.

If these biases are constant over time, then movements in expected inflation derived from TIIS will still reflect movements in actual inflation expectations. But the data suggest that, at least for the five-year TIIS, these premiums might not be constant. Today's error contains information predicting tomorrow's bias; but 20 out of 21 times, the sign of today's error predicted the sign of tomorrow's.