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Inflation or disinflation? Evidence from maturing US Treasury Inflation-Protected Securities

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Abstract

The prices of maturing US Treasury Inflation-Protected Securities (TIPS) during the last 6-month coupon period reveal whether the market is anticipating an inflationary or disinflationary regime. Against the benchmark of the Treasury bill yield to adjust for the time value of money, maturing TIPS prices represent a sequence of updated forecasts of the consumer price index (CPI) to be used to determine the final single cash flow on the maturity date. Under the assumption of risk-neutrality, the sequence of forecasts is modelled as a martingale. Generalized method of moments and regression analysis are used to test two martingale properties of the CPI forecasts: (1) the unconditional mean of daily changes in the CPI forecasts is zero and (2) serial correlations of the daily changes in the CPI forecasts are zero. The test statistics reject both martingale properties of the CPI forecasts implied in maturing TIPS prices. A persistent upward

movement of the CPI forecasts toward the actual target CPI during the first quarter of 2002 implies the market was then anticipating a disinflationary regime. One policy implication is that time series behaviour of CPI forecasts can provide timely feedback to the Federal Reserve Open Market Committee.

Acknowledgements

Notes

[1] Wall Street Journal, 13 August 2002, p. D1, column 5.

[2] In the foreign exchange market, assuming rationality and risk-neutrality of market participants, forward rates should reflect all available information and expectations of future spot rates. Therefore, the forward rate should be an unbiased predictor of the future spot rate. This has the same meaning as 'the expected rate of return to speculation in the forward exchange market will be zero,' reported in Hansen and Hodrick (1980).

[3] Neftci (2000) refers to successive forecasts based on a filtration of information set as 'the simplest martingale.'

[4] In fact, the CPI forecasted by the TIPS and the actual target CPI did converge on 15 April 2002.

[5] Articles include the cover story of Business Week, 18 March 2002, entitled, 'Would a Pinch of Inflation Help?'; 'What Deflation?' in Forbes, 24 December 2001; 'Though it's a Real Long Shot, a New Era of Falling Prices in American Could be at Hand' in Sound

Money, 4 January 2002; 'Deflation is the Real Danger' in Business Week, 11 February 2002.

[6] As a practical matter, so that the BLS has enough time to compile price data, there is a 3-month lag in indexing CPI.

[7] This issue is a 5-year TIPS note with a coupon rate of 3–5/8%, auctioned on 9 July 1997 and reopened on 8 October 1997. A 10-year TIPS note with a coupon rate of 3–3/8%, auctioned on 29 January 1997 and reopened on 8 April 1997, will be the next to mature on 15 January 2007.

[8] Amihud and Mendelson ([1991](#)) use the same linear approximation approach to derive the price of a hypothetical Treasury security with a maturity date lying between two actual Treasury bill maturity dates.

[9] These two statistical properties of a martingale difference sequence are derived in Hayashi ([2000](#)), p. 104.

[10] Hayashi ([2000](#)) observes that expression ([17](#)) should be asymptotically chi-squared distributed.

[11] A common measurement of liquidity is the bid–ask spread. During the entire study period, the bid–ask spread for TIPS remains virtually the same. The stable bid–ask spread does not support the argument that the large and gradually decreasing difference between the forecast and actual CPI in period I is due to a time-varying liquidity premium.

[12] The contract settlement date for an issue of inflation futures is set on the CPI announcement date. The last trading date is two business days before the settlement date. The settlement price is based on the previous month's CPI. For example, the settlement price of the July 1986 inflation futures contract is based on the June 1986 CPI, announced on 23 July 1986 (Wednesday). The last trading date would be 21 July 1986 (Monday), two business days before 23 July 1986.

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