

TIPS: Treasury Inflation Protected Securities

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TIPS issued by the U.S. Treasury have the nice property that the return is protected against changes in the rate of inflation as measured by the Consumer Price Index. Here is a simple numerical example (see qualifications at the end):

Definitions: F = Face value at time zero = \$1000
 π = Annual inflation = 4% = .04
 i = Annual coupon rate = .02

(1) Time	(2) Rate of Inflation	(3) Adjusted Par Value = Previous Period's F times $(1 + \pi)$	(4) Coupon Payment = $i \times$ Adjusted Par Value = .02 x Column 3
0	0	\$1000	
1	.04	\$1040	\$20.80
2	.04	\$1081.60	\$21.632

Real Rate of Return per Annum

$$R = \text{Return per annum} = \frac{p' - p + c}{p} \quad \text{Real R} = \frac{1 + R}{1 + \pi} - 1$$

	<u>Return per Annum</u>	<u>Real R</u>
Year 1	$\frac{1040 - 1000 + 20.80}{1000} = .0608$	$\frac{1 + .0608}{1 + .04} - 1 = .02$
Year 2	$\frac{1081.60 - 1040 + 21.632}{1040} = .0608$	$\frac{1.0608}{1.04} - 1 = .02$

Therefore, TIPS provide a fixed real rate of return assuming: (1) no taxes; (2) ignoring the reinvestment of coupons; and (3) assuming no change in the real rate of interest.