

$$CPI_M = CPI_{M-1} \times \left[ \frac{CPI_{M-1}}{CPI_{M-12}} \right]^{1/12}$$

(b) Generalizing for the last reported CPI issued N months prior to month M:

$$CPI_M = CPI_{M-N} \times \left[ \frac{CPI_{M-N}}{CPI_{M-N-12}} \right]^{N/12}$$

(c) If it is necessary to use these formulas to calculate an index number, we will use that number for all subsequent calculations that rely on the month's index number. We will not replace it with the actual CPI when it is reported, except for use in the above formulas. If it becomes necessary to use the above formulas to derive an index number, we will use the last CPI that has been reported to calculate CPI numbers for months for which the CPI has not been reported timely.

5. *Computation of Interest for a Regular Half-Year Payment Period.* Interest on marketable Treasury inflation-protected securities is payable on a semiannual basis. The regular interest payment period is a full half-year or six calendar months. Examples of half-year periods are January 15 to July 15, and April 15 to October 15. An interest payment will be a fixed percentage of the value of the inflation-adjusted principal, in current dollars, for the date on which it is paid. We will calculate interest payments by multiplying one-half of the specified annual interest rate for the inflation-protected securities by the inflation-adjusted principal for the interest payment date. Specifically, we compute a semiannual interest payment on the basis of one-half of one year's interest regardless of the actual number of days in the half-year.

#### Example

A 10-year inflation-protected note paying 3¾% interest was issued on January 15, 1999, with the first interest payment on July 15, 1999. The Ref CPI on January 15, 1999 (Ref CPI<sub>IssueDate</sub>) was 164, and the Ref CPI on July 15, 1999 (Ref CPI<sub>Date</sub>) was 166.2. For a par amount of \$100,000, the inflation-adjusted principal on July 15, 1999, was  $(166.2/164) \times \$100,000$ , or \$101,341. This amount was multiplied by .03875/2, or .019375, resulting in a payment of \$1,963.48.

#### C. Accrued Interest

1. You will have to pay accrued interest on a Treasury bond or note when interest accrues prior to the issue date of the security. Because you receive a full interest payment despite having held the security for only a portion of the interest payment period, you must compensate us through the payment of accrued interest at settlement.

2. For a Treasury fixed-principal security, if accrued interest covers a fractional portion of a full half-year period, the number of days in the full half-year period and the stated interest rate will determine the daily interest decimal to use in computing the accrued interest. We multiply the decimal by the number of days for which interest has accrued.

3. If a reopened bond or note has a long first interest payment period (a "long coupon"), and the dated date for the reopened issue is less than six full months before the first interest payment, the accrued interest will fall into two separate half-year periods. A separate daily interest decimal must be multiplied by the respective number of days in each half-year period during which interest has accrued.

4. We round all accrued interest computations to five decimal places for a \$1,000 par amount, using normal rounding procedures. We calculate accrued interest for a par amount of securities greater than \$1,000 by applying the appropriate multiple to accrued interest payable for \$1,000 par amount, rounded to five decimal places.

5. For an inflation-protected security, we calculate accrued interest as shown in section III, paragraphs A and B of this appendix.

*Examples. (1) Treasury Fixed-Principal Securities—(i) Involving One Half-Year:* A note paying interest at a rate of 6¾%, originally issued on May 15, 2000, as a 5-year note with a first interest payment date of November 15, 2000, was reopened as a 4-year 9-month note on August 15, 2000. Interest had accrued for 92 days, from May 15 to August 15. The regular interest period from May 15 to November 15, 2000, covered 184 days. Accordingly, the daily interest decimal,  $\$0.183423913$ , multiplied by 92, resulted in accrued interest payable of  $\$16.874999996$ , or  $\$16.87500$ , for each \$1,000 note purchased. If the notes have a par amount of \$150,000, then 150 is multiplied by  $\$16.87500$ , resulting in an amount payable of \$2,531.25.

(2) *Involving Two Half-Years:*

A 10¾% bond, originally issued on July 2, 1985, as a 20-year 1-month bond, with a first interest payment date of February 15, 1986, was reopened as a 19-year 10-month bond on November 4, 1985. Interest had accrued for

44 days, from July 2 to August 15, 1985, during a 181-day half-year (February 15 to August 15); and for 81 days, from August 15 to November 4, during a 184-day half-year (August 15, 1985, to February 15, 1986). Accordingly,  $\$0.296961326$  was multiplied by 44, and  $\$0.292119565$  was multiplied by 81, resulting in products of  $\$13.066298344$  and  $\$23.661684765$  which, added together, resulted in accrued interest payable of  $\$36.727983109$ , or  $\$36.72798$ , for each \$1,000 bond purchased. If the bonds have a par amount of \$11,000, then 11 is multiplied by  $\$36.72798$ , resulting in an amount payable of  $\$404.00778$  (\$404.01).

## II. Formulas for Conversion of Fixed-Principal Security Yields to Equivalent Prices

### Definitions

P = price per 100 (dollars), rounded to three places, using normal rounding procedures

C = the regular annual interest per \$100, payable semiannually, e.g., 6.125 (the decimal equivalent of a 6¼% interest rate)

i = nominal annual rate of return or yield to maturity, based on semiannual interest payments and expressed in decimals, e.g., .0719

n = number of full semiannual periods from the issue date to maturity, except that, if the issue date is a coupon frequency date, n will be one less than the number of full semiannual periods remaining to maturity. Coupon frequency dates are the two semiannual dates based on the maturity date of each note or bond issue. For example, a security maturing on November 15, 2015, would have coupon frequency dates of May 15 and November 15.

r = (1) number of days from the issue date to the first interest payment (regular or short first payment period), or (2) number of days in fractional portion (or "initial short period") of long first payment period

s = (1) number of days in the full semiannual period ending on the first interest payment date (regular or short first payment period), or (2) number of days in the full semiannual period in which the fractional portion of a long first payment period falls, ending at the onset of the regular portion of the first interest payment

$v^n = 1/[1 + (i/2)]^n$  = present value of 1 due at the end of n periods