

was \$1,000,000(.03875/2)(100/164.00000), or \$11,814.02 (no intermediate rounding). For an interest component that matured on January 15, 2000, the payment amount was \$11,814.02 (168.24516/100), or \$19,876.52 (no intermediate rounding).

V. Computation of Purchase Price, Discount Rate, and Investment Rate (Coupon-Equivalent Yield) for Treasury Bills

A. Conversion of the discount rate to a purchase price for Treasury bills of all maturities:

Formula:

$$P = 100 (1 - dr / 360)$$

Where:

d = discount rate, in decimals

r = number of days remaining to maturity

P = price per 100 (dollars)

Example:

For a bill issued November 24, 1989, due February 22, 1990, at a discount rate of 7.61%, solve for price per 100 (P).

Definitions:

d = .0761

r = 90 (November 24, 1989 to February 22, 1990)

Resolution:

$$P = 100 (1 - dr / 360)$$

$$(1) P = 100 [1 - (.0761)(90) / 360]$$

$$(2) P = 100 (1 - .019025)$$

$$(3) P = 100 (.980975)$$

$$(4) P = 98.0975$$

$$(5) P = 98.098$$

Note: Purchase prices per \$100 are rounded to three decimal places, using normal rounding procedures.

B. *Computation of purchase prices and discount amounts based on price per \$100, for Treasury bills of all maturities:*

1. To determine the purchase price of any bill, divide the par amount by 100 and multiply the resulting quotient by the price per \$100.

Example:

To compute the purchase price of a \$10,000 13-week bill sold at a price of \$98.098 per \$100, divide the par amount (\$10,000) by

100 to obtain the multiple (100). That multiple times 98.098 results in a purchase price of \$9,809.80.

2. To determine the discount amount for any bill, subtract the purchase price from the par amount of the bill.

Example:

For a \$10,000 bill with a purchase price of \$9,809.80, the discount amount would be \$190.20, or \$10,000—\$9,809.80.

C. *Conversion of prices to discount rates for Treasury bills of all maturities:*

Formula:

$$d = \left[\frac{100 - P}{100} \times \frac{360}{r} \right]$$

Where:

P = price per 100 (dollars)

d = discount rate

r = number of days remaining to maturity

Example:

For a 26-week bill issued December 30, 1982, due June 30, 1983, with a price of \$95.930, solve for the discount rate (d).

Definitions:

P = 95.930

r = 182 (December 30, 1982, to June 30, 1983)

Resolution:

$$d = \left[\frac{100 - P}{100} \times \frac{360}{r} \right]$$

$$(1) d = \left[\frac{100 - 95.930}{100} \times \frac{360}{182} \right]$$

$$(2) d = [.0407 \times 1.978022]$$

$$(3) d = .080506$$

$$(4) d = 8.051\%$$

Note: Prior to April 18, 1983, we sold all bills in price-basis auctions, in which discount rates calculated from prices were rounded to three places, using normal rounding procedures. Since that time, we

have sold bills only on a discount rate basis. For regular Treasury bills—13-, 26-, and 52-week bills—discount rates bid were submitted with two decimals in increments of .01 percent, e.g., 5.32, until 1997, when we instituted a change to three-decimal bidding in increments of .005 percent, e.g., 5.320 or 5.325.

D. *Calculation of investment rate (coupon-equivalent yield) for Treasury bills:*

1. *For bills of not more than one half-year to maturity:*

Formula:

$$i = \left[\frac{100 - P}{P} \times \frac{y}{r} \right]$$

Where:

i = investment rate, in decimals

P = price per 100 (dollars)

r = number of days remaining to maturity

y = number of days in year following the issue date; normally 365 but, if the year following the issue date includes February 29, then y is 366.

Example:

For a cash management bill issued June 1, 1990, due June 21, 1990, with a price of \$99.559 (computed from a discount rate of 7.93%), solve for the investment rate (i).

Definitions:

P = 99.559

r = 20 (June 1, 1990, to June 21, 1990)

y = 365

Resolution:

$$i = \left[\frac{100 - P}{P} \times \frac{y}{r} \right]$$

$$(1) i = \left[\frac{100 - 99.559}{99.559} \times \frac{365}{20} \right]$$

$$(2) i = [.004430 \times 18.25]$$

$$(3) i = .080848$$

$$(4) i = 8.08\%$$

2. *For bills of more than one half-year to maturity:*