

Formulas for the calculation of the yields for Government Securities

1. Yields for Treasury Bills

Nominal yield:

$$Y_n = \frac{F - P_c}{P_c} * \frac{365}{T} * 100$$

Effective yield:

$$Y_{ef} = \left[\left(\frac{F}{P_c} \right)^{\frac{365}{T}} - 1 \right] * 100$$

where: F - face value of Treasury Bill
 P_c - purchase price of Treasury Bill
 T - term of circulation (days)

2. Yield for fixed rate Government Bonds

Government Bond effective yield depends on purchase price of the bond, on coupon amount and on the number of coupon payments per year and is determined by solving for y in the following formula:

$$P = \frac{C_1}{(1+y)^{\frac{t_1}{365}}} + \frac{C_2}{(1+y)^{\frac{t_2}{365}}} + \dots + \frac{C_n + F}{(1+y)^{\frac{t_n}{365}}}$$

where: P - purchase price of Government Bond (including accrued interest);
 C_n - amount of the coupon payment "n"; *
 F - face value of Government Bond;
 y - effective yield on Government Bond ;
 t_n - actual number of days until coupon payment "n";

* coupon amount calculation formula:

$$C = F * \frac{P}{365} * \frac{R}{100}$$

F - face value of Government Bond;
 P - coupon period (days);
 R - annual rate of coupon interest, ;