13. Here we are finding the YTM of semiannual coupon bonds for various maturity lengths. The bond price equation is:

$$P = C(\text{PVIFA}_{R\%,t}) + \$1{,}000(\text{PVIF}_{R\%,t})$$

Miller Corporation bond:

$$P_0 = \$45(\text{PVIFA}_{3.5\%,26}) + \$1{,}000(\text{PVIF}_{3.5\%,26}) = \$1{,}168.90$$
$$P_1 = \$45(\text{PVIFA}_{3.5\%,24}) + \$1{,}000(\text{PVIF}_{3.5\%,24}) = \$1{,}160.58$$
$$P_3 = \$45(\text{PVIFA}_{3.5\%,20}) + \$1{,}000(\text{PVIF}_{3.5\%,20}) = \$1{,}142.12$$
$$P_8 = \$45(\text{PVIFA}_{3.5\%,10}) + \$1{,}000(\text{PVIF}_{3.5\%,10}) = \$1{,}083.17$$
$$P_{12} = \$45(\text{PVIFA}_{3.5\%,2}) + \$1{,}000(\text{PVIF}_{3.5\%,2}) = \$1{,}019.00$$
$$P_{13} = \$1{,}000$$

Modigliani Company bond:

$$P_0 = \$35(\text{PVIFA}_{4.5\%,26}) + \$1{,}000(\text{PVIF}_{4.5\%,26}) = \$848.53$$
$$P_1 = \$35(\text{PVIFA}_{4.5\%,24}) + \$1{,}000(\text{PVIF}_{4.5\%,24}) = \$855.05$$
$$P_3 = \$35(\text{PVIFA}_{4.5\%,20}) + \$1{,}000(\text{PVIF}_{4.5\%,20}) = \$869.92$$
$$P_8 = \$35(\text{PVIFA}_{4.5\%,10}) + \$1{,}000(\text{PVIF}_{4.5\%,10}) = \$920.87$$
$$P_{12} = \$35(\text{PVIFA}_{4.5\%,2}) + \$1{,}000(\text{PVIF}_{4.5\%,2}) = \$981.27$$
$$P_{13} = \$1{,}000$$

All else held equal, the premium over par value for a premium bond declines as maturity approaches, and the discount from par value for a discount bond declines as maturity approaches. This is called "pull to par." In both cases, the largest percentage price changes occur at the shortest maturity lengths.