

$$\text{Price} = \text{Face value} \left( 1 - \frac{\text{Days}}{360} \times R_{BD} \right)$$

$$R_{BD} = \frac{\text{Par-Price}}{\text{Par}} \times \frac{360}{n}$$

$$R_{BEY} = \frac{\text{Par-Price}}{\text{Price}} \times \frac{365}{n}$$

$$R_{BEY} = \frac{365 \times R_{BD}}{360 - (R_{BD} \times n)}$$

$$\text{Equivalent taxable yield} = \frac{\text{Tax-exempt yield}}{1 - \text{Marginal tax rate}}$$

$$\text{Critical tax rate} = 1 - \frac{R_M}{R}$$

### 30/360

If D1 = 31, change to 30

If D2 = 31 and D1 = 30 or 31, change D2 to 30, otherwise leave D2 at 31

# of days

$$(Y2 - Y1) \times 360 + (M2 - M1) \times 30 + (D2 - D1)$$

### 30E/360 – Assumes a 30-day month

If D1 = 31, change to 30

If D2 = 31 Change to 30

# of days

$$(Y2 - Y1) \times 360 + (M2 - M1) \times 30 + (D2 - D1)$$

$$w = \frac{\text{\# of days between settlement and next coupon payments}}{\text{\# of days in coupon period}}$$

$$\text{Accrued interest} = C \left( \frac{\text{\# of days since last coupon}}{\text{\# of days in period}} \right)$$

$$\frac{\partial P}{P} = -D \left( \frac{\partial R}{1 + R} \right)$$

$$\frac{\partial P}{P} = -D \left( \frac{\partial R}{1 + (R/2)} \right)$$

$$D = \frac{\sum \text{DCF} \times t}{\sum \text{DCF (price)}}$$

$$D = \frac{1 + y}{y} - \frac{(1 + y) + T(c - y)}{c[(1 + y)^T - 1] + y}$$

$$\text{Duration of a perpetuity is: } \frac{1 + y}{y}$$

$$\text{Duration for a level annuity is: } \frac{1 + y}{y} - \frac{T}{(1 + y)^T - 1}$$

$$\partial P = P \times [(-D) \times \left[ \frac{\partial R}{1 + R} \right]]$$

$$\frac{\partial P}{P} = -D \left[ \frac{\Delta R}{1+R} \right] + \frac{1}{2} CX(\Delta R)^2$$

CX = convexity = Scaling factor [capital loss from one basis point rise in R + capital gain from one basis point drop in R]

$$D_M = \frac{D}{1+y}$$

$$\% \Delta \text{ in bond price} = -D_M(\Delta R)$$

$$D_E = \frac{V_- - V_+}{2V_0(\Delta R)}$$

$V_0$  = initial price

$V_-$  = price if YTM decreases by R

$V_+$  = price if YTM increases by R

$$CX_E = \frac{V_- + V_+ - 2V_0}{2V_0(\Delta R)^2}$$