

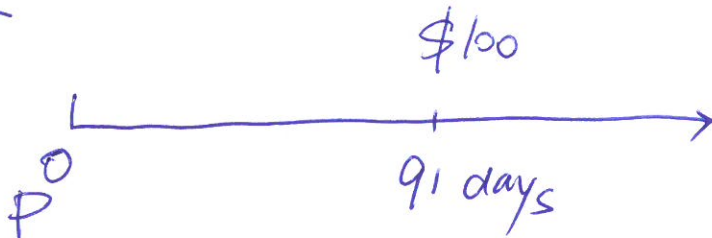
Fixed Interest Securities

- ① Bills
- Short-term, three months
 - Issuer: Government
 - No coupon payment.

- ② Bonds
- long-term, $> 1 \text{ yr}$
 - Issuer: Government / Corporations
 - With or without coupon payments.

Bills

Ex:



a simple annual rate of discount: 12%.

$$\Rightarrow 91 \text{ days rate of discount} = \frac{91}{365} \times 12\% \approx 3\%$$

$$\Rightarrow \text{discount} = \$100 \times 3\% = \$3$$

$$\Rightarrow P = \$100 - \$3 = \$97$$

Bonds

P : price

$F \times r = \text{coupon payment}$

F : ~~Face value~~; principal; nominal amount.

r : ~~effective interest rate~~ per coupon period.

C : redemption amount (Exp: $C = F$, "redeemed at Par")

n : ~~No.~~ No. of coupon payments until maturity

EN 81.

(2)

\bar{r} : annual redemption yield of a bond.



$\left\{ \begin{array}{l} \text{annual redemption yield: effective} \\ \text{nominal yield} \\ \boxed{\text{running yield}} \end{array} \right.$

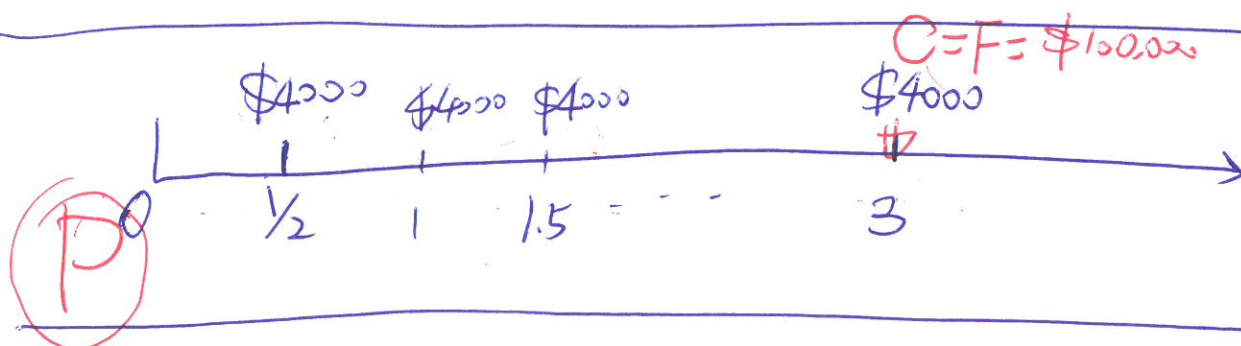
Ex: $\boxed{8\%}$ $\boxed{3\text{-yr}}$ bond with $\boxed{\text{par} = \$100,000}$
 has coupons paid $\boxed{\text{half-yearly}}$.
 \downarrow
coupon rate $\Rightarrow r = \frac{8\%}{2} = 4\%$

$$n = 3 \times 2 = 6$$

$$F = \$100,000$$

$$Fr = \$100,000 \times \frac{8\%}{2} = \$4000 \quad (\text{coupon payment})$$

$\boxed{\text{redeemed at par}} \Rightarrow C = \bar{F}$



uncertainties: reinvestment

government bond

Corporate bond

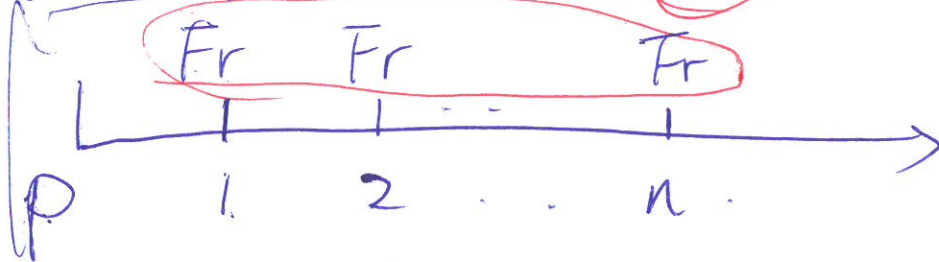
default risk

liquidity

③

⇒ Investors require a greater yield on corporate bonds than on corresponding government bonds.

Bond Price



nominal yield

$\bar{r}^{(2)}$

$$\Rightarrow P = Fr \cdot a_{\overline{n}|j} + C \cdot v_j^n, \quad j = \frac{\bar{r}^{(2)}}{2}$$

$$\Rightarrow P = 2Fr \times a_{\overline{n/2}|\bar{i}}^{(2)} + C \cdot v_{\bar{i}}^{n/2}, \quad \bar{i} = \left(1 + \frac{\bar{r}^{(2)}}{2}\right)^2 - 1$$

Ex: