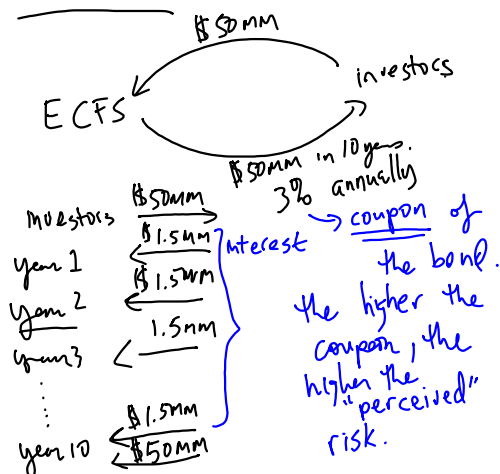


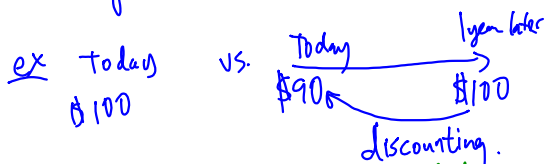
Bonds



in total investors get \$65MM. net the get \$15MM.

you would rather get the money tomorrow instead of 10 years from now.
"Time is money"

The way we account for this is to find the present value of future cash flow.



this \$10 reflects the passage: "lost interest" from a savings account.
risk of not getting money.

\$100 1 year now
I will value this by thinking
\$X invested for a year very safely 2%
will get me \$100.

$$X \cdot (1.02) = 100$$

$$X = \frac{100}{1.02} \approx 98.04$$

the present value of \$100 received a year from now.

discount factor

ex GE Bond \$100 paying 10% annually.
for 3 years.

Year 1 $\xleftarrow{\$10}$ GE
Year 2 $\xleftarrow{\$10}$ GE
Year 3 $\xleftarrow{\$10}$ GE
 $\xleftarrow{\$100}$ GE

assume risk free rate is 2%.

$$\frac{\$10}{1.02} + \frac{\$10}{(1.02)^2} + \frac{\$110}{1.02^3} = \text{PV of cash flows.}$$

$$\frac{\$10}{1.02} + \frac{10}{1.02^2} + \frac{10}{1.02^3} + \frac{100}{1.02^3} = \text{PV}$$

ex you purchase 10,000 of GM
they are paying 5% coupon
for 5 years.
find the PV of your income cash

$$\text{PV} = \frac{500}{1.02} + \frac{500}{1.02^2} + \frac{500}{1.02^3} + \frac{500}{1.02^4} + \frac{500}{1.02^5} + \frac{10,000}{1.02^5}$$

$$\sum_{i=1}^5 \frac{500}{1.02} \left(\frac{1}{1.02}\right)^{i-1} = \frac{500}{1.02} \left(1 - \left(\frac{1}{1.02}\right)^5\right) + \frac{10,000}{1.02^5}$$