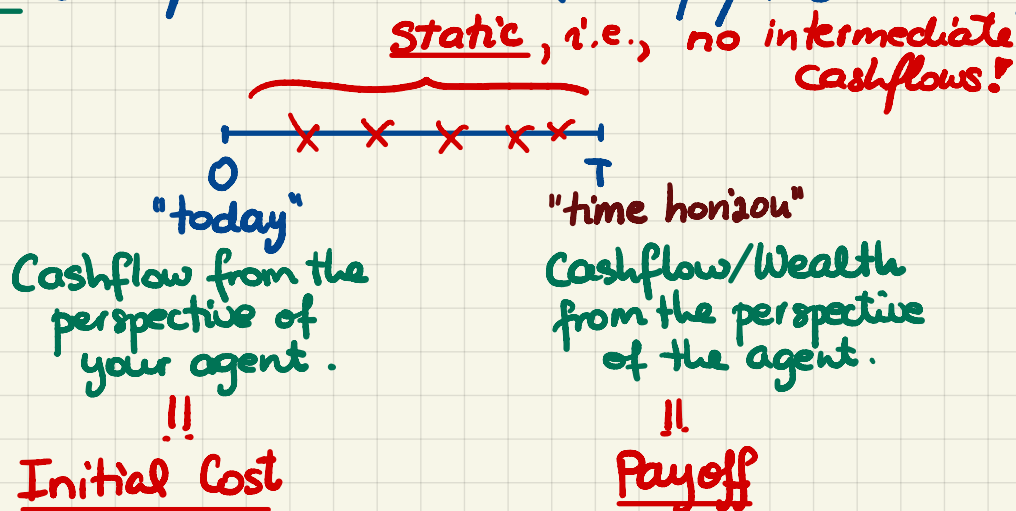M339D: September 6th, 2023.

Static Portfolios.

Step#1. Decide who your protagonist is!
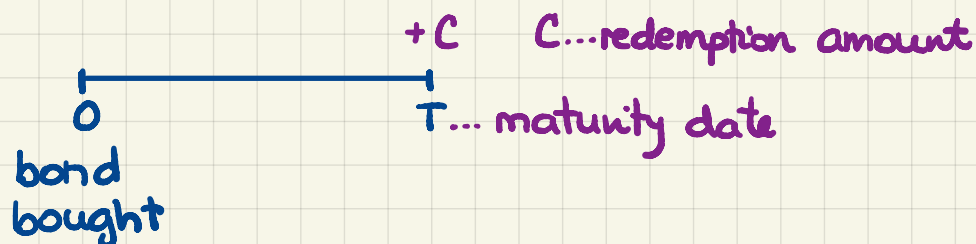
Step#2. Set up a time line ("on paper" or mentally)!

Static, i.e., no intermediate cashflows!

"today"

Cashflow from the perspective of your agent.

!!

Initial Cost

"time horizon"

Cashflow/Wealth from the perspective of the agent.

!!

Payoff

$$\text{Profit} := \text{Payoff} - FV_{0,T}(\text{Initial Cost})$$

$\begin{cases} \text{If} & \text{Profit} > 0, \text{ we call it a } gain. \\ \text{If} & \text{Profit} < 0, \text{ we call it a } loss. \\ \text{If} & \text{Profit} = 0, \text{ we say that we } break\ even. \end{cases}$

Example. [Investing in a zero-coupon bond]

+C   C...redemption amount

0   T... maturity date

bond bought

r... continuously compounded, risk-free interest rate

Initial cost: Ce^{-rT}

Payoff: C