Static Portfolios.

Step #1. Decide who your protagonist is!

Step #2. Set up the time line ("on paper" or mentally)!

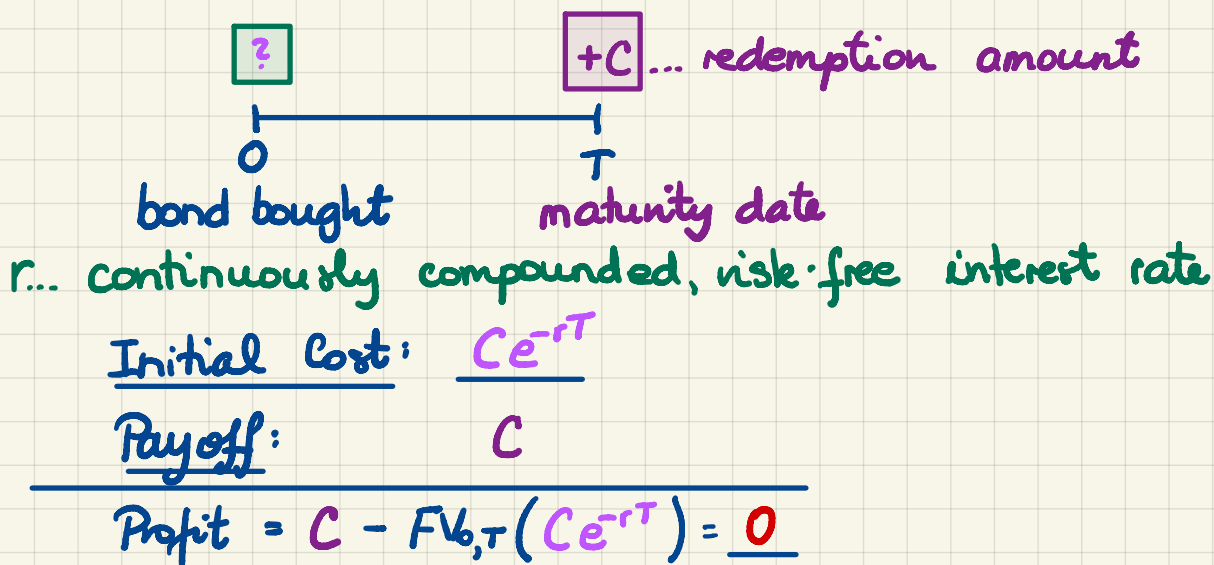static, i.e., no intermediate cashflows

"today"
Cashflow from
the perspective
of our agent.

"time horizon"
Cashflow/Wealth from
the perspective
of our agent.

Initial Cost

Payoff

$$\text{Profit} := \text{Payoff} - FV_{0,T}(\text{Initial Cost})$$
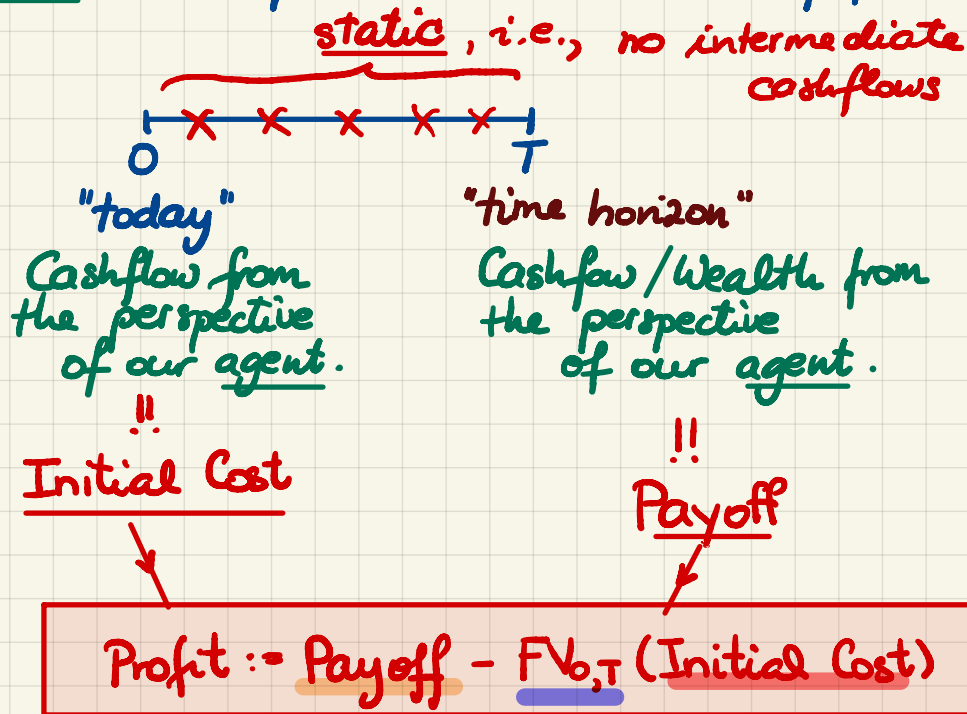
If Profit > 0, we call it a **gain**.

If Profit < 0, we call it a **loss**.

If Profit $= 0$, we say that we **break even**.

Example. Investing in a zero-coupon bond.

?

$+C$ ... redemption amount

O — bond bought

T — maturity date

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

Initial Cost: Ce^{-rT}

Payoff: C

Profit $= C - FV_{0,T}(Ce^{-rT}) = 0$

Example. Taking a loan.

L... loan amt

$$\underset{\substack{0 \\ \text{loan taken}}}{\vdash}\joinrel\underset{\substack{T \\ \text{loan repaid}}}{\dashv}$$

Initial Cost: $-L$

Payoff: $-Le^{rT}$

Profit $= -Le^{rT} + FV_{0,T}(+L) = \underline{0}$