M339D: February 2nd, 2026.



UNIVERSITY OF TEXAS AT AUSTIN

# Problem Set 3

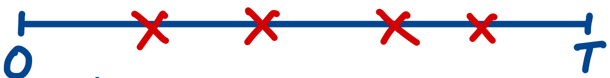
## Payoff. Profit.

3.1. **Static portfolios.**

*Step #1*. Remember the **bottom-line approach** from *theory of interest*. Decide who your **protagonist** is!

*Step #2*. Set up the **timeline** (on paper or mentally):

Static, i.e., no intermediate cashflows.




"today"

Cashflow from the perspective of our agent.

!!

Initial Cost

TIME HORIZON

Cashflow/Wealth from the perspective of our agent.

!!

Payoff

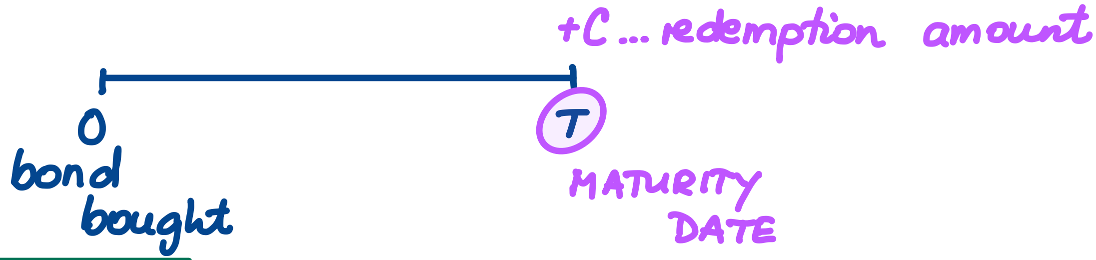
$$\boxed{\text{Profit} := \text{Payoff} - FV_{0,T}(\text{Initial Cost})}$$

This is how we will talk about **profit**:

- If Profit$> 0$, then we call it a gain.
- If Profit$< 0$, then we call it a loss.
- If Profit$= 0$, then we say that we break even.

3.2. **Riskless assets.**

**Example 3.1.** Investing in a zero-coupon bond




$\boxed{r \ldots ccrfir}$

Initial Cost: $\underline{Ce^{-rT}}$

Payoff: $\underline{C}$

$$\text{Profit} = \text{Payoff} - FV_{0,T}(\text{Initial Cost})$$
$$= C - \underbrace{FV_{0,T}(Ce^{-rT})}_{C} = \underline{0}$$

$\square$

**Example 3.2.** Taking a loan