

## Financial Portfolios.

- Riskless Asset :
  - loans, bonds, savings accounts
  - governed by r... continuously compounded,  
risk-free interest rate
- Risky Assets :
  - shares of stock
  - foreign currencies
  - commodities: soy beans, corn, -  
silver, gold, ...  
oil
- Derivative Securities

## Financial Instruments.

We abstract; we only care about:

- **WHEN** the cashflows happen;
- then **AMOUNTS** of the cashflows

(bottom-line approach)

So far: fixed cashflows }  
fixed times } fixed-income instrument

e.g., anything of the riskless  
kind : bonds; savings accounts;  
annuities.

## Outright Purchase of one share of stock.

No borrowing @ all  
to finance this purchase!

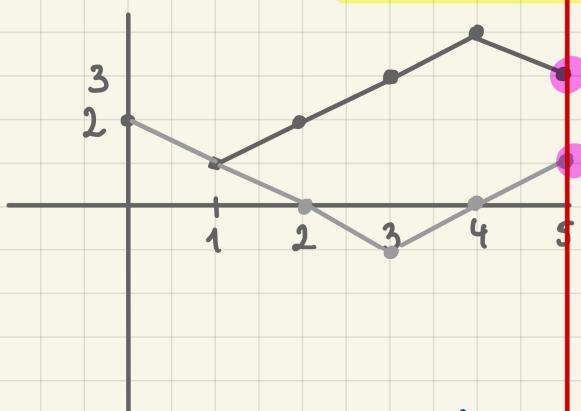
If the stock pays dividends, we assume a given projected dividend schedule. The implementation will depend on the type of dividend.

Case #1. No dividends.



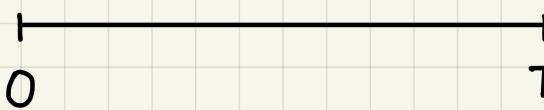
Notation: Stock price varies w/ time in a non-deterministic way ; it's a stochastic process.

$S(t)$ ,  $t \geq 0$  ...  $S(t)$  stands for the stock price  
@ time  $t$



Cashflow

$-S(0)$



buy 1 share of stock

Wealth

$S(T)$  ... a random variable



own 1 share of stock