Theoretical	Empirical	`R`
X	$x_1, x_2, \ldots, x_n$	
$\mathbb{E}[X]$	$\bar{x} = \dfrac{x_1 + x_2 + \cdots + x_n}{n}$	mean($\cdot$)
$\mathrm{Var}[X] := \mathbb{E}\left[(X - \mathbb{E}[X])^2\right]$	$s^2 := \dfrac{1}{n-1} \sum\limits_{i=1}^{n} (x_i - \bar{x})^2$	var($\cdot$)
$\mathrm{SD}[X] = \sqrt{\mathrm{Var}[X]}$	$s := \sqrt{s^2}$	sd($\cdot$)

Outright Purchase of One Share of Stock.

$-S(0)$ $S(T)$

0   T... TIME HORIZON

"today"
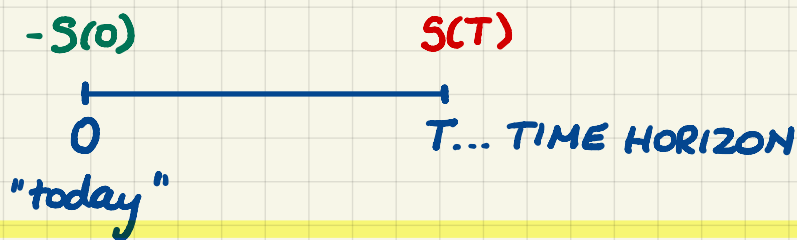
Short Sale.

T... short sale is closed

$t=0$

borrow stock

$t=T$

Short Seller   **Shareholder**

div

time·0 sell stock   time·T buy stock

firm

div

Stock Market

Margin Account alleviates credit risk mostly due to the stock price going up.

$+S(0)$ $-S(T)$

0   T