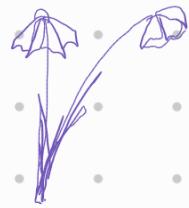


# Pricing Forwards & Futures

$F_{t,T}$

forward price of an underlying at time  $t$  with maturity

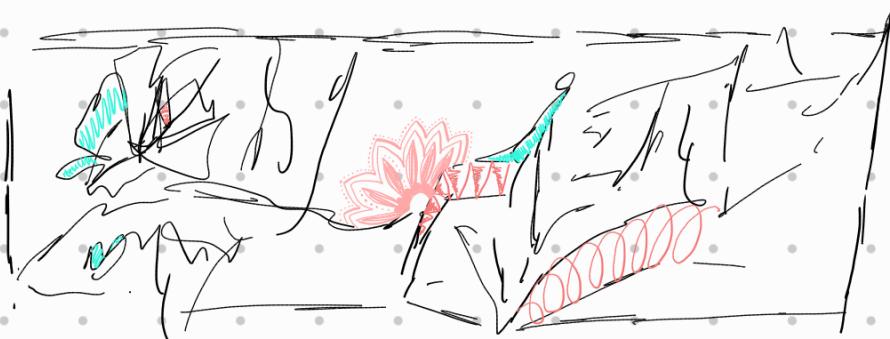


$$\rightarrow F_{t,T} = S_0 e^{rt}$$

asume que no paga dividendos

Técnica de no arbitraje → no hay manera que ninguna parte se aproveche de eso.

↑ tasa libre de riesgo  
↑ horizonte  
↓ subyacente (precio de hoy)



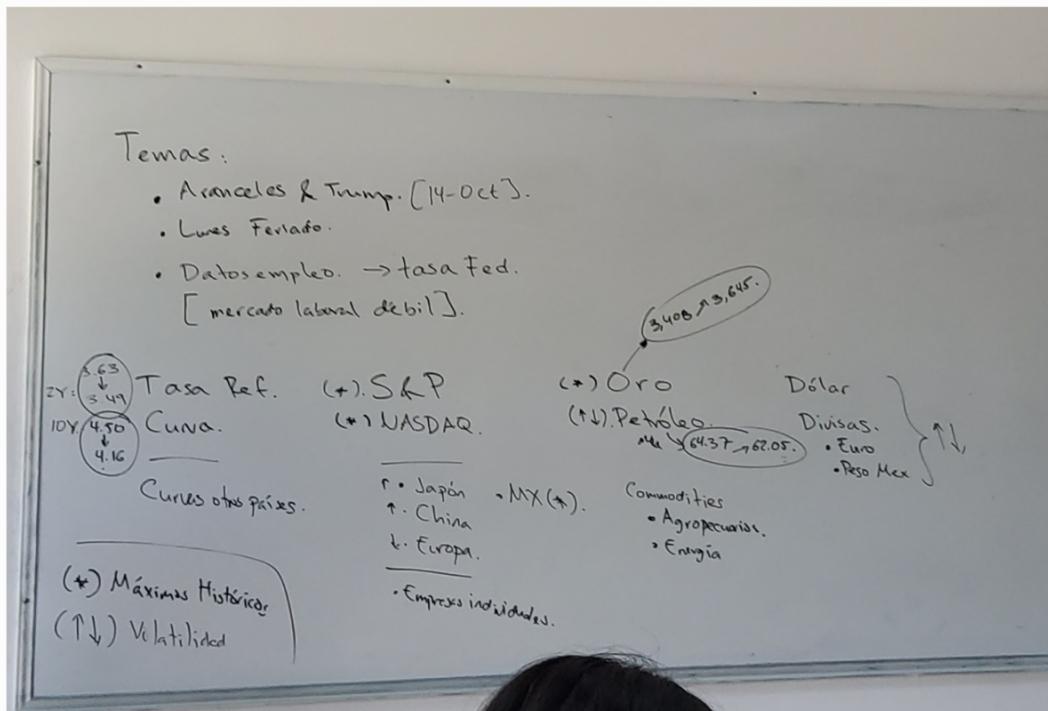
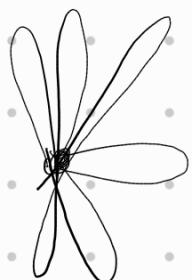
¡Dónde está la expectativa del precio del futuro?

# Semana 1-5 Sept

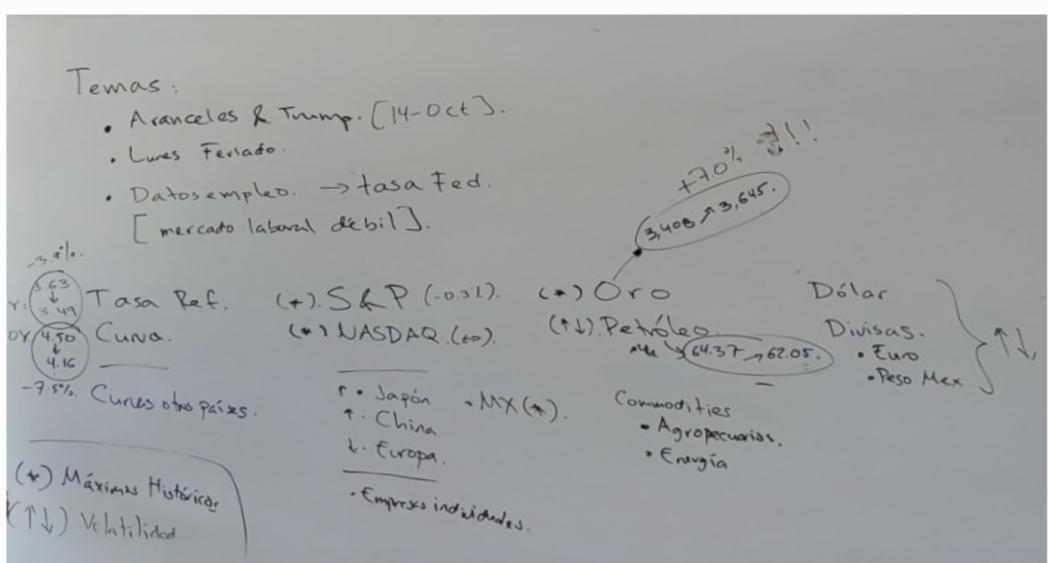
- ✓ Aranceles y Trump [14 Oct] → *noticia potencialmente buena*
- ✓ Lunes feriado
- ✓ Datos empleo → Tasa Fed → *Mercado laboral débil* → *mercado donde se venden menos cosas* → *hace que las tasas baje[n]*  
 ↳ se publica todos los viernes 1ro de c/mes  
*Hubo oferta de empleo, pero la tasa de desempleo fue l[a]*

## Como valoras

traer a valor presente con una tasa



nunca es 1 al 1 la relación  
solo va cuando - futuro



$$F_{0,T} = S_0 e^{rT}$$

Forward on stock with discrete dividends

METHOD 1: outright purchase

METHOD 2: forward

$S_0$

0

0

$F_{0,T}$

$P_m n + 0$

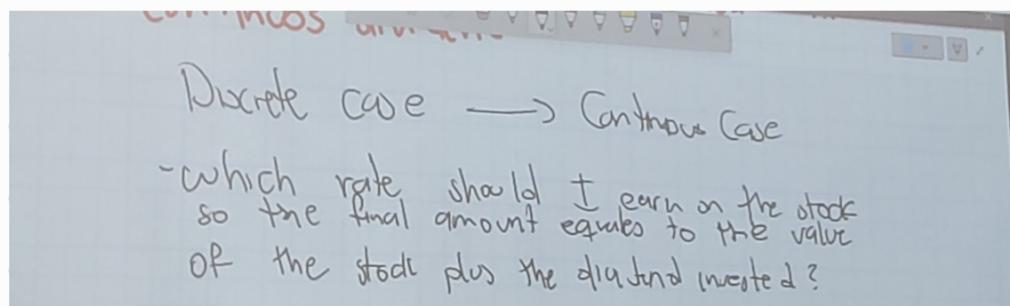
$P_m n + T$

## DIVIDENDS

companies have certain amount of cash and decides to give it to the investors.

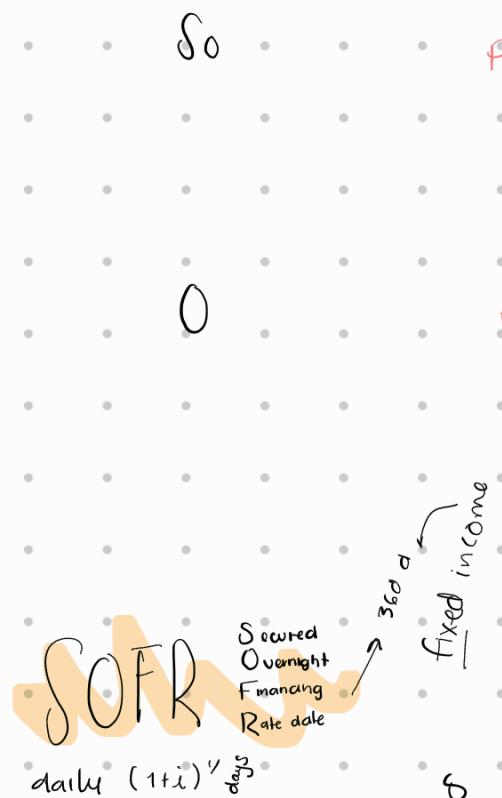
- The stock will pay a dividend of \$1 at  $T/2$
- I can invest the dividend into  $r$  from  $T/2$  to  $T$  at:  $S_T + \text{Div } e^{rT/2}$
- On the And method you will not receive the dividend

$$\begin{aligned} F_{0,T} &= S_0 e^{rT} - \text{cumValue (Div)} \\ &= S_0 e^{rT} - \$1 e^{rT/2} \end{aligned}$$

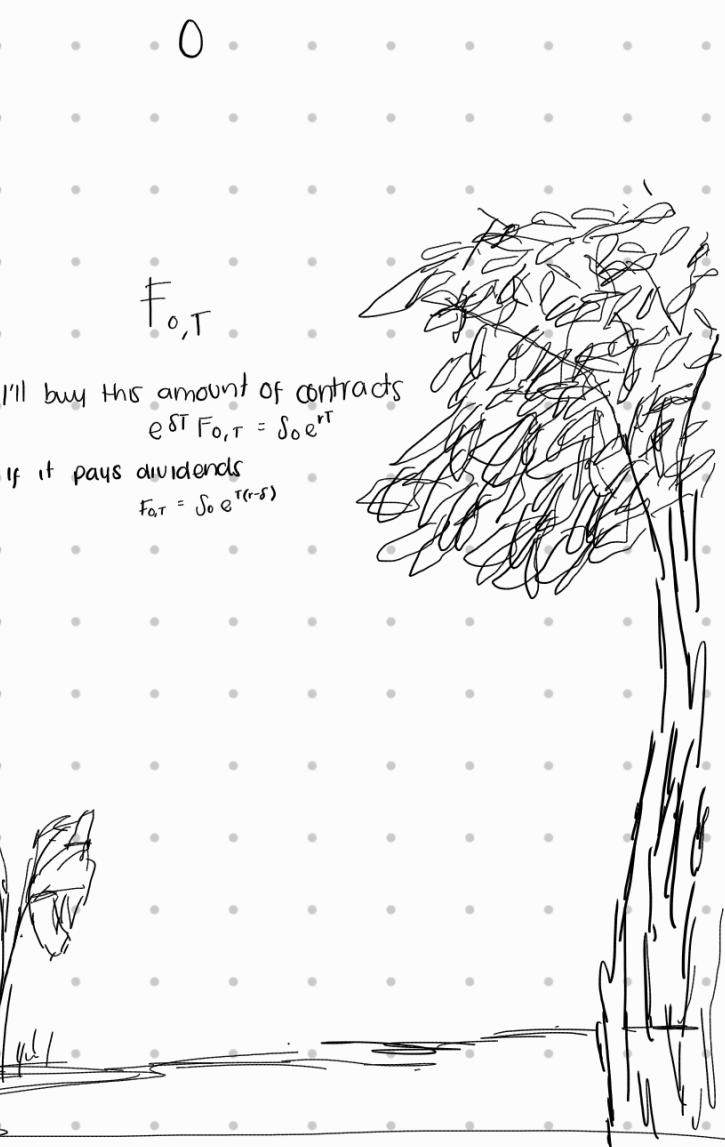


- continuous dividend rate  $f$
  - Assume you can reinvest the continuous dividend rate  $f$  on the stock to buy more shares of it.
  - After  $T$  the investor should have more shares of the stock
  - ↪  $S_0 e^{fT}$
- # of shares after reinvesting

## METHOD 1



## METHOD 2



$\delta$  d. Yield

$r$   $r_f$

$$F_{0,T} = \text{S&P500} \left( \exp^{(\text{risk free rate} - \text{Dividend rate}) * T} \right)$$

Risk Premium

Actual price  
 $S_0$