

M3392

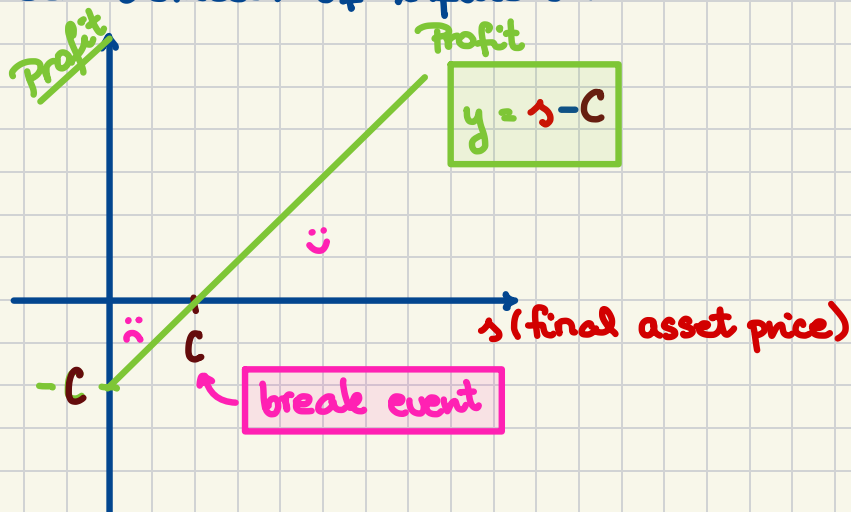
Hedging Motivation.

Example. Producer of Goods.

- farmers producing corn, soy beans, peaches
- crude oil
- ore mining
- "widgets"

C ... deterministic, total aggregate fixed and variable costs of production valued @ the time of sale, i.e., @ time T

If the producer sells their goods in the market, they get the market price which is outside of their domain of influence.



Forward Contracts.

*** A BINDING CONTRACT ON BOTH SIDES! ***

No CASHFLOW!

Handshake!

An agreement:

- the underlying asset: $S(t)$, $t \geq 0$
- the quantity (for us: 1 unit)
- the type of settlement: physical or **cash**
- T ... the delivery date
- F ... the forward price

Initial cost = 0

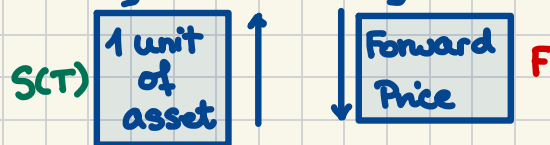
Profit = Payoff

T

DELIVERY DATE

(When the **cash** is exchanged for the asset.)

Long Forward: Buy Forward



Short Forward: Sell Forward

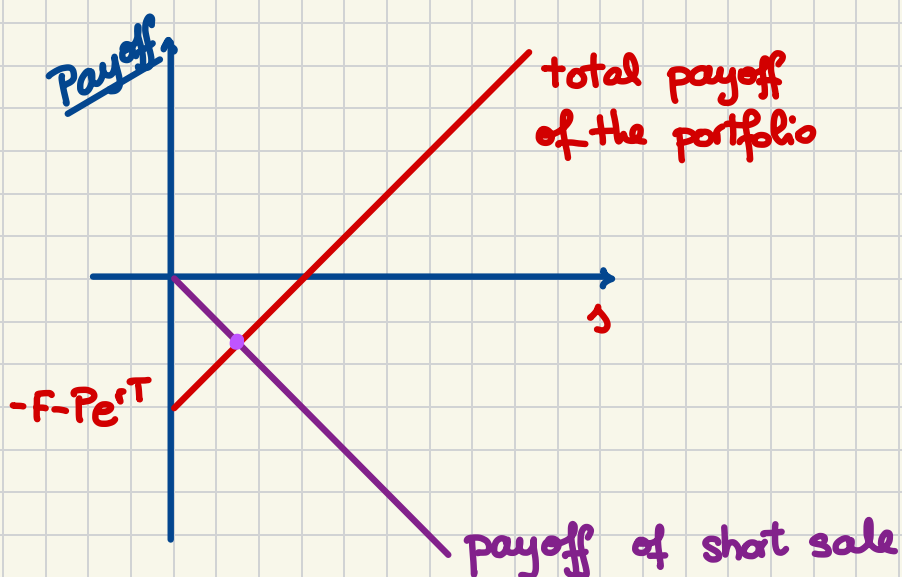
$$\left. \begin{aligned} \text{Payoff (Long Forward)} &= S(T) - F \\ \text{Payoff (Short Forward)} &= F - S(T) \end{aligned} \right\}$$

Payoff F'n'ion: $v(s) = s - F$

X (iii) long forward and a short zero-coupon bond

	Initial Cost	Payoff
Long Forward	0	$S(T) - F$
Short Bond	$-P$	$-Pe^{rT}$
Total	$-P$	$S(T) - F - Pe^{rT}$

Q: Are there F and P such that the cashflows match w/ the short sale one?



X (iv) short forward and a long zero-coupon bond.

Initial Cost: Price of Bond > 0

(v) short forward and a short zero coupon bond

	Initial Cost	Payoff
Short Forward	0	$F - S(T)$
Short Bond	$-P$	$-Pe^{iT}$
Total	$-P$	$F - Pe^{iT} - S(T)$
Short Sale	$-S(0)$	$-S(T)$

Match:

$$P = S(0)$$

$$F = Pe^{iT} = S(0)e^{iT}$$

Important!

