Basic Risk Management

Def'm. We say that a financial position (a portfolio, e.g.) is LONG with respect to a certain (underlying) asset if its PROFIT function is increasing (as a function of the final asset price).

Example. An apple farmer has apples to sell (@ harvest time).

- Crates of apples .... underlying asset
- Price per crate of apples @ harvest time ...
  ... final asset price, i.e., the independent argument

\[ \text{PAYOFF} \quad \text{PAYOFF} \quad \text{PAYOFF} \]
\[ \text{PROFIT} \quad y = \alpha \quad \text{PROFIT} \]

\[ s(\text{final asset price}) \]

\[ -c \]

\[ c \ldots \text{total aggregate costs of production per crate} \]

\[ \text{INHERENT LONG position w.r.t. the underlying} \]
Defn. We say that a financial position is **SHORT** with respect to an underlying asset if its **PROFIT** function is decreasing.

**Example.** Airline buying **oil** ... need to buy oil as fuel

\[ y = R - C - s \]

\[ y = -s \]

\[ R \ldots \text{revenue from the sale of the final product (plane tickets, e.g.)} \]
\[ C \ldots \text{total aggregate costs (outside of the fuel)} \]
\[ R - C \ldots \text{net "inflow" of money (outside of the fuel)} \]
Forward Contract

AGREEMENT:
- No Cash Flows?
  - Asset
  - Quantity

THE FORWARD PRICE \( F \)

SETTLEMENT < Cash Physical

Binding agreement between two sides:
- Long (buys forward)
- Short (sells forward)

\( S(T) \) - \( F \)

\( \psi(s) = s - F \)

Long forward

The Payoff: \( +S(T) - F \)

=> The Payoff function:

Short forward: the payoff function is \( -s + F \)
Example. PRODUCER of Goods.

Prior to Hedging

HEDGED POSITION

S (final asset price)

Short forward: THE HEDGE