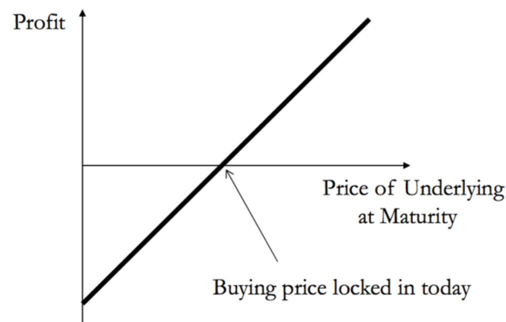
Derivatives Summary

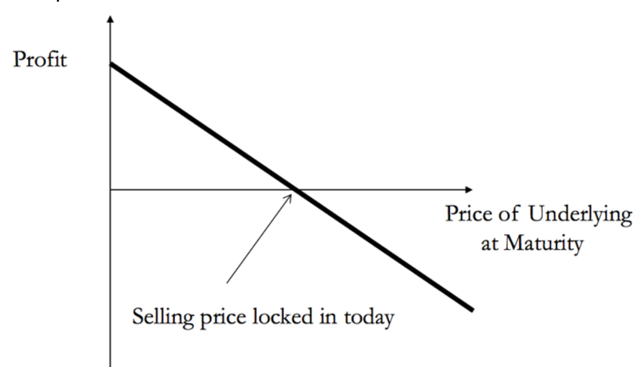
FNCE90011

Week One: Introduction to Futures

- Definition
  - A contract between two parties
    - One party buys something from the other at a later date
    - At a price agreed today
    - Subject to daily settlement of gains and losses
    - Guaranteed against the risk that either party might default
  - Available on a range of underlying securities, eg
    - Bonds, shares, Indices such as the SFE SPI 200
  - Exchange traded
  - Settled daily
- Profit from a Long Forward or Futures Position
  - Initially treat futures as a forward and add complexity as we progress

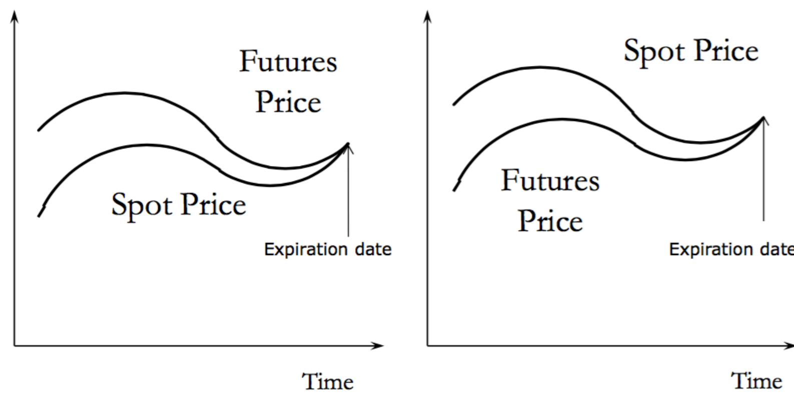


    - Symmetric payoff, equal upside and downside risks
- Profit from a Short Forward or futures position

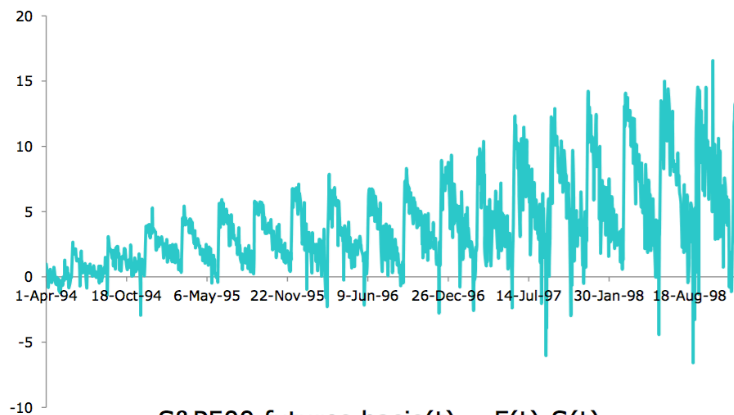


    - Long makes a profit, the short loses and vice versa
- Specifications
  - What can be delivered (the asset)
    - Most contracts cash settled at expiry
    - Some are deliverable
      - E.g 90day Bank Accepted Bill and some commodities
      - Usually only hedgers take delivery
  - Where it can be delivered (delivery arrangements)
  - When it can be delivered (delivery months)
    - Most contracts expire quarterly, ie, March, June, Sept, Dec
    - Commodities aligned to harvesting and crop seasons
  - Contract size
  - Prices quotes, limits and position limits
      - Most contracts are cash settles at expiry
      - Maturity date aligned w the end of the quarter, normally around the 15th
- Opening and closing a contract
  - To open a position, you call your broker or enter into the contract via online trading account
    - Contracts are referred to by their delivery month
      - E.g long May oil futures
    - Most contracts don't lead to delivery
      - Might be inconvenient (speculators)
      - Can be expensive (storage costs, transport)
  - To close a position, etner into the opposite trade
    - Eg. Short 5 contracts for June 15, then long 5 contracts for Sept 20, net position is zero and exchange closes position
- Contract not closed out prior to expiration
  - Cash settled

        - Exchange closes out the position
        - Left with margin account balance
    - Deliverable
        - Settled by delivering the assets underlying the contract at the settle price at maturity
        - When there are alternatives about what is delivered, where is delivered, and when it is delivered, the party with the short position chooses
    - Bullish → long
    - Bearish → short
- Example: SPI 200 Futures
    - The SPI 200 Futures contract tracks the price fluctuations of the ASX 200 index, suppose an investor is bullish (long futures), each point move in the futures contract is worth $25
        - Long: contract price increases from 5500 to 5501 → $25 profit/contract
            - Contract decreases from 5500 to 5499 → $25 loss/contract
- Convergence of Future Prices to Spot Prices
    - As futures approaches expiration → futures price convergence to spot price, otherwise there would be arbitrage
    - Example
        - Assume futures is above the sport maturity $F_T > S_T$
        - Sell overvalued security and buy undervalued one, arbitrageurs sell (short) a futures contract, buy the asset, and make the delivery
        - Futures price decreases and spot prices increases
        - Continue until prices are equal (subject to transaction costs)



        - Buy low, sell high; gap converges until they are equal, in reality there are transaction costs



        - Fluctuation of prices
        - Time series plot of the difference, gap between the two markets
        - Returns deviate around the mean of approximately zero but volatility is not constant
- Margins (forward market)
    - When two investors enter a trade without an exchange they are exposed to default risk
        - Role of exchange is to organise trading so that this risk is minimalised
    - A margin is cash or marketable securities deposited by an investor with his or her broker
    - The balance in the margin account is adjusted to reflect da3ily settlement (marking to market)
    - Margins to minimize the possibility of a loss through a default on a contract
        - Have to top it back up to initial margin, not to the margin call; if not topped up within 24hr then your position is closed
- Price and trading information