Financial Markets
How securities are traded

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Outline

- What determines the price?
- Primary markets: new issues
- Secondary markets: re-trade of securities
- Trading costs and liquidity

Equilibrium prices:

- What determines the price:
  - In economic theory?
  - In reality? (The topic of this class.)
- What is the equilibrium price?
- What is the mechanism that drives prices towards equilibrium?
**Primary Markets**

- Raises capital.

- How are new securities floated (sold):
  - Government securities: typically auctioned.
  - Corporate securities, Federal Agencies Debt, Municipal Bonds, Mortgage-Baked securities: typically underwritten by investment banks.

**Primary Markets: Underwriting**

- Underwriters: a syndicate of investment banks
  - “Firm commitment” or “Best effort”
  - “Road show”
  - Bookbuilding

- Registration through SEC
  - Preliminary prospectus (“red herring”)
  - Becomes prospectus after SEC approval

**Secondary Markets: Investors, brokers, and dealers**

- **Investors** usually trade through brokers.

- **Brokers** help investors trade without taking positions themselves (no inventory):
  - Broker guarantees counterparty that:
    - an investor can pay for a security he is buying
    - an investor can deliver a security he is selling

- **Dealer = market maker**
  - holds inventory
How does a broker execute a trade:

- Trade directly with another broker/investor:
  - over the phone
  - on the floor of an exchange
  - in a call auction
  - using a limit order book
  - in an alternative trading system
- Through a market maker
  - on organized exchange
  - over the counter (OTC)

Call Auction

- How does it work:
  - All investors get together at a fixed time
  - Orders aggregated into demand/supply curves
  - Equilibrium price chosen.
- Examples:
  - London Gold Fixing
  - Opening of NYSE
  - Sotheby's, eBay

Trade in a limit order book:

- "Continuous auction"
- Types of orders:
  - Limit order
  - Market order
- What is the trade-off between submitting
  - a market order vs.
  - a limit order
Continuous trading

- Investors want to trade immediately – why?
- Order flow fragmented
- Prices bounce around the equilibrium price

What business becomes profitable?

Market Marker = Dealer (on exchange: ) = Specialist

- Quotes bid and ask prices
- Holds inventory
- How does the market maker know where to put the bid and ask prices?
- Market maker provides a service:
  - Immediacy, liquidity
- Price of this liquidity service: bid-ask spread

What determines the bid-ask spread?

- Volume of trade
- Volatility of equilibrium price
- Competition between market makers
- Accessibility of other brokers/ investors
Trading Costs

- Commission: fee paid to broker for making the transaction
- Costs of trading with dealer
  - Bid-ask spread
  - For large orders: market impact
    - Deep market = small market impact
    - Thin market = big market impact

Real-world exchanges

- Many exchanges are “hybrids”
- National Exchanges for stocks: NYSE, AMEX
  - brokers, dealers, limit order book
- Regional Exchanges: Boston, Philadelphia, Pacific, Midwest, etc.
- Chicago Board of Trade (CBOT): the largest futures market in the world
  - floor traders (brokers, dealers, “speculators”)
- Chicago Board Options Exchange (CBOE): the largest options market in the world
  - floor traders (brokers, dealers, “speculators”), limit orders

Other real-world trading environments:

- Over-the-Counter (OTC) Markets
- NASDAQ (National Association of Securities Dealers Automated Quotation system):
  - supplies agents with bid-ask quotes via computer
  - several market makers for each stock
- Electronic Communication Networks (ECNs)
  - Island, Instinet: electronic limit order books
  - Posit: crossing network (crosses orders at the price currently used at an exchange such as NYSE)
Short Sales

- Short sales (to sell something you don't own)
  - One short sells by:
    - borrowing the securities, and
    - later deliver them back (to cover position)
  - A profit is made if the short position is covered at a price lower than the one at which it was established.
  - Bearish investment or as a hedge
- Requirements
  - Short sale proceeds must remain with the broker
  - The investor is also required to deposit a collateral (to post margin) as a guarantee against default
  - Short selling is subject to the up-tick rule

Margin Purchases

- The investor borrows part of the purchase price of a security from his broker.
- The interest charged to the investor is the broker’s money rate plus a spread.
- The securities purchased by the investor are held by the broker in street name as a collateral on the loan made.

Margin Ratio

- The margin ratio is:
  \[
  m = \frac{MVA - Loan}{MVA}
  \]
  - investor’s equity as a percentage of the market value of the securities bought on margin.
- Where
  - MVA = market value of securities bought on margin.
  - Loan = money borrowed from broker (inclusive of accrued interest).
Initial and Maintenance Margins

- **Initial margin:**
  - the minimum acceptable level for \( m \) when the securities are bought.
  - At least 50% (by FED regulation), typically 60%

- **Maintenance margin:**
  - the minimum level for \( m \) during the life of the loan.
  - At least 25% for NYSE-traded securities, typically 30%.
  - If \( m \) falls below this level, the investor receives a Margin Call from his broker, requiring him to deposit cash or sell his stock.