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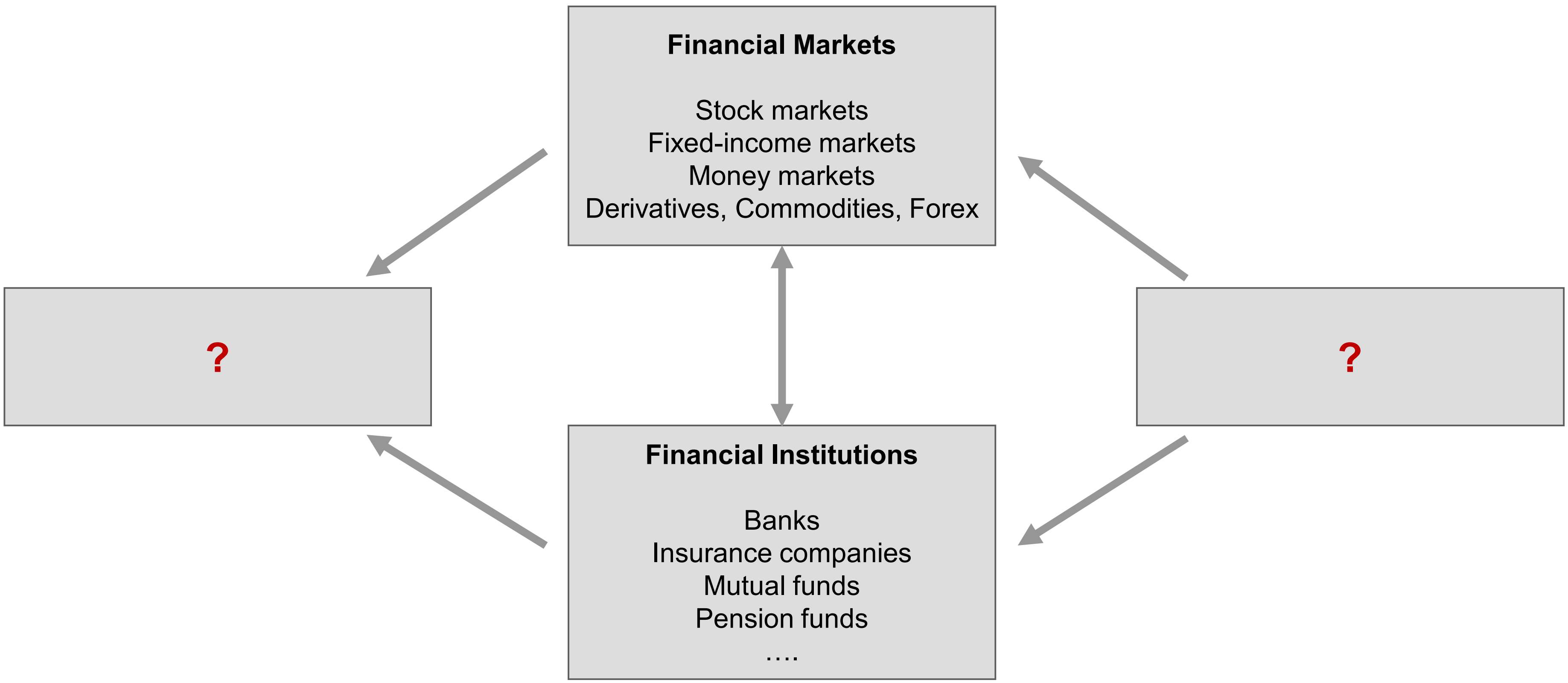
# Financial markets and institutions

# After this lecture, you will understand

1. Financial markets and their functions
   - Stock markets, bond markets, and many more
2. Financial institutions (intermediaries) and their roles
   - Banks, insurance companies, and more
3. The Global Financial Crisis of 2007-2009
   - What happens when financial markets break down?


Financial Markets
Stock markets
Fixed-income markets
Money markets
Derivatives, Commodities, Forex
?
?
Financial Institutions
Banks
Insurance companies
Mutual funds
Pension funds
….


**Firms**
**(Invest in real assets)**

**Financial Markets**

Stock markets
Fixed-income markets
Money markets
....

**Investors**
**(Savers)**

**Financial Institutions**

Banks
Insurance companies
Mutual funds
Pension funds
....

# 1. Financial markets

- Stock markets (equity markets)
- Bond markets (fixed-income markets)
- Money markets
- Options/derivatives markets
- Commodities markets
- Forex (foreign exchange) markets

# Stock markets (equity markets)

- Markets where stocks are issued and traded
- Stock markets = equity markets ("equity" in finance = ownership)
  - Equity financing = raising capital by selling ownership stakes
  - Equity holders = shareholders who own part of the company
- *Primary market:* as firms grow, they need outside money
  - Firms raise capital by "going public"
  - IPO (Initial Public Offering)
    : First time the firm issues shares & sell to investors in exchange for cash.

(13 mil shares x $17 per share)

Tesla IPO on June 29, 2010 ($226 mil)


Amazon IPO on May 15, 1997 ($54 mil)


Ferrari IPO on Oct 21st, 2015 ($893 mil)



Facebook IPO on May 18, 2012 ($ 16bil)


Zoom IPO on April 18, 2019 ($356 mil)


Manchester U IPO on Aug 10, 2012 ($233 mil)

## Stock markets (equity markets)

- Markets where stocks are issued and traded
- *Primary market:* as firms grow, they need outside money
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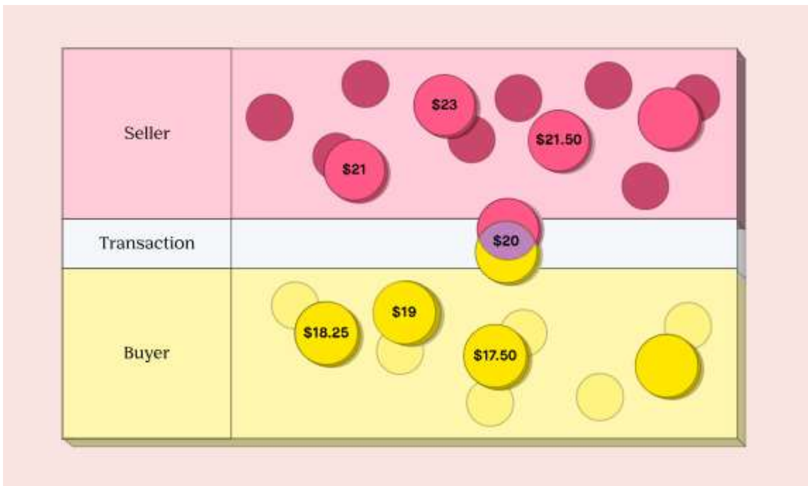
    : First time the firm issues shares & sell to investors in exchange for cash.
- *Secondary market:* buying and selling of existing shares
- What it the company goes bankrupt?
  - As an owner, you also share the company’s risk (bankruptcy)
  - Equity holders are last in line (the company does not owe you anything!)

# Stock exchanges

where buyers and sellers trade shares of companies
(i.e. New York Stock Exchange (NYSE), Nasdaq)



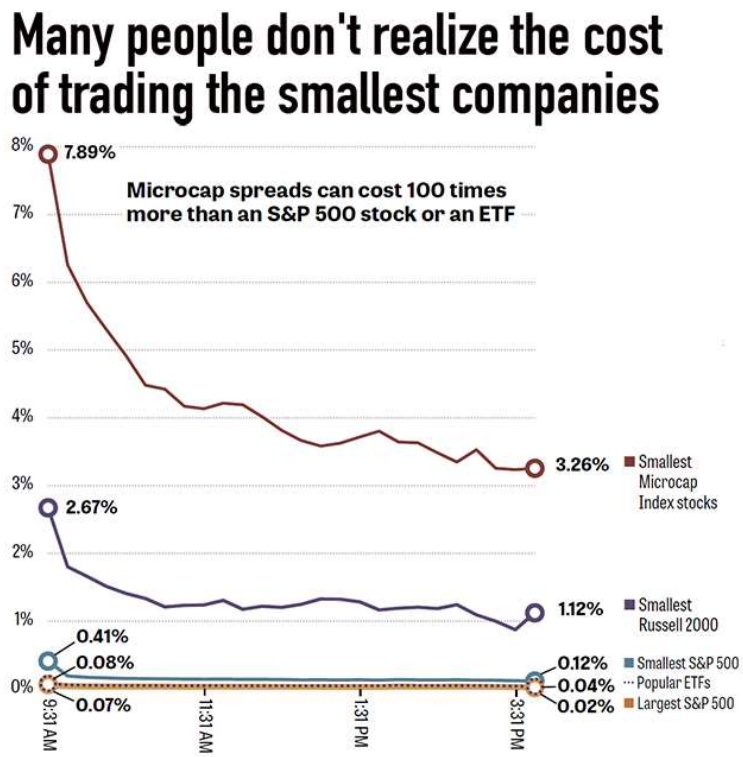

Source: Robinhood

NYSE 1932 vs. 2007

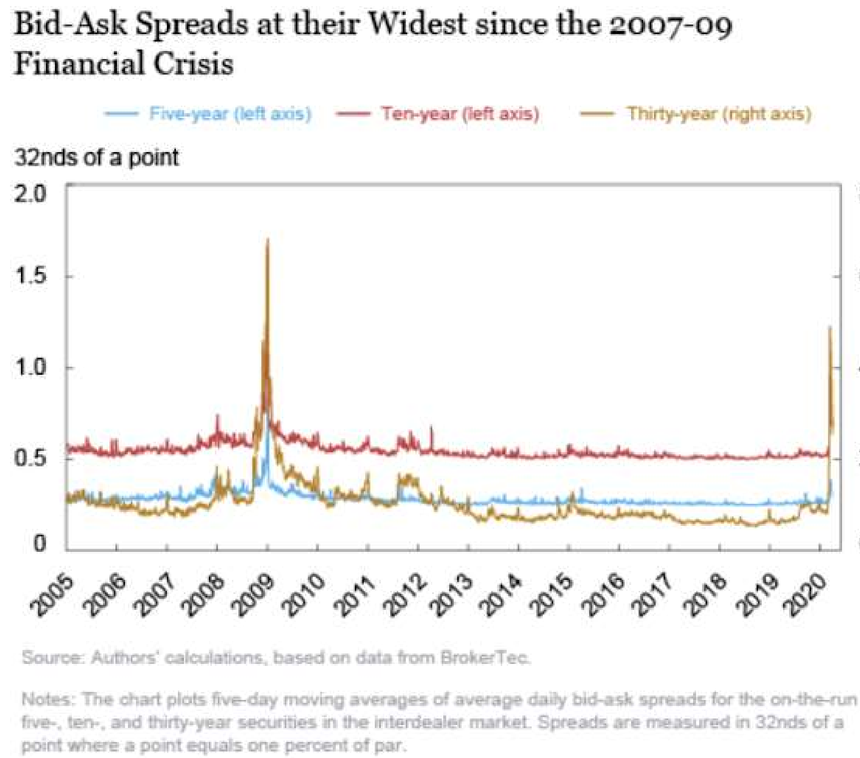
# How does the stock market work?

Stock markets bring buyers and sellers together to negotiate the trade

- Buyers want to pay the _______ price possible
  - The bid price = the _______ price that a buyer is willing to pay
- Sellers want to sell at the _______ price possible
  - The ask price = the _______ price that a seller is willing to accept
- *Spread = the bid price – the ask price*
- In highly competitive markets, is the spread zero?
- A wide bid-ask spread is a sign of
  - Low liquidity (not many buyers and sellers)
  - High risk, volatility




Source: MarketWatch



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# Fixed-Income Markets (Bond Markets)

- Markets where debt securities (bonds) are issued and traded
- Issuers (corporations or governments) raise capital by issuing bonds (“Debt financing” = borrowing money from investors).
- Investors *lend* money in exchange for future interest payments (coupon payments, thus “fixed-income”) and repayment of principal
- Bonds can have different maturities (duration of the loan)

# Types of Bonds in Fixed-Income Markets

**Government Bonds**

- Issued by governments to fund public spending (e.g., U.S. Treasuries, German Bunds, UK Gilts).
- Generally seen as low-risk.

**Corporate Bonds**:

- Issued by companies to raise capital.
- Riskier than government bonds but offer higher returns.

**Mortgage-Backed Securities (MBS)**

- Bonds backed by mortgage payments.
- Riskier due to dependence on real estate market conditions.

**Sovereign Bonds, Asset Backed Securities, many more**

# Credit Ratings for Bonds

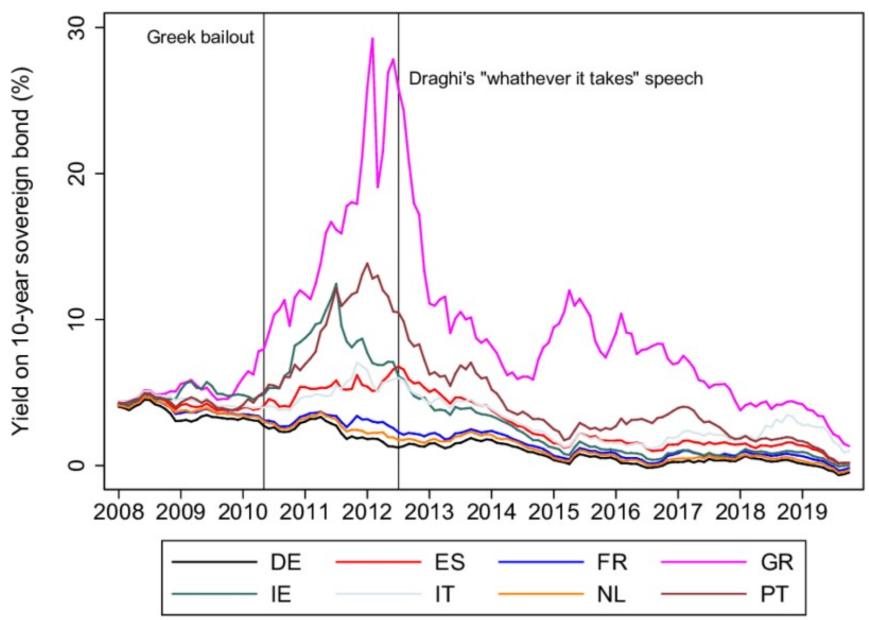
- Assigned to bonds to assess the issuer's ability to repay debt.

- Rated by agencies (Moody’s, S&P, Fitch)

- Ratings:
  - “Investment Grade”  (AAA, AA, A, BBB):
    - High credit quality, low risk of default.
    - Examples: U.S. Treasuries, large multinational corporations

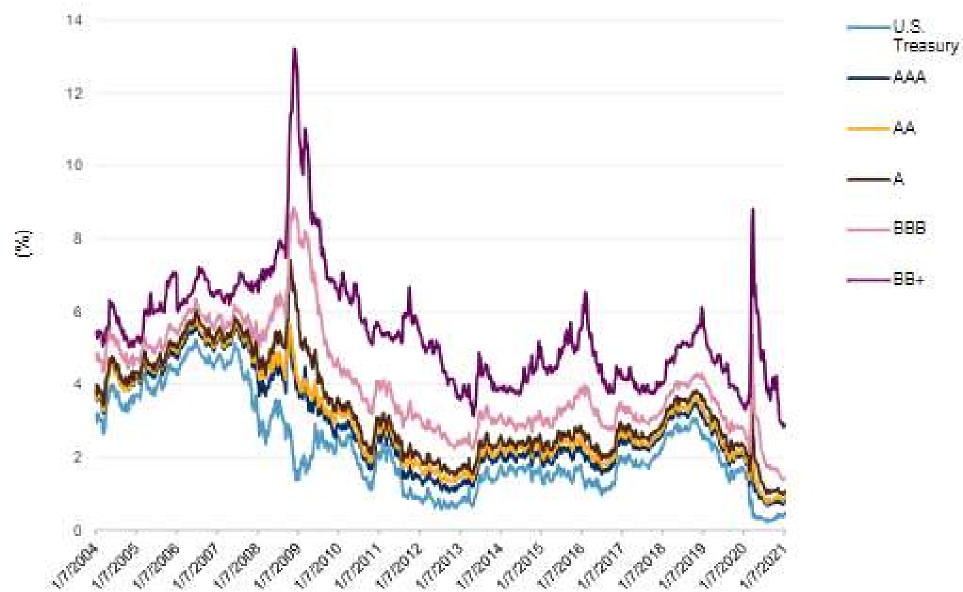
  - “High-Yield (Junk Bonds)” (BB, B, CCC, etc.):
    - Higher risk of default, but offer higher yields.
    - Examples: Small or distressed companies, emerging market bonds.

Yield on the 10-year government bond




Source: ECB (2019)

Historical Corporate Bond Yields--Five-Year Maturity




Data as of Jan. 13, 2021. Source: S&P Global Ratings Research.

# Comparison of Stock vs. Bond Markets

| | Stock Market | Bond Market |
|---|---|---|
| Type of Security | Equity (ownership) | Debt (loan) |
| Income | - | Interest (coupon) |
| Risk Level | Typically higher | Lower than stocks but varies (low for gov’t bonds, higher for corporate) |
| Market Behavior | Volatile, growth potential | Less volatile, income-focused |
| Investment Horizon | Long-term growth | Steady income over different maturities |

# Money markets

- Short-term debt instruments with maturities of less than one year.
- Low-risk (thus lower return) and highly liquid
- Treasury bills, certificate of deposit (CDs), etc.
- Used by governments, corporations, and financial institutions to manage short-term funding needs.

# Derivatives Markets

- Markets where traders buy and sell *contracts* that derive their value from the performance of the underlying assets.
- 4 main types of derivatives: options, futures, forwards, swaps.
- Used for *hedging risk* or *speculation* on price movements.
- *An options contract* gives the buyer the *right* (but not the obligation) to buy or sell an asset at a specific price ("strike price") by a specific date.
    - Call option: right to buy
    - Put option: right to sell

Example: a wheat farmer buys a **put option** (the right to sell) on wheat with a **strike price of $50** per bushel, paying a **premium(fee) of $2** per bushel for the option)

Q. A speculator thinks the price of oil will rise. How can he profit from price movements?

# Derivatives Markets

- A *futures contract* is a *binding* contract to buy or sell an asset at a predetermined price on a specific future date.
  - "Long" futures contract (obligation to buy)
  - "Short" futures contract (obligation to sell)

  i.e. A **wheat farmer** might buy a futures contract to **lock in the price** at which they can sell their wheat after harvest
- *A forward contract* is similar to a futures contract but customizable/private.
  - Flexible: quantity, price, and delivery date can be fully negotiated between the buyer and the seller.
  - But exposed to counterparty risk (one party not fulling the contract)

## Derivatives Markets

- A swap is a financial agreement in which two parties exchange cash flows or other financial obligations
  - Interest rate swap
    : One party exchanges fixed interest rate payments for floating interest rate payments, or vice versa
  - Credit default swap
    : A type of swap where the buyer pays a periodic fee (like an insurance policy) to transfer the credit risk of an asset, such as a bond or loan, to the seller. If a default occurs, the seller pays the buyer.

## Commodities Markets

- Markets where raw materials and natural resources like oil, gold, agricultural products, and metals are traded.
- Spot markets: physical commodities are traded directly.
- Futures/forward markets: traded in a later date.

## Forex (foreign exchange) markets

- The largest financial market in the world (daily trading vol. exceeding +$7 trillion).
- Currencies are bought and sold in pairs (e.g., EUR/USD).
- Used by governments, central banks, corporations, and speculators to trade currencies for various purposes.
- Spot market (immediate exchange) and futures/forward markets (at a later date).

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# Practice what we learned [Quiz]

# 2. Financial institutions

- Banks
- Insurance companies
- Pension funds
- Mutual funds and ETFs (exchange-traded funds)
- Hedge funds

# Banks

- Commercial banks
  - Raise money from depositors and other investors
  - Make loans to individuals and businesses.
  - Facilitate payments and money transfers between people and businesses


Chapter 2. Brealey, Myers and Marcus.

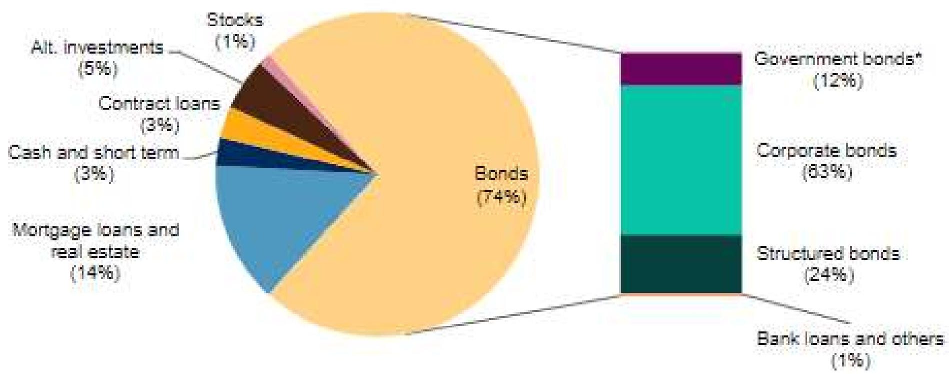
# Banks

- Investment banks
  - Generally, do not take deposits and do not make loans
  - Advise and assist companies in obtaining financing
    - IPO (Initial Public Offering): IBs purchase the new shares from the issuing company at a negotiated price and resell them to investors.
  - Advise on takeovers, mergers and acquisitions.
  - Offer investment advise and portfolio management for individuals and institutional investors.
  - Typically focus on large corporations, governments, and institutions rather than individual retail investors.
  - Examples: Goldman Sachs, Morgan Stanley, etc.

# Insurance companies

- Insurance companies collect regular premiums from many policyholders (e.g., accidents, health issues, or property damage).
- Insurance companies don’t just sit on these premiums—they invest them in various financial assets to meet future obligations (insurance payouts).
    - Invest in safer, longer-term assets like corporate bonds, government bonds, and stocks to maintain liquidity and meet future claims obligations.
    - Invest in stable assets (like government bonds and investment grade corporate bonds, and blue-chip stocks)

# US Insurance companies investment portfolio




Data as of year-end 2019. Excludes affiliated investments. *Government bonds include U.S. govt. (5% of invested assets), U.S. local govt. and munis (6%), and foreign government (1%).
Sources: NAIC statutory filings for U.S. life insurance companies and S&P Global Ratings research.

# Pension funds

- Pension funds manage retirement savings on behalf of individuals (employees) and organizations (employers).
- Like insurance companies, pension funds collect contributions (either from employees, employers, or both) regularly.
- The goal is to grow these contributions through investments to ensure sufficient funds for future retirement payouts.
- Similar to insurance companies, pension funds invest in long-term financial assets, focusing on safer, stable investments that generate consistent returns to meet future liabilities.
  - Government bonds and investment-grade corporate .
  - Stocks (especially blue-chip stocks)
  - Real estate and alternative investments (like private equity) for diversification and inflation protection.

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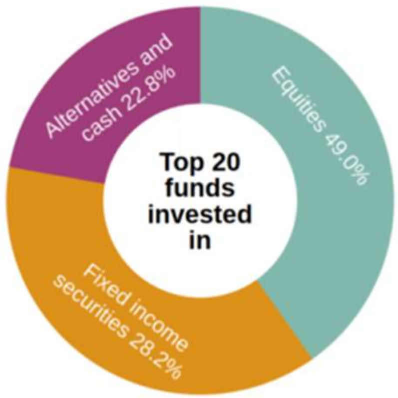
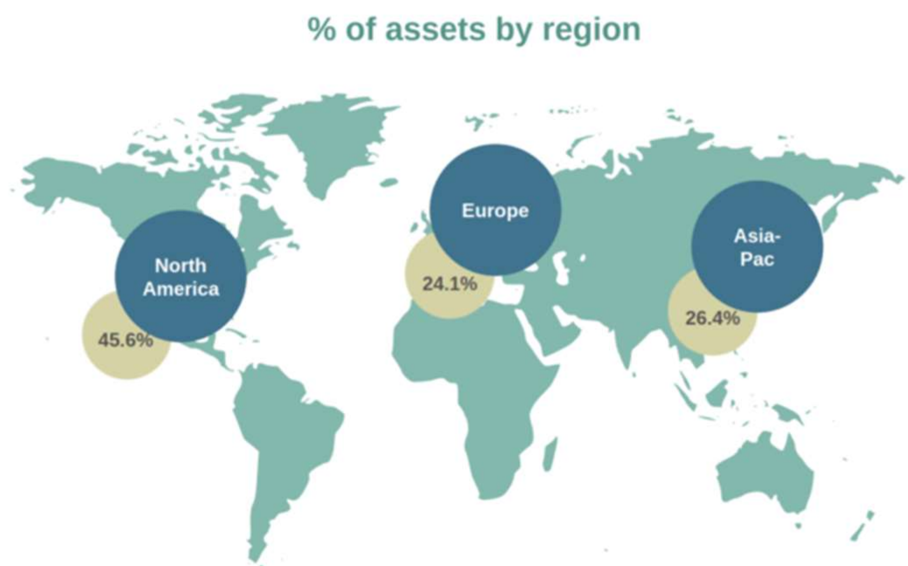
# Pension funds investment portfolio




Source: Thinking Ahead Institute

# Mutual funds

- Mutual funds pool money from many investors to invest in a *diversified* portfolio of financial assets (stocks, bonds, money market funds).
- Mutual funds are managed by portfolio managers.
- They charge a management fee (“expense ratios” between 0.1% - 2%)
- Typically require a minimum investment.
- Shares are bought or sold at the fund's Net Asset Value (NAV), which is calculated at the end of the trading day.

# Mutual funds vs. ETFs (Exchange-Traded Funds)

- ETFs are pooled investment vehicles that hold a diversified portfolio of financial assets (stocks, bonds, commodities, and many more) and are traded on exchanges.
- Passively Managed: Most ETFs are designed to track an index (like the S&P 500).
- ETFs typically have lower expense ratios compared to mutual funds, making them more cost-effective.
- No Minimum Investment
- ETFs can be bought and sold throughout the trading day at market prices.

## Holdings of US Corporate Equities (Qtr. 3, 2020).

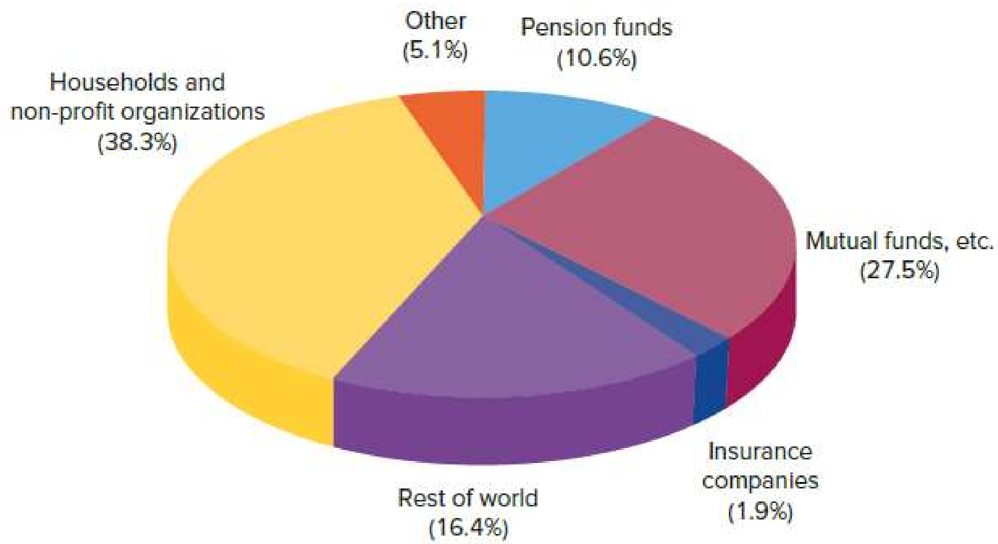



Figure 2.4. Chapter 2. Brealey, Myers and Marcus. Source: Board of Governors of the Federal Reserve System

## Holdings of corporate and foreign bonds (2020): the total amount is $16.2 trillions

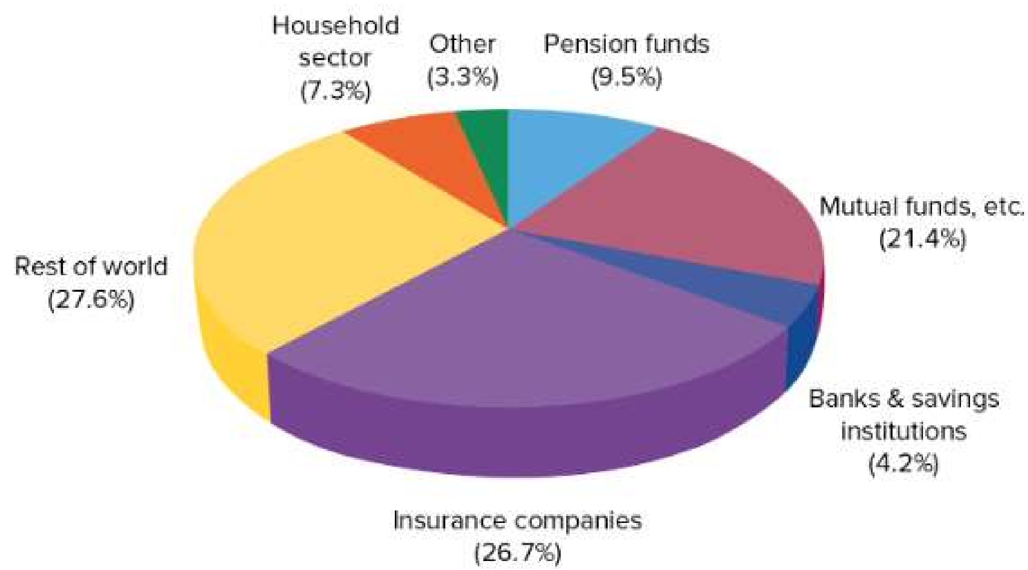



Figure 2.3. Chapter 2. Brealey, Myers and Marcus. Source: Board of Governors of the Federal Reserve System

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# Practice what we learned [Quiz]

# 3. The Global Financial Crisis of 2007-2009

- What happens when financial markets and institutions break down?

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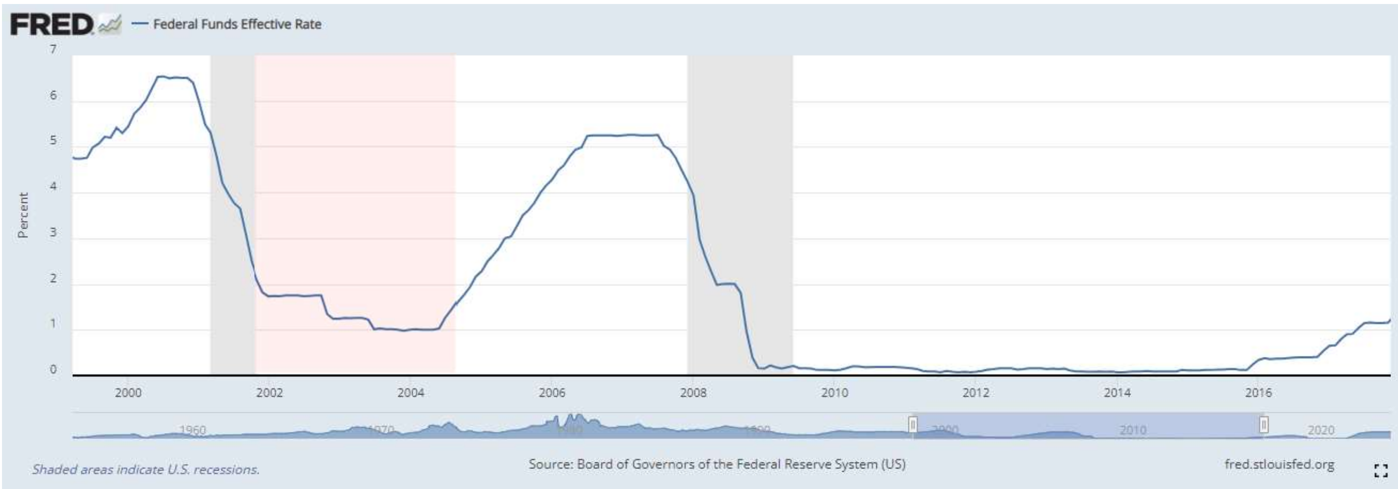
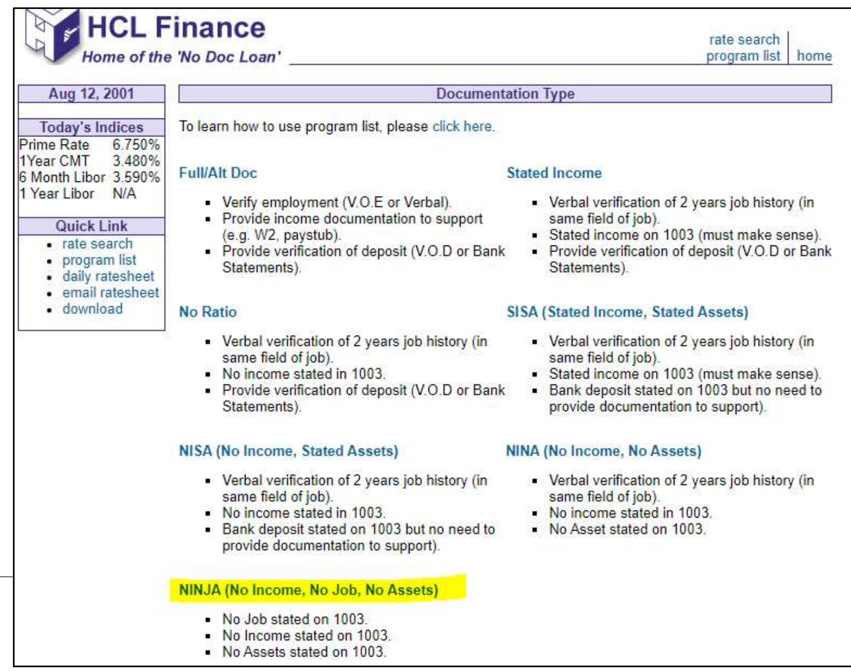
# Cheap money in early 2000s

- Low interest rates = cheap to borrow



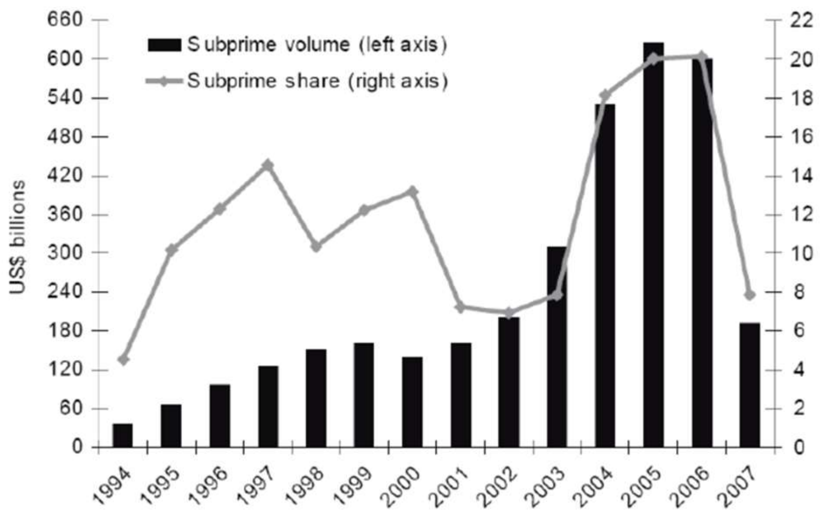
# Rise in subprime mortgages

- Increase in *subprime mortgages* to low-income borrowers (i.e. NINJA loans)
- Borrowers are offered a two-year “teaser rate” (fixed, low rate) which would later reset to an adjustable rate.



# Rise in subprime mortgages

- These subprime mortgages were then packaged into MBSs that could be resold to investors
- Many banks owned these securities.

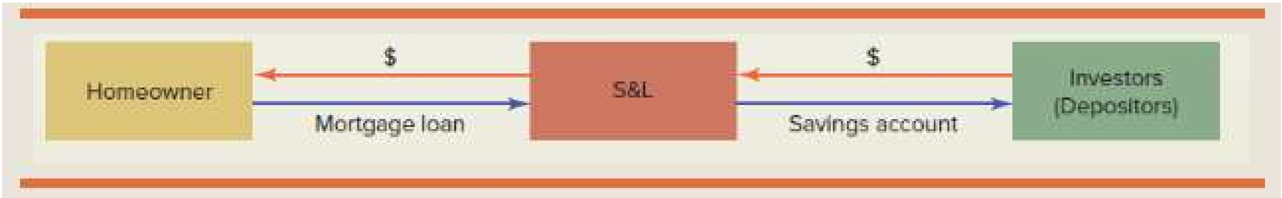



Source: *Inside Mortgage Finance*.

# Mortgage-backed securities (MBSs)

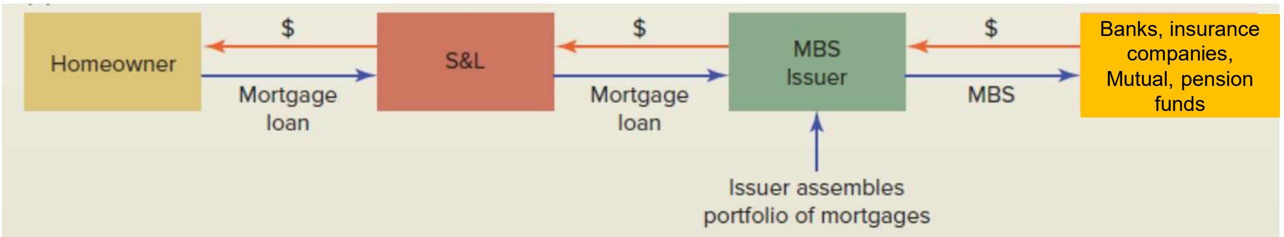
In the 1960s, most mortgage loans were made by local banks, savings banks.

- Mortgage lending before the invention of MBSs

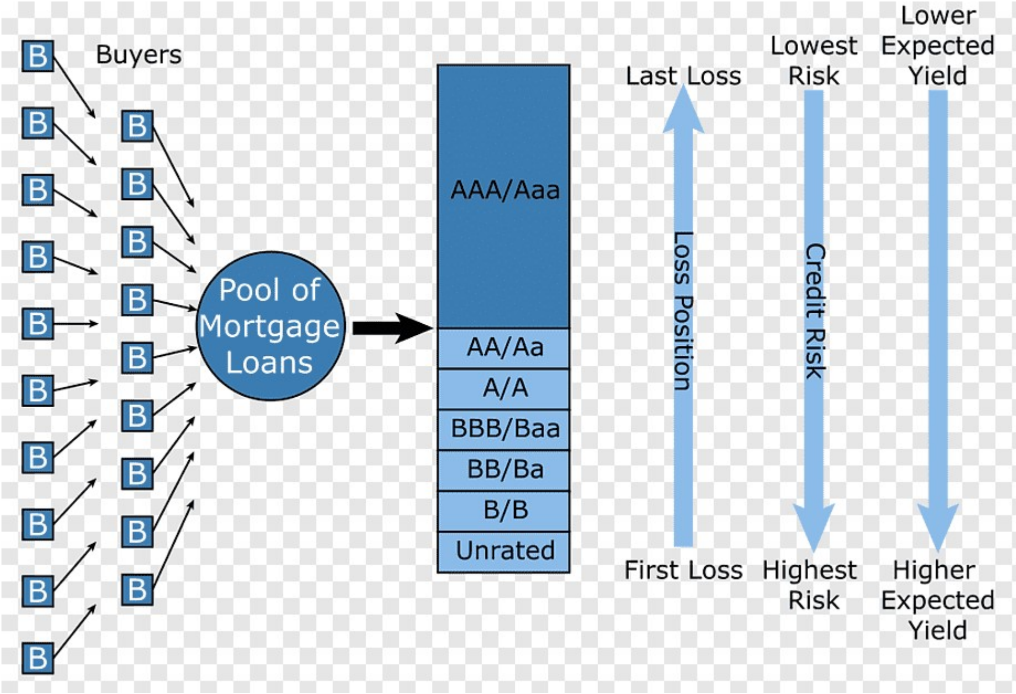



Chapter 2. Brealey, Myers and Marcus.

- Mortgage lending after the invention of MBSs

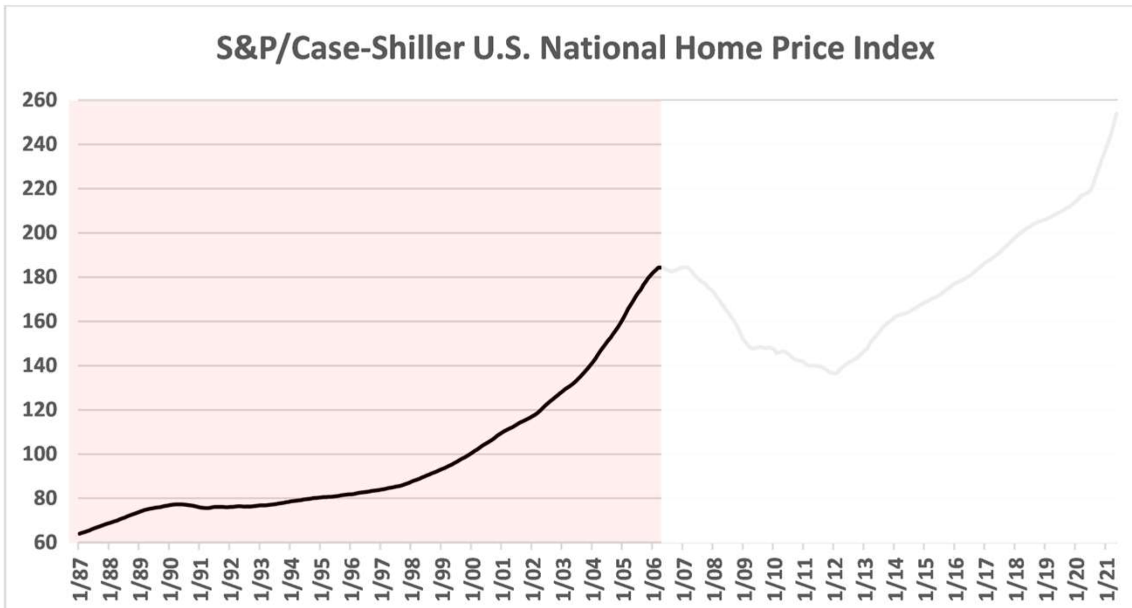


# Mortgage-backed securities (MBSs)



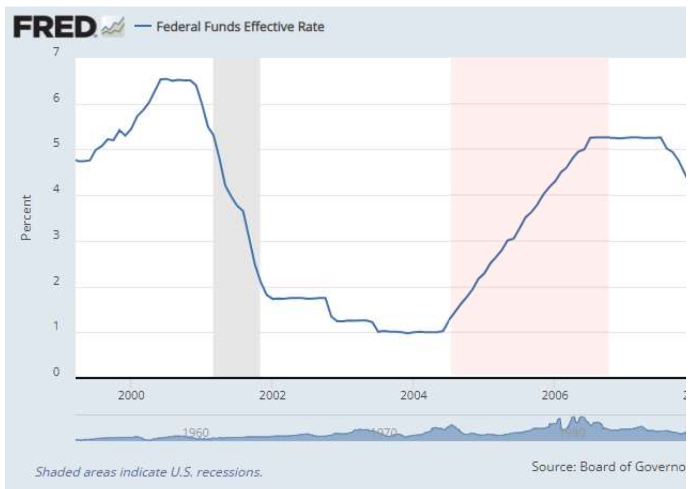
# Cheap money in early 2000s and souring housing prices

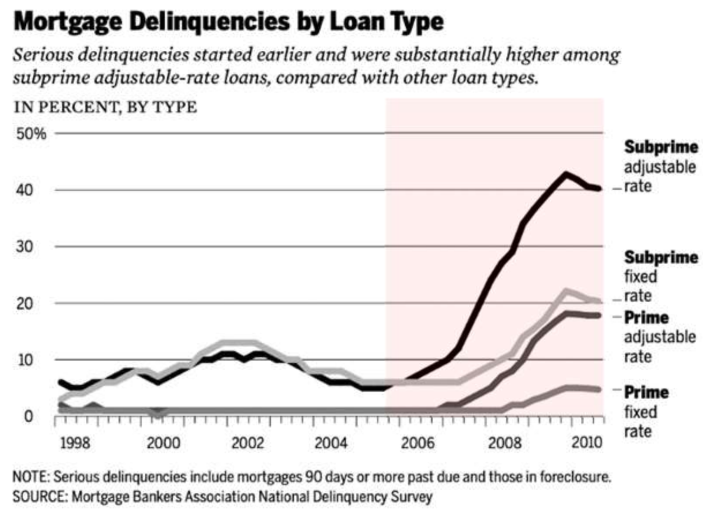
- Housing prices soared



# Interest rates started to rise… so did loan delinquencies

- Central bank starts to increase interest rates and as the mortgage teaser rate resets to the market rate, borrowers started to default.



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# Banks exposed to these subprime loans started to fail

- U.S. government had to many institutions (Fannie Mae, Freddie Mac, Bear Sterns, the insurance giant AIC who sold credit default swaps).
- The fall of Lehman Brothers caused a large shock wave.
- Banks stopped lending/buying securities → firm investment was cut back → unemployment rose → the economy contracted.



Max 18C, min 5C
Tuesday September 16 2008 timesonline.co.uk No 69430
Lehman collapse sends shockwave round world