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# An Introduction to Financial Markets

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# Outline

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- Function of the financial system
- Structure of the financial system
- Types of financial institutions
- Regulators
- Information asymmetries
- Links to further resources

# Function of the Financial System

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- Match savers with borrowers
- Portfolio diversification
- Transform maturity

# Function of the Financial System: Match Savers with Borrowers

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- Savings = Income less consumption
  - Various factors can affect savings: the business cycle, demographics, and uncertainty
- Demand for borrowing:
  - Investment
    - Business investment
      - Purchase of any type of capital (tangible or intangible) that increases future productivity and capacity
    - Residential fixed investment
      - Primary component is construction and remodeling of residential buildings
  - Consumption of big ticket items (houses, cars, boats, etc.)

# Function of the Financial System: Match Savers with Borrowers

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- Saving is not synonymous with investing
  - Savings
    - Done primarily by households
    - Transfer of current period consumption to future periods
    - Motivated by uncertainty over the future
  - Investment
    - Done primarily by firms
    - Acquisition of the inputs used in future output
    - Motivated by desire to grow future income

# Function of the Financial System: Match Savers with Borrowers

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- Households typically save, on net.
- Governments and firms invest.
- The financial market brings savers and investors together.
  - Savers benefit from higher returns.
  - Borrowers increase future income or current consumption.
- An individual or firm can both save and invest.

# Function of the Financial System: Portfolio diversification

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- Individual savers have limited funds.
- A financial intermediary pools savings and spreads risk.
  - “Don’t put all your eggs in one basket.”
  - A large portfolio of loans will typically be less risky than one.

# Function of the Financial System: Transform Maturity

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- Investments are usually long-term projects.
  - Borrowers prefer to finance projects with debt of similar maturity.
- Savers prefer liquidity, to access their savings any time.
- Intermediaries typically borrow short-term and lend long-term.
  - For example, banks take deposits and make long-term loans.
    - Long-rates are usually higher than short-rates, banks make money.
  - If savers demand their money back at once, intermediaries have a big problem.

# Function of the Financial System: Transform Maturity

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- The “bank run” is at the heart of financial crises.
- The recent subprime crisis was a “bank run” on financial institutions that borrowed short and lent long.

# Structure of Financial Markets

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- Direct v. Indirect Finance
- Debt v. Equity
- Short-term v. Long-term
- Primary v. Secondary
- Over-the-Counter v. Exchanges
- Derivates v. Underlying Assets

# Structure of Financial Markets: Direct v. Indirect

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- Direct Finance: Investors borrow directly from lenders
  - Example: IPO of stock or bond, loan between neighbors
  - Example: A firm sells commercial paper to an individual.
- Indirect Finance: Financial intermediary is a middleman
  - Example: A bank accepts deposits and loans the money to businesses or individuals.

# Structure of Financial Markets: Debt v. Equity

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- Debt: fixed contractual obligation
  - Most debt is nominally fixed.
  - Examples: corporate bond, mortgage
- Equity: Ownership stake in an income stream
  - Example: common stock
  - Unlimited upside but greater risk of loss. If a firm goes bankrupt, equity holders lose first, then bond holders.
  - There are often various classes of equity and bond holders.
- Bond markets are much bigger than equity markets.

# Structure of Financial Markets: Debt v. Equity

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- Equity holders don't mind high volatility, they gain on the upside and have limited loss.
- Debt holders do not gain from the upside so they often rebel at overly risky strategies.
- The bondholders of AIG, Fannie and Freddie, Bear Sterns and others actually benefitted from the financial crisis rescue packages much more than equity holders.
- Some proposals require that debt of large financial firms be automatically converted to equity in the event of financial crisis.

# Structure of Financial Markets: Short-term v. Long-term

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- Short-term: debt obligation with a maturity of less than 1 year
- Long-term: debt obligation with a maturity of over 10 years
- Different firms/individuals will have different preferences over debt maturity.
- Intermediaries reconcile the maturity preferences of savers and borrowers.

# Structure of Financial Markets: Primary v. Secondary

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- Primary market
  - New issues of securities are sold for the first time, usually underwritten by investment banks.
  - Example: IPO of a corporate stock or bond
- Secondary market
  - Securities that have been previously sold are resold.
  - Examples: NYSE, NASDAQ, bond markets
- Does the secondary market matter for the primary market? Yes.
  - Enhances demand for initial offerings in the primary market

# Structure of Financial Markets: OTC v. Exchanges

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- Over-the-Counter (OTC)
  - Private markets with individual banks for various securities.
  - Example: U.S. bond market
- Exchanges
  - Central location, standardized contracts, mark-to-market margins, default protection.
  - Examples: NYSE, Chicago Mercantile Exchange
- Both are secondary markets.

# Structure of Financial Markets: Derivatives v. Underlying Assets

- Derivative
  - Agreement or contract that depends on an underlying asset
    - Value is often determined by underlying asset prices, volatility and/or perceived probability of future events.
    - You own a put option on your mortgage. It is the law.
    - Examples: credit default swaps, futures contracts, currency options
- Underlying Asset: A claim on future income
  - Can be tangible or intangible
    - Example: car, U.S. dollar (tangible)
    - Example: copyright (intangible)

# Structure of Financial Markets: OTC v. Exchanges (cont.)

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- Derivatives are powerful, generally implying high *leverage*, a small investment for a given payoff or loss.
- The “Restoring American Financial Stability Act” would move specified OTC derivatives trading to exchanges, to...
  - Increase transparency
  - Reduce settlement risk
  - Promote standardization of contracts
  - Why? Fairer prices, less settlement risk, transparent accounting.

# Types of Financial Institutions

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- Depository Institutions
- Contractual Savings Institutions
- Investment Intermediaries
- Investment Banks
- Government-Sponsored Enterprise (GSE)

# Types of Financial Institutions:

## Depository Institutions

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- Commercial Banks
- Savings and Loan Associations (S&Ls)
- Mutual Savings Banks
- Credit Unions

# Depository Institutions: Common Characteristics

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- Liabilities (funding from deposits):
  - Checking
    - Demand deposits: Typically do not earn interest.
  - Savings
    - Demand deposits: Earn interest, but no checks.
  - Time
    - Certificates of deposit (CD) usually pay more interest than savings accounts, but withdrawals of funds are subject to fixed maturity dates.

# Depository Institutions: Common Characteristics

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- Assets: loans to homeowners and businesses
- Important role as a transformer of maturity:
  - Short-term liabilities (demand deposits) and long-term assets (e.g., loans) such as mortgages.

# Depository Institutions: Vanishing Differences

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- The Depository Institution Deregulation and Monetary Control Act of 1980 (DIDMCA) lifted previous restrictions on:
  - Deposits:
    - Allowed S&Ls, credit unions and mutual savings banks to provide checking deposits, like commercial banks.
  - Lending:
    - Permitted mutual savings banks and S&Ls to make consumer loans and credit unions to make mortgage loans
      - Previously mutual savings banks and S&Ls were restricted to mortgages, while credit unions were restricted to consumer loans

# Depository Institutions: Vanishing Differences

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- The Riegle-Neal Banking Act of 1994 reversed the McFadden Act of 1927, which had prohibited interstate branching among commercial banks
  - Previously only credit unions were allowed interstate branching

# Depository Institutions: Remaining Distinctions

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- Depositors own credit unions and mutual savings banks.
- Membership in credit unions is restricted to a group.
  - Credit unions can be organized around labor unions, industry and company employees, military, etc.
- Credit unions still specialize in consumer loans.
- S&L's and mutual savings banks still specialize in mortgages.

# Depository Institution: Typical Balance Sheet

<b>Assets</b>	<b>Liabilities</b>
Loans to consumers	Checking Deposits
Loans to businesses	Savings Deposits
Mortgages	Time Deposits
Government Bonds (local and federal)	

# Types of Financial Institutions: Contractual Savings Institutions

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- Life Insurance Companies
- Fire and Casualty Insurance Companies
- Pension Funds
- State and Local Government Retirement Funds

# Contractual Savings Institutions: Common Characteristics

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- Accept the risk of predefined future losses.
  - Assume contingent liabilities in return for regular payments.
- Exceptions to the risks that these institutions take on:
  - Exclude payouts in the case of “Acts of God”, terrorism, etc.
    - Institutions must be able to diversify risks.

# Contractual Savings Institutions: Distinguishing Characteristics

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- Contingent Event
  - Life insurance pays out when the policy owner dies.
  - Fire and causality insurance pays out in the event of theft, fire, accident, natural disaster, etc.
  - Pension funds and state and local government retirement funds pay out upon retirement.

# Contractual Savings Institutions: Distinguishing Characteristics

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## ● Premiums

- Payments for insurance are *premiums*.
- Employees/employers *contribute* to pensions and retirement funds.

## ● Payouts

- Life insurance payouts can be one-time or annuities
- Fire and casualty insurance payouts are one-time.
- Pension and Retirement funds are paid out as annuities.
- Retirement timing is more certain than insured events.

# Contractual Savings Institutions: Distinguishing Characteristics

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- Liquidity Needs
  - Life insurance companies and pension and retirement funds hold longer-term securities for predictable liquidity needs.
  - Fire and causality insurance companies require the liquidity of shorter-term securities to meet greater uncertainty and higher risk of correlated payouts.

# Contractual Savings Institution: Typical Balance Sheet

Assets	Liabilities
<u>Short Term</u>	Contingent payments on future events
Municipal bonds	
<u>Long Term</u>	
Corporate bonds	
Mortgages	
Stocks (the proportion of stocks that can be held is restricted by law for life insurance companies)	
Treasury Securities	

# Types of Financial Institutions: Investment Intermediaries

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- Finance Companies
- Mutual Funds
- Money Market Mutual Funds
- Hedge Funds

# Investment Intermediaries: Common Characteristics

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- Diversify savers' portfolios.
  - Savers diversify their investment portfolios.
  - Higher yields and lower volatility.
  
- A digression on diversification
  - Don't put all your eggs in one basket.
  - An asset's risk depends on other opportunities.
    - A share of Sun Inc and Rain Inc might each be "risky" but together have little or no risk.

# Investment Intermediaries: Distinguishing Characteristics

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- Finance Companies
- Mutual Funds
- Money Market Mutual Funds ( MMMFs )
- Hedge Funds

# Investment Intermediaries: Finance Companies

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- Fund small business investment and consumer loans
  - Consumer loans are for:
    - Home improvement (residential fixed investment)
    - Durable goods
  - Often affiliated with a holding company that manufactures goods.
- Funding: Issue commercial paper, stock, and bonds
- Parent companies use subsidiary finance companies.
  - Profit in the finance company.
  - Sell more of the original product.
  - Examples: GMAC and Ford Motor Credit

# Finance Company: Typical Balance Sheet

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<b>Assets</b>	<b>Liabilities</b>
Consumer Loans	Commercial Paper
Small Business Loans	Bonds
	Owner's equity

# Investment Intermediaries: Mutual Funds and MMMFs

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- Mutual Funds and MMMFs pool assets and invest the proceeds in a given asset class or classes on behalf of their investors.
  - Lower transactions costs
  - Increased portfolio diversity
  - Professional portfolio management (useful?)
- Characteristics include:
  - High liquidity
    - Investors can sell shares at any time.
  - Disclosure of investment strategy and investment objectives
    - Potential investors can judge a fund's risk.

# Investment Intermediaries: Mutual and MMMFs

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- Mutual and MMMFs are part of a recently (last 30-years) developing “shadow banking” system.
- Like banks, they take money from savers and invest it in assets.

# Investment Intermediaries: Mutual and MMMFs

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- Distinguishing characteristics:
  - Securities Held
    - Mutual funds hold long-term assets: stocks and/or bonds.
    - MMMFs hold short-term assets: a lot of commercial paper and asset-backed commercial paper (ABCP).
  - One can write checks against MMMFs (up to a limit)
    - MMMFs hold liquid securities.

# Investment Intermediaries: MMMFs

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- There are both institutional and retail MMMFs.
  - Institutional: High minimum investment, low costs, marketed to big firms. A cash management tool for corporations.
  - Retail: Marketed to individuals.
- Money market deposit accounts (MMDAs) at banks vs. MMMFs
  - MMDAs are bank accounts with high minimums that offer higher interest than passbook savings.
  - Money market accounts might refer to MMDAs or MMMFs.

# Mutual Funds: Typical Balance Sheet

Assets	Liabilities
<u>Mutual funds</u>	Redeemable shares
Stocks	
Bonds	
<u>MMMFs</u>	
Commercial Paper	

# Investment Intermediaries: Mutual v. Hedge Funds

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- Like mutual funds, hedge funds (HFs):
  - Pool resources among investors
  - Invest in stocks, bonds and commercial paper
  - Usually have low leverage.
    - They don't borrow more money than their investors put in.
- Unlike mutual funds, hedge funds:
  - Are only open to “sophisticated investors”
  - Pay the investment manager a performance fee
  - Have different investment strategies and objectives.

# Investment Intermediaries: Mutual v. Hedge Funds

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- Mutual funds face regulations on:
  - Short selling
  - Use of derivatives
  - Use of leverage
  - Fee structures
- Hedge funds avoid strict regulation through their exclusivity
  - The term hedge fund originates from the concept of hedging against economy-wide, or systematic, risks.
  - Not a buy-and-hold equity strategy.

# Types of Financial Institutions:

## Investment Banks

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- Not a bank in the traditional sense
  - Do not accept deposits
- Major role is as a consultant and middle man
  - Advises companies on raising funds through equity or bond sales.
  - Underwrites public offerings of newly issued securities.
    - Underwrite: To accept risk in exchange for a payment. Investment Banks guarantee a stock price in exchange for a fee.
  - Provides services related to mergers and acquisitions
  - Have recently (last 15 years) substantially increased proprietary trading.

# Types of Financial Institutions:

## Government-Sponsored Enterprise (GSE)

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- Federal National Mortgage Association (Fannie Mae)
- Government National Mortgage Association (Ginnie Mae)
- Federal Home Loan Mortgage Corporation (Freddie Mac)
- Student Loan Marketing Association (Sallie Mae)

# GSEs: Origination

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- Created by U.S. Congress with the intention of encouraging the flow of credit to agriculture, housing, and education
  - Securitize debt to promote funding of the loans and lower the cost of loans.
  - Securitization: Creation of a more or less standard asset, such as a bond, backed by non-standard assets, such as mortgage loans.
- The first GSE, the Farm Credit System, was created in 1916.

# GSEs: Origination

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- Securitization: Creating standardized assets (like bonds) out of heterogeneous assets like loans.
- Securitization makes the underlying asset (e.g, the loans) more liquid and thus more valuable to the lender. As a result it reduces borrowing costs.

# GSEs: History in the Housing Market

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- Congress created Fannie Mae in 1938 to increase the accessibility of mortgages.
  - Fannie Mae bought mortgages from originators (mainly S&Ls), and then securitized and resold those mortgages as bonds.
  - This lowered the cost of mortgages.
- In 1968, Congress transformed Fannie Mae from a government agency to a private corporation.
- Markets believed that the US Treasury still implicitly backed Fannie Mae's bonds.

# GSEs: History in the Housing Market

- In 1968, Congress transformed Fannie Mae from a government agency to a private corporation.
  - The legislation established Ginnie Mae to guarantee government issued mortgage-backed securities, as Fannie had done.
- In 1970, Congress created Freddie Mac to compete with Fannie Mae.
  - Intended to increase efficiency and stability of secondary market for mortgages.

# GSEs: History in the Housing Market

- In 2003 “significant accounting irregularities” brought housing GSEs into the spotlight
  - Upper management was overstating profits in order to garner larger bonuses
  - The attention on GSEs caused serious concern among some, but no material changes in their operations
    - For a good summary see the following speech by then St. Louis Fed President William Poole: “GSEs: Where do we Stand,” Federal Reserve Bank of St. Louis *Review*, May/June 2007
- In September of 2008 Fannie Mae and Freddie Mac were placed under the conservatorship of the Federal Housing Finance Agency

## GSEs: What Went Wrong?

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- The premise of the housing GSEs was that by purchasing and then securitizing mortgages the GSEs would establish a stable secondary market for mortgages.
  - Improves the liquidity of mortgage originators.
  - Lowers borrowing rates for home owners.
  - Poole (2007) suggests that the fully private secondary market for mortgages was capable of function fine without GSEs

## GSEs: What Went Wrong?

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- While GSEs were privately run, there was always the assumption that the government would not let them fail.
  - Opened a large profit opportunity
    - “The fact is that it is very profitable for a firm to be able to borrow at close to the Treasury rate, lend at the market rate, and hold little capital.” – Poole (2007)
- The GSEs faced moral hazard
  - Management and private shareholders benefited from the returns on highly leveraged mortgage portfolios while ultimately passing the cost of those risks on to taxpayers

## GSEs: What Went Wrong?

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- The threat of the GSEs during poor economic times was known before the financial crisis
  - The accounting scandals resulted in investigations by the SEC and the Department of Justice, as well as Congressional hearings.
  - GSE reform legislation made it out of committee but did not pass on the floor
    - Reform proposals included limiting the size of the assets that the GSEs could hold, and completely privatizing the GSEs

# GSEs: History in Post-Secondary Education

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- Congress established Sallie Mae in 1972 to encourage post-secondary education with affordable students loans.
  - Originated, serviced and collected on student loans.
- In 1997 Congress began privatizing Sallie Mae's operations.
  - Congress officially terminated its federal charter in 2004. It is now a private corporation.

# Regulators

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- Deposit Institutions
- Other Financial Institutions
- Proposed Legislative Changes

# Regulators

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- Why regulate financial institutions?
  - They are investing other people's money.
    - Financial firms have most of the upside but limited downside. They have an incentive to make volatile investments.
  - Protect investors. Information is costly.
  - Systemic risk: The failure of one firm can affect many others.
    - Example: Systemic bank runs.

# Regulators of Depository Institutions

	By Charter		By Deposit Insurer	By Membership
	State	Federal		
Bank Holding companies				Federal Reserve
Commercial Banks	State Regulators	OCC	FDIC	Federal Reserve
S&Ls	State Regulators	OTS	FDIC	
Mutual Savings Banks	State Regulators	FDIC	FDIC	
Credit Unions	State Regulators	NCUA	NCUA	

# Regulators of Other Financial Institutions By Market

Market	Regulator(s)
Insurance	State Regulators
Equity and Securities	Securities and Exchange Commission
	State Regulators
	Financial Industry Regulatory Authority
Commodities Futures	Commodity Futures Trading Commission

# Regulators:

## Proposed Legislative Changes

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- Proposals in the Restoring American Financial Stability Act
  - Establish the Consumer Financial Protection Bureau as an independent entity within the Federal Reserve
  - Create the Financial Stability Oversight Council
    - Responsible for identifying, monitoring, and addressing systematic risk
    - Chaired by Treasury Secretary with representatives from the Fed, SEC, CFTC, OCC, FDIC, FHFA, Consumer Financial Protection Bureau and independent representative with knowledge of insurance industry
  - Merge OTS and OCC into one national banking regulator
    - Regulation of S&Ls would go to the Fed
  - Create Office of National Insurance within the Treasury Department

# Information Asymmetries

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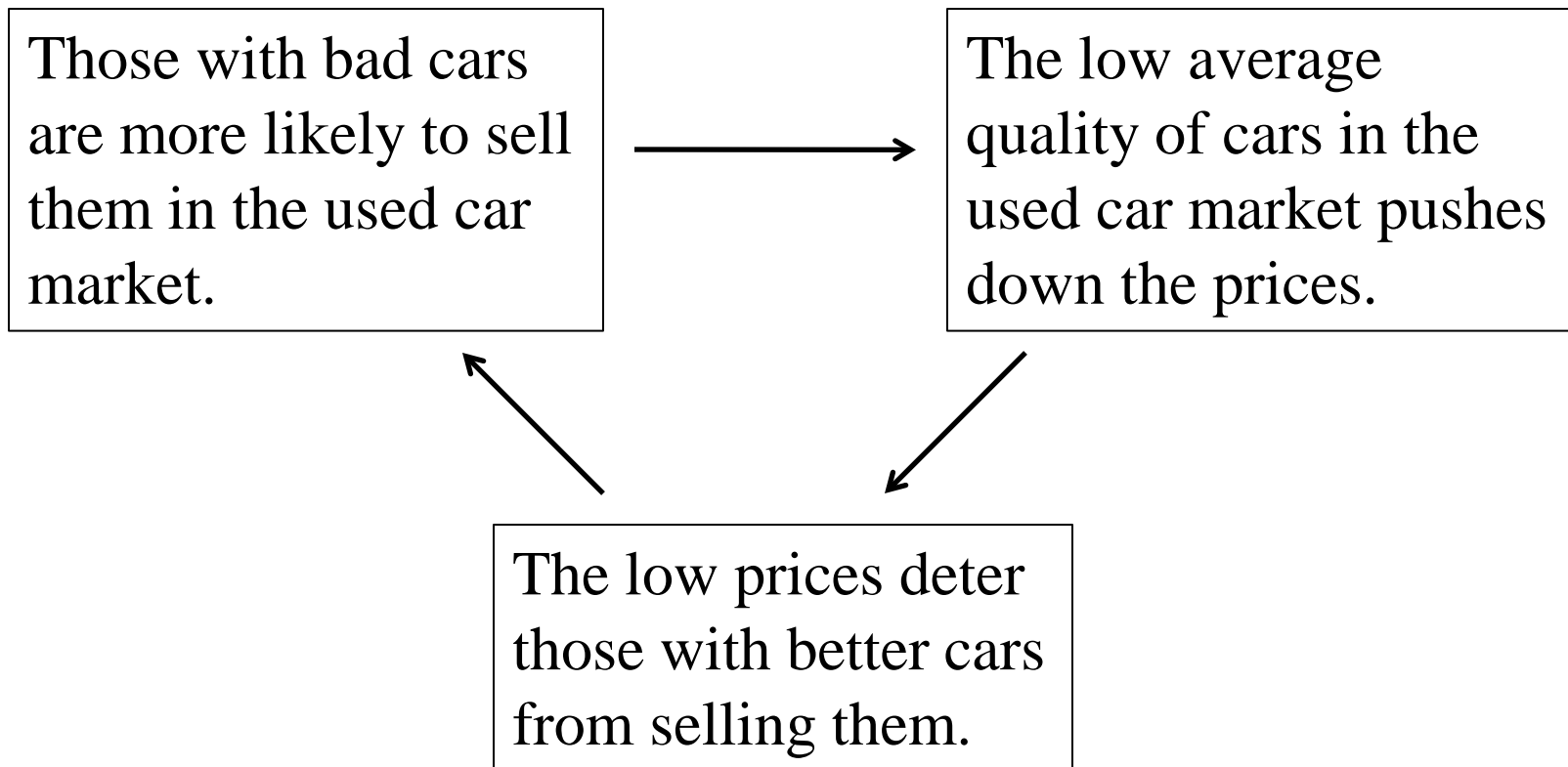
- Adverse Selection
- Moral Hazard

# Information Asymmetries: Adverse Selection

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- Adverse selection: Only the “bad” customers want to come to your business.
- Adverse selection plagues the insurance industry.
  - Individuals know more about their health than insurance companies and the less healthy are more interested in health insurance.
- Adverse selection can eliminate the market entirely.
  - Insurers must charge higher premiums due to unhealthy pool.
  - Higher premiums drive out the healthiest policy holders.
- The classic example of adverse selection is the used car market.

# Adverse Selection: The “Lemons” Problem in Used Cars



# Information Asymmetries: Moral Hazard

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- Individuals may take on too many risks if they do not bear the whole cost of their behavior.
  - An insured driver might drive more recklessly than if he had no insurance.
  - How do people drive rental cars?
- An important issue with recent financial rescue packages.
  - Bondholders have less incentive to monitor firms if they will get their money back anyway.
- Moral hazard can also significantly impair markets.

# Information Asymmetries: Moral Hazard v. Adverse Selection

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- Adverse selection occurs before the transaction.
- Moral hazard occurs after the transaction.

# Summary

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- Function of the financial system:
  - Match savers and borrowers.
- Structure of the financial system
  - Direct v. Indirect Finance, Debt v. Equity, Short-term v. Long Term, Primary v. Secondary markets, OTC v. Exchanges, Derivates v. Underlying Assets
- Types of financial institutions
  - Depository Institutions, Contractual Savings Institutions, Investment Intermediaries, Investment Banks, Government-Sponsored Enterprises (GSE)

# Summary

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- Regulators
  - Why regulate? Financial institutions are investing other people's money.
    - Imperfect information.
    - Systemic risk.
- Information asymmetries
  - Adverse selection
  - Moral hazard

# Links to Further Resources

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- Data is available at:
  - Federal Reserve Board of Governors  
<http://www.federalreserve.gov/econresdata/releases/statisticsdata.htm>
  - St. Louis Fed's FRED  
<http://research.stlouisfed.org/fred2/>
- Additional Resources Include:
  - <http://www.federalreserveeducation.org/>
  - St. Louis Fed's Education Resources  
[http://www.stlouisfed.org/education\\_resources/](http://www.stlouisfed.org/education_resources/)
  - <http://financeeducation.org/> (still undergoing construction)

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# The End