

Macroeconomics: Principles & Applications

CHAPTER 4

Working with Supply and Demand

Robert E. Hall & Mark Lieberman

PowerPoint slides prepared by:
Andreea Chiritescu
Eastern Illinois University

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Government Intervention in Markets

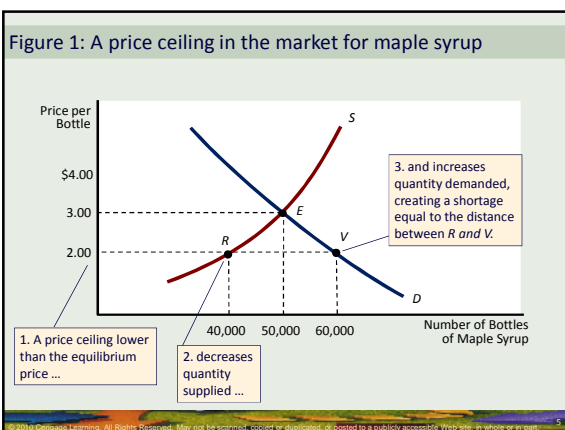
- **Governments**
 - Sometimes intervene to change the market outcome
 - Fight the market
 - Prevent the price from reaching equilibrium value
 - Price ceilings
 - Price floors

Fighting the Market: Price Ceilings

- **Price ceiling**
 - Government-imposed maximum price in a market
- **Short side of the market**
 - The smaller of quantity supplied and quantity demanded at a particular price
- **When Q^D and Q^S differ**
 - The short side of the market will prevail

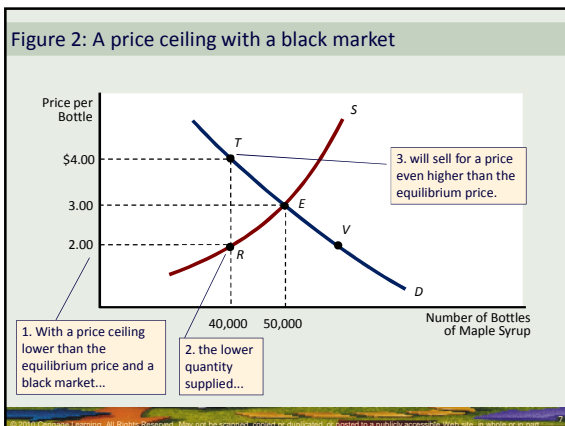
Fighting the Market: Price Ceilings

- **Shortage**
 - Excess demand not eliminated by a rise in price
 - $Q^D > Q^S$
- **Price ceiling**
 - Creates a shortage
 - Increases the time and trouble required to buy the good
 - Price decreases
 - Opportunity cost may rise



Fighting the Market: Price Ceilings

- **Black market**
 - A market in which goods are sold illegally at a price above the legal ceiling
 - Price – above equilibrium price
- **Unintended consequences of price ceilings**
 - Long lines
 - Black markets
 - Often, higher prices



Fighting the Market: Price Ceilings

- **Rent control**
 - Price ceiling imposed in a rental housing market
 - Government-imposed maximum rents on apartments and homes
 - Purpose: to keep housing affordable
 - Especially for those with low incomes

Fighting the Market: Price Ceilings

- **Problems with rent control**
 - It doesn't target those with low incomes
 - Luck
 - Persistent excess demand
 - Wasted time
 - 'black market'
 - Rent – higher than rent-controlled price
 - Decrease in the quantity of apartments supplied

Fighting the Market: Price Floors

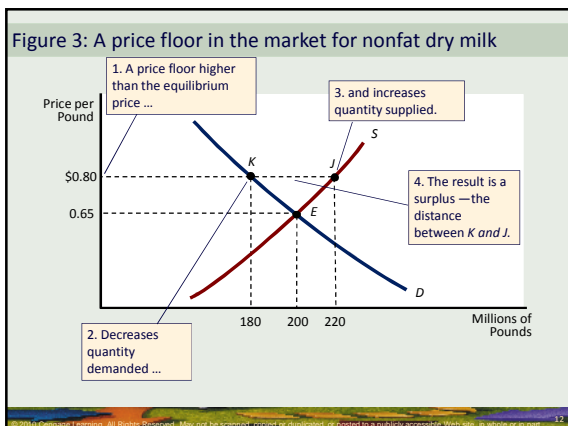
- **Price floor**
 - Government-imposed minimum price in a market
 - Purpose: to help sellers
- **Price floors for agricultural goods**
 - Price support programs
 - United States Department of Agriculture (USDA)
 - Programs to maintain high prices for cotton, wheat, rice, corn, tobacco, honey, milk, cheese, butter

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Fighting the Market: Price Floors

- **Surplus**
 - Excess supply not eliminated by a fall in price
 - $Q_s > Q_d$
- **Price floor**
 - Surplus of a good
 - Temptation – to sell the surplus below the price floor
 - Government – purchases the surplus

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Fighting the Market: Price Floors

- **Government - limit any excess supplies**
 - Dairy market - control the production and sale
 - Government - ordered or paid farmers not to grow crops on portions of their land
 - Imposed strict limits on imports of food from abroad

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Fighting the Market: Price Floors

- **Critics**
 - Government- spends too much money buying surplus agricultural products
 - Higher prices distort the public's buying and eating habits
 - Assistance – support all farmers
 - Many farmers - wealthy individuals or powerful corporations
 - More cost-effective if given directly to those truly in need

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Manipulating the Market: Taxes

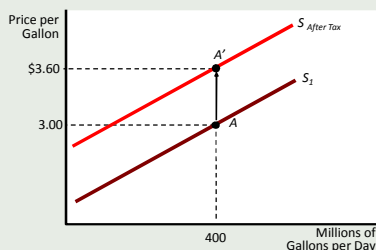
- **Excise tax**
 - A tax on a specific good or service
 - Can be collected from either sellers or buyers
- **Tax incidence**
 - The division of a tax payment between buyers and sellers
 - Determined by comparing the new (after tax) and old (pretax) market equilibriums

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Manipulating the Market: Taxes

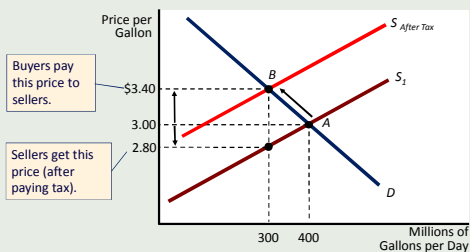
- **Tax shifting**
 - Some/all of a tax imposed on one side of a market
 - Ends up being paid by the other side of the market
- **Excise tax on sellers**
 - Shifts the supply curve upward by the amount of the tax
 - Incidence: both sides of the market
 - Buyers pay more
 - Sellers receive less

Figure 4: A tax on sellers shifts the supply curve upward



After a \$0.60 per gallon tax is imposed on sellers, the price at which any given quantity would be supplied is \$0.60 greater than before, so the supply curve shifts upward. For example, before the tax, 400 million gallons would be supplied at \$3 per gallon (point A); after the tax, to get that same quantity supplied requires a price of \$3.60 (point A').

Figure 5: The effect of an excise tax imposed on sellers

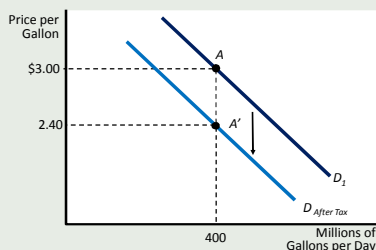


After a \$0.60 excise tax is imposed on sellers, the market equilibrium moves from point A to point B, with buyers paying sellers \$3.40 per gallon. But sellers get only \$3.40 - \$0.60 after paying the tax. Thus, the tax causes buyers to pay \$0.40 more per gallon, and sellers to get \$0.20 less.

Manipulating the Market: Taxes

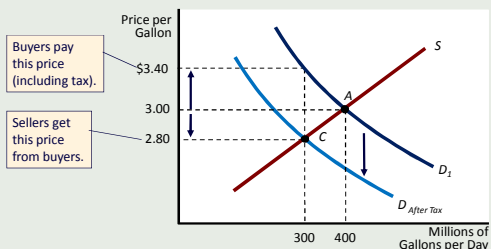
- Excise tax on buyers
 - Shifts the demand curve downward by the amount of the tax
 - Tax incidence – both sides of the market
 - Buyers pay more
 - Sellers receive less

Figure 6: A tax on buyers shifts the demand curve downward



After a \$0.60 per gallon tax is imposed on buyers, the price at which any given quantity would be demanded is \$0.60 less than before, so the demand curve shifts downward. For example, before the tax, 400 million gallons would be demanded at \$3 per gallon (point A); after the tax, that same quantity would be demanded at a price of \$2.40 (point A').

Figure 7: The effect of an excise tax imposed on buyers



After a \$0.60 excise tax is imposed on buyers, the market equilibrium moves from point A to point C, with buyers paying sellers \$2.80 per gallon. But buyers pay a total of $\$2.80 + \$0.60 = \$3.40$ per gallon when the tax is included. Thus, the tax causes buyers to pay \$0.40 more, and sellers to get \$0.20 less, just as when the tax is imposed on sellers.

Manipulating the Market: Taxes

- **Tax incidence**
 - Distribution of tax burden between buyers and sellers
- **Tax incidence**
 - Is the same whether the tax is collected from buyers or sellers

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Manipulating the Market: Subsidies

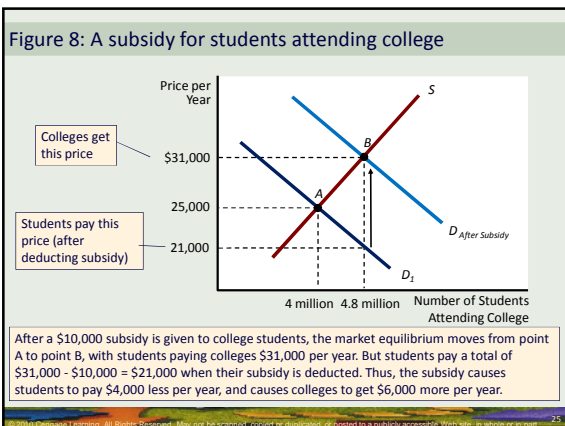
- **Subsidy**
 - A government payment to buyers or sellers on each unit purchased or sold
 - Medical care for the poor and elderly
 - Energy-saving equipment
 - Smoking-cessation programs
 - College education

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Manipulating the Market: Subsidies

- **Subsidy to buyers**
 - Shifts the demand curve upward by the amount of the subsidy
 - Benefits both sides of a market
 - Buyers pay less
 - Sellers receive more for each unit sold

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Manipulating the Market: Subsidies

- **Subsidy to sellers**
 - Shifts the supply curve downward by the amount of the subsidy
 - Benefits both sides of a market
 - Buyers pay less
 - Sellers receive more for each unit sold
- **Distribution of benefits from a subsidy**
 - Are the same, regardless of whether the subsidy is paid to buyers or sellers

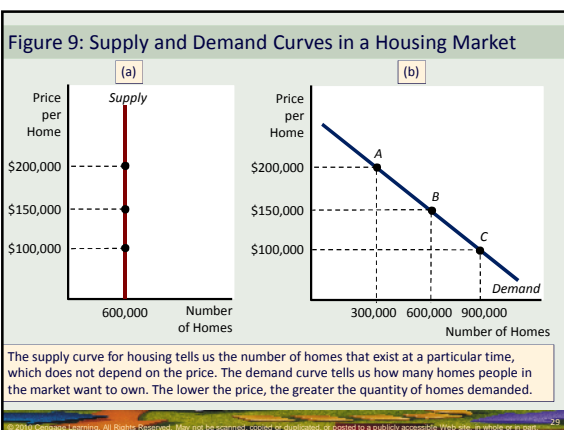
Supply and Demand in Housing Markets

- **Stock variable**
 - Measures a quantity in existence at a moment in time
 - Housing stock
 - Number of homes that people own at a given time
- **Flow variable**
 - Measures a process that takes place over a period of time
 - New home construction
 - New home purchases

Supply and Demand in Housing Markets

- **Supply**
 - Housing stock
 - Vertical
- **Demand**
 - Demand for housing stock
 - Downward sloping
 - Number of families who want to be homeowners at each price
 - Households – can own only one home

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Supply and Demand in Housing Markets

- **Home ownership**
 - An alternative to renting
- **Monthly cost of owning a home**
 - Maintenance, property taxes, interest
- **Monthly costs for prospective owners**
 - Foregone monthly interest
 - Mortgage and interest
 - Higher home prices
 - Higher cost of ownership

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Supply and Demand in Housing Markets

- **Mortgage**
 - Loan given to a homebuyer
 - Part of the purchase price of the home
- **Monthly costs for current owners**
 - Foregone interest
 - Higher home prices
 - Higher cost of ownership

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Supply and Demand in Housing Markets

- **Monthly cost of ownership**
 - Current homeowners
 - Prospective homeowners
 - Rises when home price rise
 - Falls when home prices fall
- **Movement along housing demand**
 - Change in price
 - Other things constant

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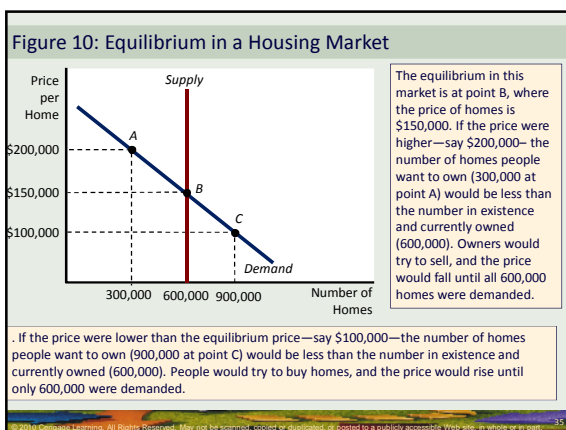
Supply and Demand in Housing Markets

- **Shifts in housing demand**
 - Monthly cost of renting a home
 - Interest rates in the economy
 - Tastes for homeownership
 - Average income
 - Population

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Housing Market Equilibrium

- **Equilibrium price**
 - Quantity of homes demanded
 - Number that people want to own
 - Equals quantity supplied
 - Housing stock



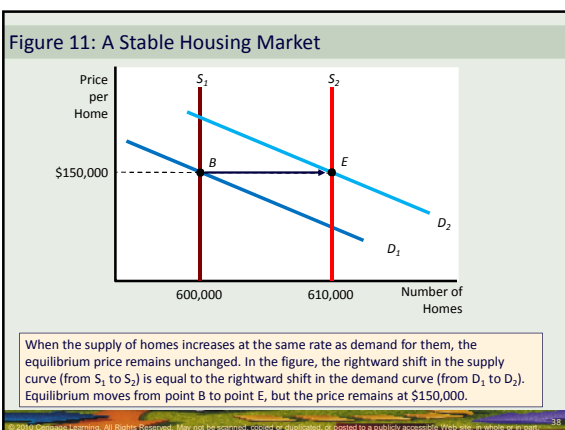
What Happens when Things Change

- **Over time**
 - Supply curve shifts rightward
 - As the housing stock rises (new homes are built)
 - Demand curve shifts rightward
 - Population growth, rising incomes
 - Market equilibrium will move rightward
 - Home prices - relative shifts in the supply and demand curves

What Happens when Things Change

- **Equal changes in supply and demand**
 - Housing stock grows at the same rate as housing demand
 - Housing prices – unchanged
 - A stable housing market

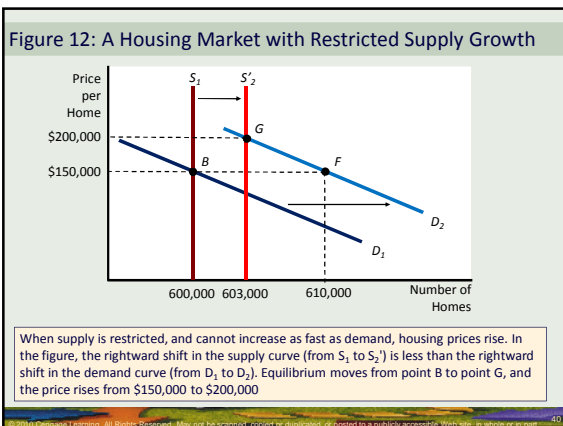
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What Happens when Things Change

- **Restrictions on new building**
 - Slow increase in supply
 - Housing stock grows slower than demand
 - Rapidly rising prices

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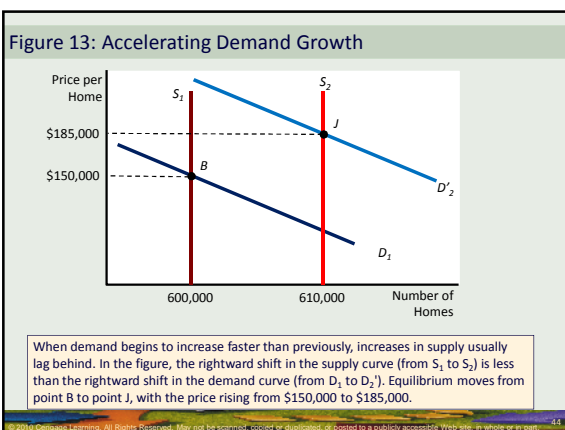


- ### What Happens when Things Change
- **Faster demand growth**
 - Due to
 - Population shifts
 - Sudden influx of new residents
 - Rapid income growth
 - Booming industry in the area
 - Change in expectations about future prices
 - Rapidly rising prices

- ### What Happens when Things Change
- **House = asset**
 - One of the most leveraged financial investments
 - Capital gain
 - Selling price > initial purchase price
 - Capital loss
 - Selling price < initial purchase price

What Happens when Things Change

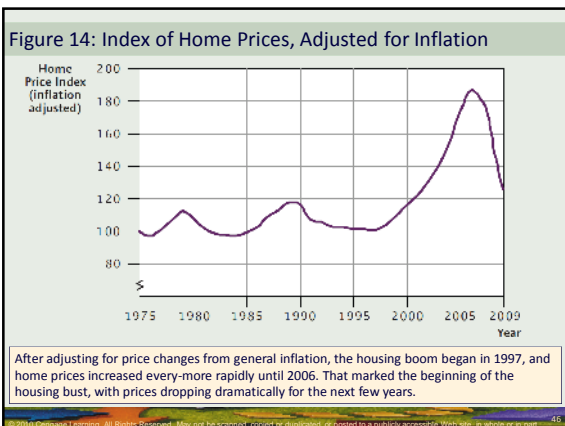
- **Expectations about future prices**
 - To increase more rapidly
 - Demand curve shifts rightward –more
 - Housing stock – increases slower
 - Housing prices rise



Using the Theory

The housing boom of 1997-2006

- **1997 to 2006**
 - Housing price index almost doubled
 - Housing 'bubble'
 - Housing boom
 - Housing bust
 - Demand increased more rapidly than supply



Using the Theory

Housing boom

- **Economic growth**
 - Higher income, Higher employment
 - Demand curve – rightward shift
- **Interest rates**
 - Trended downward
 - Demand curve – rightward shift

Using the Theory

Housing boom

- **Government policy**
 - Encourage homeownership
 - Tax deductible mortgage interest payments
 - Purchase mortgages from banks
 - Demand curve – rightward shift

Using the Theory

Housing boom

- **Financial innovations**
 - More-attractive terms for borrowers
 - Adjustable-rate mortgage
 - Mortgage lending more attractive
 - Securitization
 - Mortgage backed securities
 - Demand curve – rightward shift

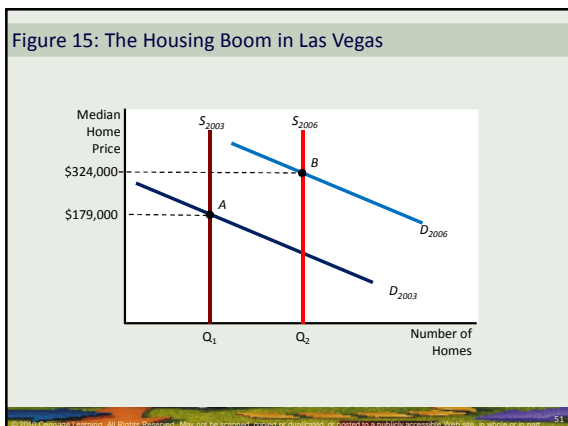
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Using the Theory

Housing boom

- **Deteriorating lending standards**
 - Subprime loans to borrowers who previously would not have qualified
 - Low or unstable incomes
 - Bad credit histories
 - Smaller down-payments
 - Demand curve – rightward shift
- **Speculation**
 - Demand curve – rightward shift

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Using the Theory

Housing bust

- **Mid-2006**
 - Oil and gasoline prices spiked
 - Many new homeowners were struggling to make ends meet
 - Interest rates on a large group of adjustable rate mortgages reset to higher levels
 - Disturbing rise in defaults
 - Subprime mortgages with no down payments
 - Prospect of higher default rates

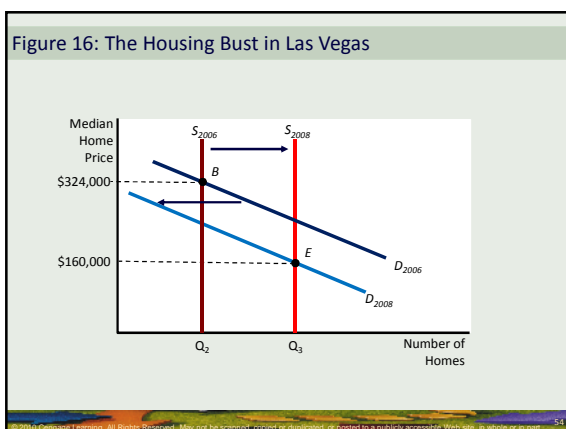
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Using the Theory

Housing bust

- **Mid-2006**
 - Interest rates on new mortgages – rose
 - Demand curve for housing shifted leftward
 - Housing prices fell
 - Speculation
 - Demand curve shifted further leftward
 - Housing prices fell even more rapidly

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APPENDIX

Leverage

- Without leverage
 - 10% higher housing prices
 - 10% capital gains
 - 10% lower housing prices
 - 10% capital losses

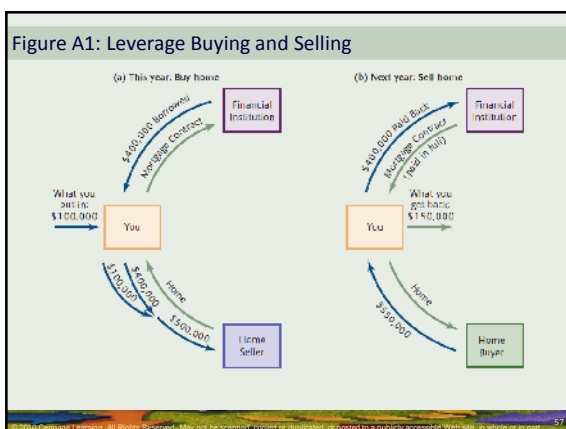
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APPENDIX

Leverage

- Leveraged financial investment
 - Using borrowed money to buy a home
 - 10% higher housing prices
 - More than 10% capital gains
 - 10% lower housing prices
 - More than 10% capital losses
- Leverage
 - Magnification of gains and losses through borrowing

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APPENDIX

Measuring leverage

- **An owner's equity in an asset**
 - Difference between the asset's value and any unpaid debts on the asset
 - $\text{Equity in Asset} = \text{Value of asset} - \text{Debt associated with asset}$
- **Simple leverage ratio**
 - Ratio of an asset's value
 - To the owner's equity in the asset

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APPENDIX

Leverage and rate of return

- **Simple leverage ratio = "Rate-of-return multiplier"**
- **Rate of return on the (leveraged) investment**
 - Rate of change in a home's price
 - Times the leverage ratio
- **When asset prices rise**
 - Leverage increases your rate of return dramatically
- **When asset prices fall**
 - Leverage increases the chance of wiping out your entire investment

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