

Introduction

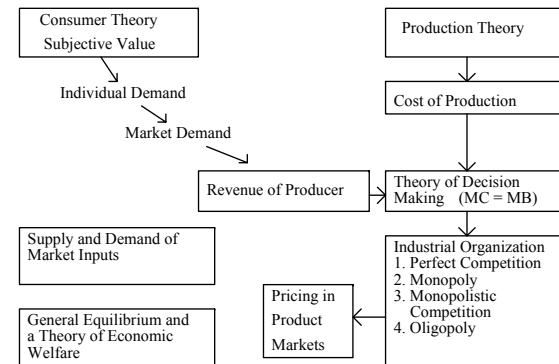
ECON 370: Microeconomic Theory

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Lecture 1

Course Outline



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Scarcity and Choice

- Micro – entails study of how people choose under conditions of scarcity.
- Relevant for developed countries (where material scarcity largely thing of the past)?
- Scarcity relevant even when material resources abundant.
- **Example:** Aristotle Onassis,
 - at his death: Billionaire.
 - but victim of debilitating and progressive neurological disease;
 - time, energy and physical skill needed to carry out ordinary activities were scarce.

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Scarcity and Time

- Time is scarce resource for everyone
- **Example:** Deciding which movie to see
- often *time* NOT price of admission that constrains most of us.
- Time and money not only important scarce resources.

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Other Scarcity

- Friend invites you to all-you-can-eat buffet brunch.
 - Your problem is to decide how to fill your plate.
 - Money no object, since you can eat as much as you want for free.
 - Time not an obstacle, since you have all afternoon.
 - Important scarce resource is capacity of your stomach.
 - Eating another waffle → less room for more scrambled eggs

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Scarcity is Fundamental

- Every choice involves elements of scarcity.
- If resources were not scarce, we would not need to make a choice!
- sometimes most relevant scarcity will be of monetary resources
- many of our most pressing decisions it will not!
- coping with scarcity in one form or another is *essence* of human condition.

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Cost-benefit Analysis

- Q: Should I do activity x ?
 - for movie goer x = “see *Matrix Reloaded* tonight”
 - for person attending buffet lunch x = “eat another waffle”
- A: Compare costs and benefits of doing activity in question.
 - Let $C(x)$ denote the costs of doing x
 - Let $B(x)$ denote the benefits.
 - If $B(x) > C(x)$ then do x , otherwise don't.

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Cost-Benefit Application

- To apply rule, need to *define & measure* costs and benefits.
- Monetary values useful common denominator.
- Define $B(x)$ as *maximum* dollar amount you would be willing to pay to do x .
- Often hypothetical magnitude (since no money may change hands)
- Define $C(x)$ as value of *all* resources you must give up to do x .
- For most decisions, some benefits and/or costs will *not* be readily available in monetary terms.

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Cost-Benefit Example

- Should I turn down my stereo?
 - Next two tracks on album are ones you dislike.
 - Have to decide whether to get up & turn music down or stay put & wait it out.
 - Benefit: not having songs you don't like blare at you.
 - Cost: inconvenience of getting out of your chair.
 - If extremely comfortable and music only mildly annoying, prob. stay put.
 - If you haven't settled for long and/or music really burdensome, then most likely to get up.

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Valuing Costs and Benefits

- Possible to translate relevant costs and benefits into monetary framework.
- Consider costs of getting out of chair
- Probably turn down 1 penny to get out of chair.
- Probably jump instantly out of chair if offered \$1000.

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Reservation Price

- $c \in (0.01, 1,000)$ is *Reservation Price*: the minimum amount it takes to get out of chair
- To see where c lies, imagine mental auction in which you keep boosting offer by small increments from 1 cent up to point at which it is barely worthwhile to get up
- Where this point lies depends upon your circumstances
 - Tend to be higher for rich person than for poor person
 - Tend to be higher the less energetic (or more tired) you feel

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Cost-Benefit Comparison

- Suppose $c = \$1$.
- Similarly for benefits conduct (hypothetical) auction to determine *max.* amount willing to pay someone to turn the music down.
- Suppose $b = \$0.75$.
- Since $b < c$, you should remain in the chair.

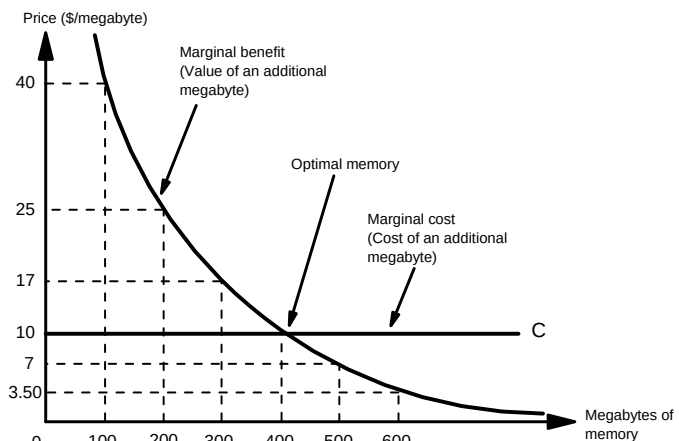
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The Concept of Marginal Analysis

- Costs and benefits that really matter are those *at the margin*
 - Example:** How much memory should your computer have?
 - Suppose RAM can be added to your computer at cost of \$10 per megabyte
 - Q. Not “Should I do x ?” But “How much x should I buy?”
- Equivalently, ask: “Should I buy an additional unit of x ?”
 - Yes, if marginal benefit exceeds marginal cost. No, otherwise.

Optimal Memory



Objection

The idea that anyone might actually calculate costs and benefits of turning down a stereo might sound strange, or even absurd.

Economists have come under heavy criticism for making unrealistic assumptions about how people behave, and outsiders are quick to wonder what purpose is served by the image of a person trying to decide how much he would pay to avoid getting up out of his chair.

Response 1

- We can make useful predictions if we assume people act *as if* they made such calculations.
- Milton Friedman illustrates this point by looking at techniques expert pool players use.
 - Shots they choose, specific ways they attempt to make them can be predicted by assuming players take careful account of all relevant laws of Newtonian physics.
 - Despite fact that very few expert pool players have formal training in physics, they never would have become experts *unless* they played as dictated by the laws of physics.

Economic Application

- Like pool players, rest of us must develop skills for coping with our environments.
- Many economists, including Friedman, believe that useful insights into our behavior can be gained by assuming that we act as if governed by rules of rational decision making.
- By trial and error we eventually absorb these rules, just as pool players absorb laws of physics.

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Response 2

- Concede that actual behavior often differs from predictions of economic models.
- We often behave more like novice rather than expert pool players
- ignoring bank shots
- having no idea about putting proper spin on the cue ball to position it for the next shot.

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Response 2 (cont)

- Models often provide useful guidance for making *better decisions*.
- Even if don't always predict how we *do* behave, may give useful insights into how to achieve goals more efficiently.
- If novice pool players have not yet internalized relevant physical laws, may nonetheless consult those laws for guidance about how to improve.
- Economic models often play analogous role wrt ordinary consumer and business decisions.

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Common Pitfalls in Economic Analysis

- Measuring costs and benefits is a tricky business: As much an art as a science!
- Some costs seem almost deliberately hidden from view
- Others may seem relevant but on closer look turn out not to be.
- Economics teaches us how to identify costs & benefits that really matter.

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Pitfall: Ignoring Implicit Costs

- If doing x means *not doing* y , then value to you of doing y (had you done it) is an *opportunity cost* of doing x .
- **Example:** Should I go sailing today or work as a research assistant?
 - Value of sailing = \$60,
 - Total Cost of Sailing for day = \$40
 - Working as RA nets \$45
 - Like it well enough to do it for free
 - $B(\text{Sailing}) = 60 < 40 + 45 = C(\text{Sailing})$

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Implicit Costs Example

Should I go sailing or scrape plates in dining hall?

- Never be willing to scrape plates for less than \$30.
- I could treat this as added benefit to going sailing
 - $B(\text{Sailing}) = 60 + 30 > 40 + 45 = C(\text{Sailing})$
- I could treat this as offset to opportunity cost of not working in dining hall
 - $B(\text{Sailing}) = 60 > 40 + 45 - 30 = C(\text{Sailing})$

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Costs v. Benefits.

- Note the reciprocal relationship between costs and benefits.
- Not incurring a cost $\equiv$ getting a benefit.
- Not getting a benefit $\equiv$ incurring a cost.

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Pitfall: Failing to Ignore Sunk Costs.

- Expenditure may seem relevant when it is not, because it is *sunk*.
- A *Sunk Cost* is a cost that is beyond recovery at the moment the decision is to be made.

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Sunk Costs Example

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Pitfall: Ignoring Some Costs

- That is: Focusing on only some of the relevant costs.
- **Example:**
 - An energy-conservation-minded consumer can't afford to rent a new car,
 - Choice of two cars:
 - A 10 yr Buick (\$1000/yr, 20 mpg)
 - A 10 yr old Toyota (\$1300/yr, 40mpg)?

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Rental Example

$$c_B = 1000 + \frac{1.5 \times M}{20}$$

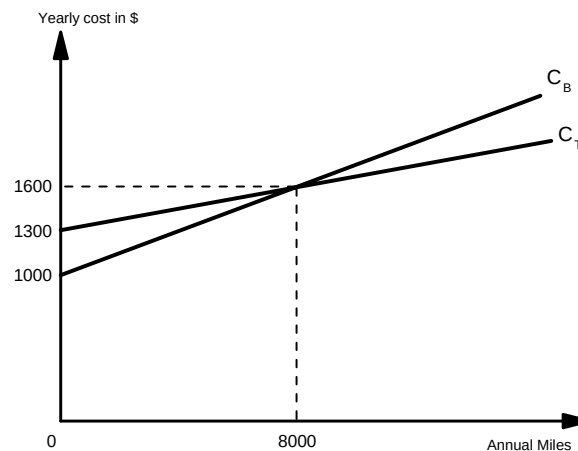
$$c_T = 1300 + \frac{1.5 \times M}{40}$$

- $c_B > c_T$ iff $M > 8000$
- Costs varies with miles driven. The Buick is cheaper if driven less than 8000 miles each year.

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Rental Costs



The Invisible Hand

- Individual pursuit of self-interest often not only *consistent* with broader social objectives, but actually even *required* by them.
- In last example, purely self-interested consumers would choose cars in such a way that energy consumption of society as a whole would be minimized.
- Perhaps the most widely quoted passage from *The Wealth of Nations*, Adam Smith wrote:

"It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard of their own interest. We address ourselves not to their humanity, but to their self-love, and never talk to them of our necessities, but of their advantage."

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Failure of the Invisible Hand

- Sometimes self-interested behavior in markets do not contribute to broader social objectives
- **Example:** Should I burn my leaves or haul them into the woods?
 - Suppose cost of hauling is \$20 and burning \$1.
 - Predict homeowner will burn.
- Problem of *external cost* arising from damage done by smoke from fire.
 - Cost is borne by people not directly involved in decision (i.e. those that live downwind of homeowner).
 - Suppose external cost is \$25, then good of community requires leaves be hauled.

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Market "Failure"

- External costs are often underlying reason for laws limiting individual discretion
- e.g: Most communities now have laws prohibiting burning of leaves within city limits

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Rationality and Self-Interest

- Rational = make decisions according to cost-benefit criterion.
- Self-interest standard of rationality
- assign weight to only those costs and benefits that accrue directly to themselves
- explicitly sets aside motives such as trying to make others happy, trying to do the 'right thing' etc

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Present-aim standard of rationality

- Only require pursuit of whatever aims or objectives they happen to hold at moment of action.
- encompasses motives such as charity, duty, etc.
- may explain or account for too much!

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Rationality Example

Should you vote in the next presidential election?

- Purely self-interested person almost sure to answer no
- vote only matters if it is 'pivotal'
- Likelihood of casting decisive vote is virtually nil (even for a Florida voter during extremely close presidential election of 2000)
- Costs of voting are positive
- 'What if *everyone* who favors your candidate stays home?'
- fails to acknowledge fundamental incentive problem
- Likelihood that other people will vote is *unaffected* by any one person's decision to vote

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Observations from Voting Example

- Something besides self-interest must be driving behavior of voters.
 - Self-satisfaction from participating in democratic process, pride arising from fulfilling civic duty etc.
- But self-interest model, helps us understand why large numbers of people do not vote.
- Not simply case that nonvoters do not care about outcome of election.
- May care very much, but discouraged by near certainty that their votes will make no difference.

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Usefulness of 'Self-Interested' Model

- By calling attention to material forces that act on people, self-interest model actually helps explain why democratic societies encourage people to take responsibility of citizenship seriously.
- In interest of society to have active, participatory, well-informed electorate.
- If material rewards do not favor such a posture, society can employ moral and cultural pressures on its behalf.
- Virtually every democratic society teaches its citizens that they have a duty to vote.

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Usefulness (continued)

- Someone who takes these teachings to heart will not behave in strict accordance with self-interest model
- In weighing her decision to vote, there will be now additional factor, namely, desire to avoid bad feelings that would result from her failure to do her duty
- Taking into account this additional factor will do a better job of predicting her behavior
- Costs of voting much as before
- Benefits no longer zero but rather the amount she would be willing to pay to avoid bad feeling she would experience by not voting

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Costs and Benefits Still Matter

- Our revised theory does not predict she will vote no matter what.
- If weather unpleasant or she has pressing alternative demands on her time, less likely she will vote.

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Not Universally Applicable...

- Clearly, many people do not fit me-first caricature of self-interest model.
 - donate bone marrow to strangers with leukemia
 - endure great trouble and expense to see justice done, even when it will not undo original injury
 - at great personal risk, they pull people from burning buildings, jump into icy rivers to rescue people about to drown
 - Soldiers throw themselves atop live grenades to save their comrades

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But Still Applicable

- But 'selfish' motives are still important
- When a detective investigates a murder, first question she asks is "Who stood to benefit from the victim's death?"
- When an economist studies a government regulation, he wants to know whose incomes it enhances
- When a senator proposes a new spending project, the political scientist tries to discover which of his constituents will be its primary beneficiaries

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Economic Application

- Goal in this course, is to understand kinds of behaviors to which selfish motives give rise in specific situations
- Critical to keep in mind, that self-interest model is not intended as a prescription for how to conduct your own affairs
- Purely self-interested person carries a degree of social isolation that is not only bad for the soul but harmful for the purse
- To succeed in life, even in purely material terms, people must be able to work together, form alliances and relationships of *trust*

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Examples

- Later on, we shall consider specific examples of how unselfish motives confer material rewards on the people who hold them.
- For present bear in mind, self-interest model is intended to capture only part of human behavior, albeit an important one.

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Benefits of Microeconomics

- Studying microeconomics enables someone to gain insight to many phenomena we see about us
- Each feature of manmade landscape no longer amorphous mass but result of an implicit cost-benefit calculation

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Example: Airline Food

- Why is airline food so bad?
- Cost-benefit perspective makes clear airlines should increase quality of meals *iff* benefits outweigh costs.
- how can airline prepare better meals at 39,000ft in tiny galley with virtually no time?
 - could remove 20 seats from plane, install modern well-equipped kitchen and employ extra staff, spend more on ingredients etc.
 - extra costs more like \$50 per passenger – few willing to bear that extra cost.

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Example: manual transmissions

- Why do manual transmissions have five forward speeds, automatics only four?
 - additional gears act like “overdrive” of cars of 40s, conserving fuel by allowing cars to cruise at highway speeds at lower engine speeds.
 - but fuel economy not only objective: want to keep price of car within limits
 - automatic transmissions more complex than manual ones
 - cost of adding extra speed accordingly much greater in automatics
 - benefits of adding extra speed, by contrast, are same in both cases.
 - if carmakers follow rule “add extra speed if its benefit outweighs its cost” then automatics will have fewer speeds than manuals

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Conservation

- Conservationists might argue people should be willing to tolerate plenty of inconvenience to avoid wasting paper
- but trees renewable resource
- more paper we use, more trees we will have

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Conservation and market failure

- Incentives not always aligned
- Pacific Northwest, logging companies cutting down few remaining strands of virgin redwoods to supply contractors with timber to build homes
- many of these trees more than 2000 years old, national treasure we cannot hope to replace
- To logging companies, worth more as lumber than as monuments to the past

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Conservation and Market Failure 2

- Impractical for lumber companies to realize true value society places on these trees
- can't wall off land and charge admission to see them
- Invisible hand breaks down when incentive in private markets do not lead us to protect non-reproducible resource that society wants to see preserved
- responsibility of gov't to protect them

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Others to ponder:

- Why do keypads of drive-up ATMs have Braille dots?
- Why do top female models earn more than top male models?
- Why do brides spend so much money on wedding dresses while the grooms often rent cheap tuxedos (even though grooms could potentially wear their tuxedos on many other occasions and brides will never wear their dresses again)?
- Why are safety seats required in cars but not in airplanes?
- Why do airlines charge the highest prices to passengers who buy at the last minute while the practice is exactly the reverse for Broadway theaters?

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Positive/Normative Questions

- Whether remaining stands of virgin redwood ought to be protected is *normative question*
- Normative Question is about what *ought* to be or *should* be
- By itself, economic analysis cannot answer such questions

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“Positive” Questions

- “Positive” Questions are about what consequences of specific policies or institutional arrangements will be
- If we ban cutting of virgin redwoods, what will happen to the price of lumber?
- What substitute building materials are likely to be developed and at what price?
- How will employment in the logging and housing industries be affected?
- Economic analysis on firmer ground in answering positive questions

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Microeconomics and Macroeconomics

- Our focus on issues confronting individual decision maker.
- also consider economic models of groups of individuals – e.g. buyers and sellers in a market.
- Macroeconomics is study of broader aggregations of markets.
- e.g: tries to explain national unemployment rate, overall price level, total value of national output (or rates of changes in those levels)

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Micro v. Macro (cont)

- Economists much better at predicting and explaining what goes on in individual markets than what happens in the economy as a whole
- When prominent economists disagree in the media, subject much more likely to be one from macro than micro
- Even though economists still not very good at answering macro Qs, no denying importance of macro analysis
- Recessions and inflation disrupt lives of millions of people

Micro Foundations

- Modern economists increasingly believe key to progress in macro lies in more careful analysis of individual mkts that make up broader aggregates
- distinction between micro and macro become less clear
- graduate training of all economists, micro and macro alike, increasingly focused on micro analysis