I. **What Is Economics?**

Economics: the study of choice under conditions of scarcity. This definition requires some unpacking, to be more precise about the notions of choice and scarcity.

Microeconomics: the branch of economics that deals with the choices of individuals and firms, and how those choices interact to produce social outcomes.

II. **Scarcity**

Scarcity: a situation in which the amount of something available is insufficient to satisfy everyone’s desire for it.

Applies most obviously to resources of a material variety (timber, ore, grain, etc.), but also applies to:

- Time (only so much time for sleeping and studying)
- Labor services (only so many workers with so many hours to spend)
- Energy (in the broadest sense – you only have so much energy to expend)
- Space

In short, scarcity is a ubiquitous phenomenon.

Scarcity implies the need to make trade-offs: giving up one thing in order to get another.

- Personal trade-offs (you give up apartment space in return for more spending money)
- Interpersonal trade-offs (resources spent on one person’s project are unavailable for others’ projects)

A market economy typically uses prices to signal scarcity. A more scarce resource will tend to have its price bid up by people competing to use it. A less scarce resource will tend to have its price bid down as people offer more of it exchange for other things. Thus, prices actually convey information about the relative scarcity of goods, and the prices induce people to economize on their use of scarce resources. The more scarce a resource is, the higher its price will be, and thus the less of it people will use.

III. **Opportunity Cost**

The notion of choice involves both selecting and setting aside.

The term “cost” is used casually in a variety of ways, but economists attach a special meaning to it; generally, they mean opportunity cost, which refers to that which is set aside in the act of choice.
Opportunity cost: the opportunity cost of any choice is [the value of] what we give up when we make that choice. More specifically, it is what you could have gotten with the scarce resources used or otherwise given up for one’s choices. Alternative definition: the value of the next best alternative sacrificed when taking an action.

Example: Going to a movie. Is the cost just the $9.00 to get in? No – it’s also the cost of getting there (taxicab, your own car’s gas) and the time taken. To find the true cost, we’d have to consider what could have been done with both the money and the time – say, buying a CD and studying some more.

Example: Running a sandwich shop. Suppose you run this shop and make total weekly revenues of $2000, with weekly labor, food, and rent totaling $1500. Are you making a profit? Well, what if you had to work 80 hours a week? Are your 80 hours worth less than $500, or about $6.25/hour? To make a true calculation of cost, we need to consider the value of your time. If it’s more than $6.25 an hour (in alternative income and/or the value of leisure), you’re not making an economic profit.

Example: During the Superbowl, the network airing the game shows lots of advertisements for its own television shows. Is the network that airs the game lucky because it gets free air time that other advertisers have to pay $1 million a minute for? No, because the network sacrifices revenues whenever it uses air time for its own advertising instead of paid advertising. The opportunity cost is whatever they could have gotten paid. Of course, it's probably worth it; obviously the network thinks so.

Note: If you have more than two other options available to you, the opportunity cost of your choice is equal to the value of the better forgone option.

Example: Two companies, Guinness and Sam Adams, wish to buy advertisement time during the Superbowl. The network uses the time to advertise its primetime line-up instead. Guinness would have paid as much as $800,000, and Coors would have paid up to $700,000. The opportunity cost is $800,000.

For the remainder of this course, whenever we use the term cost, you should remember that we’re talking about opportunity cost. Opportunity cost can be divided into two parts, implicit and explicit costs.

Explicit cost: costs that require a monetary payment.
Implicit cost: costs that do not require a monetary payment. Implicit costs often (but not always) involve forgone payments -- that is, payments you could have receive if you had made a different choice.

Profit is usually defined as the difference between revenue and cost. But cost can be defined in different ways. Accountants usually employ explicit costs; so when profit is calculated using only explicit costs, we call it accounting profit. Economists, on the other
hand, almost always use opportunity cost; so when profit is calculated using opportunity cost, we call it economic profit. In the sandwich shop example, the accounting profit was $500. To find the economic profit, we would need to know the value of the show owner’s time in its next-highest-valued use. If the shop owner valued the time at $800 total, economic profit would be negative $300.

IV. Rationality

Economists typically use a “rational choice” model of human behavior.

Rationality does not mean exactly the same thing in economics as it does in everyday language. In economics, rationality means that people choose means that are appropriate to their ends. They try to do as well as they can, subject to constraints.

The basic model of all forms of choice in economics: Goals are filtered through Constraints to yield Choices.

N.B.: Rationality is not used by economists to judge people’s ends, i.e., their preferences.

In short, rationality is not about ends, but about the relationship between means and ends. However, economists sometimes use rationality in a somewhat narrower sense, to describe certain assumptions we make about people’s preferences. Specifically, it refers to people’s preferences being internally consistent (e.g., I don’t simultaneously prefer A to B and B to A). But even here, rationality does not involve any kind of value judgment.

V. Marginal Decision-Making

The word “marginal” means “next,” “additional,” or “incremental.” For example, when we talk about the marginal cost of a good, we mean the cost of producing one more unit of the good. The next unit of the good is the marginal unit.

It turns out that marginal decisions are extremely important in economics. Why? Because we are rarely in situations where we have to choose between total quantities of things. For example:

- A firm has to decide whether to increase or decrease production. GM is not usually in the position of choosing between building 10 million cars or none at all; instead, GM decides whether to increase or decrease production from its current level, and how much.
- You don’t generally decide to either study for 10 hours or not study at all. Rather, you decide whether or not to study more than you already have studied or plan to study.

Even when individuals make all-or-nothing decisions, we are often interested in the marginal behavior of a population. For instance, most individuals makes an all-or-nothing decision about whether to deal drugs. Either you do or you don’t. But if the
criminal punishment for selling drugs increases, we can see the marginal effect on the population: some people will continue selling, some will continue not selling, and some will switch from selling to not selling. The people who switch illustrate the marginal response of the population to a change in criminal justice policies.

Finally, marginal decision-making is important because of its relationship to rational choice. If you’re trying to get the maximum net benefit from an activity (in terms of your own goals and preferences), you want to find where the difference between total benefits and total costs is greatest. You can do that by increasing the level of an activity whenever the added benefit of doing so exceeds the added cost. That is, do more when MB > MC. Stop when MB ≤ MC.

Example: Suppose your only goal is to get the highest grade you can on tomorrow’s economics exam. There are twelve hours until then, and you can use each hour to study or to sleep. Now, each hour you study will allow you to raise your grade a little bit. But you will learn less each hour, because (a) the things you learn are less likely to be on the exam, and (b) you’re getting sleepier, so you’re retaining less material. Thus, the marginal benefit (MB) curve slopes downward (see graph). Meanwhile, each hour of study is a lost hour of sleep. Losing sleep causes you to lose points on your exam, because you can’t concentrate and aren’t thinking clearly. And the more sleep you lose, the worse it is. (Having 8 hours of sleep instead of 9 has little effect, but getting 2 hours instead of 3 has a large effect.) Thus, the marginal cost (MC) of studying which is the same as the MB of sleep) is upward sloping (see graph).

Suppose you’ve studied for 2 hours. Should you study for a third? You’ll gain 10 points from the studying, but lose 4 from loss of sleep, for a net increase of 6 points – so do it. The same goes for hours 4, 5, and 6. But by the time you’re thinking of studying a seventh hour, MB < MC. You’ll lose more points from
lack of sleep than you’ll gain from studying. So you decide to study for 6 hours and sleep the rest of the night.

The rule of $MC = MB$ turns out to be a nearly universal rule for economic decision-making.

Mathematically, you should think of a marginal value as a slope of a line or curve. It is the amount of increase in the total of something, for a given amount of change in something that affects the total. If you know calculus, you can think of the marginal as the first derivative of the total.

The picture above shows the total cost ($TC$) of production for some good – say, copies of a magazine (with quantity measured in 1000s). Notice that the slope of the line between $q = 0$ and $q = 1$ is given by rise over run: $(100 – 50)/(1 – 0) = 50$, which is the marginal cost of the first unit. The same can be done between $q = 1$ and $q = 2$: $(150 – 100)/(2 – 1) = 50$, which is the marginal cost of the second unit. Notice that the $MC$ is constant; that’s because $TC$ is a straight line, and by definition a straight line has the same slope everywhere.
This picture shows the total cost (TC) of production for some other good—say, barrels of oil. The approximate slope from \( q = 0 \) to \( q = 1 \) is given by rise over run: \( \frac{60 - 50}{1 - 0} = 10 \), the marginal cost of the first unit. The approximate slope from \( q = 1 \) to \( q = 2 \) is \( \frac{100 - 60}{2 - 1} = 40 \), the marginal the cost of the second unit. Notice that the MC is increasing; that’s because the slope of this TC curve is also rising.

Marginalism was very important in the historical development of economics. Up through the 1870s, the marginal idea had not been grasped, which led to “paradoxes” such as the diamond-water paradox. This paradox was resolved by the introduction of marginal thinking.

VI. Mutually Beneficial Trade

Economists used to think people would only trade things of equal value. After all, if \( A \) is worth more than \( B \), then why would anyone ever give up \( A \) for \( B \)?

The problem was a lack of subjectivism, which means recognizing that people differ in their preferences. If preferences differ across individuals, then there is no difficulty explaining why people trade. They do it because they value things differently, not in spite of it. They make a mutually beneficial trade, which means a transaction that benefits both (or all) parties to the transaction.

Example: I trade you an orange for an apple. Clearly, I value the apple more than the orange, and you value the orange more than the apple. It is the fact that we value them differently that makes trade possible. And since both of us benefit from the transaction, there is not a “loser” here.

This is a general feature of almost any voluntary transaction: that each party is necessarily better off, or at least not worse off. Otherwise, why would they agree? They
wouldn’t, unless they were irrational. The same analysis can be applied to all kinds of transactions; for instance, when a worker sells an hour of his time to an employer, they both get better off, because the worker values the money more than the labor time, and the employer values the labor time more than the money.

When mutually beneficial transactions can be made, but for some reason they are not, economists generally consider this a kind of inefficiency. We will not discuss the term “economic efficiency” extensively in this class, because it’s really useful primarily in the context of public policy. The key thing you need to know is that efficiency is a social concept (which is why we generally won’t talk about the efficiency of a one-person situation), and that it generally refers to the maximization of joint gains from trade.

VII. Specialization & Division of Labor

One of the earliest insights of economics, dating back to Adam Smith, is that people can expand their productivity by dividing their labor among different tasks and specializing. Smith observed three main reasons that division of labor increase productivity:

- Workers get better at a task when they focus exclusively on that one task; they increase their skill at the task.
- They save time through not having to go from task to task several times a day.
- They are more likely to discover new techniques and devices for faster or better completion of their task.

To these I would add one more:

- They can take advantage of innate differences in talents or propensities for different tasks.

Example: Suppose in one day Bill and Mary can produce according to the following table:

<table>
<thead>
<tr>
<th></th>
<th>BILL</th>
<th>MARY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shoes</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Shirts</td>
<td>6</td>
<td>4</td>
</tr>
</tbody>
</table>

Now suppose each one has one day to work, and they each split their time between shoes and shirts. Then the total production is $2 + 3 = 5$ of each good. But if Bill spends all day on shirts, and Mary spends all day on shoes, then the total production is 6 of each good. The opportunity for trade gives Bill and Mary an incentive to take advantage of the division of labor. Neither can live on shirts and shoes alone, but if they can trade with each other, they can get both items in greater quantity.

This advantage of specialization is not limited to situations, such as they above, where each person is clearly better at one task (because they can produce a larger output in the same amount of time). The principle of comparative advantage says that gains from trade resulting from division of labor can be available even if one person (or country) is better at producing both goods.
Example:

<table>
<thead>
<tr>
<th></th>
<th>Lawyer</th>
<th>Secretary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pages of research</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>Pages of typing</td>
<td>6</td>
<td>4</td>
</tr>
</tbody>
</table>

If both divide their time equally between the two tasks, the total production is 6 + 1 = 7 pages of research and 3 + 2 = 5 pages of typing. If the lawyer specializes in research and the secretary in typing, the total production is 12 research and 4 typing. Now, maybe that’s preferable (5 extra pages of research are probably worth more than one page of typing). But if not, just let the lawyer spend 10 minutes (1/6 hour) on typing to get (1/6)(6) = 1 typed page. That reduces his research by (1/6)(12) = 2 pages, so the totals are now 10 and 5. That’s unambiguously better than 7 and 5.

Gains from trade may not always be available, but usually they are. Specifically, gains from trade will exist whenever the traders' opportunity costs differ. Here, the lawyer’s opportunity cost of a typed page is 2 pages of research. The secretary’s opportunity cost of a typed page is 1/2 page of research. Since these are different, there are gains from trade.

N.B.: The principle demonstrated here does not require that each party be “better” at something. In this example, the lawyer is a better typist and a better researcher, while the secretary is neither.

Definition of absolute advantage: You have an absolute advantage over someone else if you can produce more of some good or service in the same amount of time and with the same resources.

Definition of comparative advantage: You have a comparative advantage over someone else if you can produce a good or service with a lower opportunity cost.

When it comes to explaining why people trade, it turns out that comparative advantage is much more important than absolute advantage. The importance of comparative advantage is that it means trade can be beneficial to everyone, even when one party is more capable than the other. The intelligent and the stupid, the rich and the poor, the developed and the underdeveloped, etc.

VIII. The Coase Conjecture

We now arrive at what I call “the Coasean Conjecture” (my term, not used by other economists to my knowledge). This concept has been around for a long time, so it can’t
really be attributed to Ronald Coase (1991 Nobel Prize winner in economics). But in my opinion, Coase did more to expand and clarify its use than anyone else.

The Coase Conjecture is this: Private transactions will tend to move assets to their highest valued uses, regardless of initial ownership. Here are some examples:

- A piece of land currently being used as a farm. Its present value in this use is $1,200,000. But if it were converted to residences, it would generate present value of $1,500,000 (net of the conversion cost). Then the land will eventually be converted to residences, either (a) because the farmer does it himself, or (b) the farmer will sell the land, at a price between $1.2 million and $1.5 million, to someone who will make the conversion.

- Slaves in the Old South. Some slaves were skilled at crafts such as carpentry, so naturally their owners wished to use them for that purpose. The problem is that slaves had little incentive to reveal their true skills. A good carpenter could pretend to be a lousy carpenter, and he had every reason to do so, because he would get nothing in return. So owners of such slaves would offer them additional compensation – wages! – for their work, even though legally they didn’t have to. This kind of private transaction between owner and slave moved an asset – the slaves’ labor – to a higher-valued use. (One difficulty with this approach is that contracts between owners and slaves were not enforced legally; more on this below.)

- Sports stars (draft versus free agency).
- Celebrity dating (studio system versus free agency).

In general, then, we expect the market system to move assets around until they rest in the hands of those who value them most. But there is an important caveat. A more accurate version of the Conjecture would be this: “Private transactions will tend to move assets to their highest valued uses, regardless of initial ownership, so long as transaction costs are sufficiently low.”

Transaction costs are costs that must be expended to make a transaction occur, and which are not experienced as benefits to either party. For example, if I buy a bottle of Coke in a 7-11, the (regular) cost to me is $1.29, and the cost to the store is the bottle of Coke. Neither of these is a transaction cost. What is a transaction cost, however, is the effort of pushing my dollar bills across the counter. To take a less mundane example, if you purchase a house, there can be large transaction costs of writing up the contract or contracts needed to complete the sale. The money paid to an attorney is paid by one or both of the parties to the transaction, and it is gained by neither.

Transaction costs can also result from strategic considerations. We will talk more about these when we get to the game theory section of the course. But the most important strategic source of transaction costs is the cost of bargaining. When two parties are trying to get as large a share of the gains from trade as possible, they can expend a lot of time and energy, and that time and energy does not increase the gains from trade – it only shifts them from one party to another. Notice that the existence of competitive markets
can reduce this kind of transaction cost; if I don’t like the price offered by 7-11 for my Coke bottle, I can go elsewhere to buy it. The price of Coke summarizes a great deal of information about the willingness of sellers to sell and buyers to buy, so it’s not necessary to have a time-consuming bargaining process for each and every sale.

Finally, transaction costs can result from ill-defined or ill-enforced property rights. This source of transaction costs is so important that is often stated as a separate condition of the Coase Conjecture. When the initial allocation of rights is not well defined, parties may spend resources trying to establish ownership, and value-increasing transactions may be more difficult to reach because the parties can’t agree on their starting point. When property rights are not well enforced, some value-increasing transactions that involve an exchange over time may not occur because parties cannot make credible promises to fulfill their commitments. For example, the fact that contracts between slaves and slave owners could not be enforced (the slave could not take the owner to court for failure to pay), some mutually beneficial transactions between slaves and owners likely did not occur.

IX. The Coasean Theory of the Firm

The Coase Conjecture underlies the Coasean Theory of the Firm. If transaction costs were always low in market settings, it would be possible to conduct all economic transactions through markets. Yet much of our economic activity occurs not in markets, but within firms, where the price mechanism is typically inoperative. As Coase put it:

For instance, in economic theory we find that the allocation of factors of production between different uses is determined by the price mechanism. The price of factor A becomes higher in X than in Y. As a result, A moves from Y to X until the difference between the prices in X and Y, except in so far as it compensates for other differential advantages, disappears. Yet in the real world, we find that there are many areas where this does not apply. If a workman moves from department Y to department X, he does not go because of a change in relative prices, but because he is ordered to do so. (Coase, “The Nature of the Firm,” in Putterman p. 91)

So we have two forms of economic organization working simultaneously: conscious organization within the firm, and unconscious organization in the market. What determines the boundary between the two? Or, to put it another way, why do have firms at all?

The answer suggested by Coase is that the transaction costs of buying and selling in the market may large enough to deter transactions. (1) When you buy each factor of production each time it is needed, you have to conclude a series of contracts, with a new contract each time the factor is hired again. It might be less costly to have a single contract that lasts over a period of time. (2) If the market is not fully competitive, there are not clear market prices. Instead, you have to engage in some amount of bargaining, which can be costly for reasons outlined above. (3) There may be search costs associated
with finding the factors of production on the market, and you can economize on these search costs by arranging not to repeat them too often. (4) The factors you’ve hired in the past may be more valuable to you than “anonymous” factors you could hire on the market, because of “asset specificity.” This occurs when the factors you’ve hired in the past have gained certain attributes, such as information, familiarity with routines, familiarity with other factors you’ve hired, physical proximity to other factors you’ve hired, and so on.

These points might lead one to believe that firms should always supersede markets; why not have just one big firm? But there are costs (including transaction costs) associated with organization within the firm as well. (1) Using the firm means forgoing some of the incentives provided by the market. The competitive process of the market helps assure that you are paying the going price for whatever factors you purchase, instead of paying higher prices locked in by long-term contracts. (But could the contract also lock in low prices? Yes, but then you can sell the factors you own on the market; if you don’t, then the opportunity cost of those factors is still the market price.) (2) Using the firm also means forgoing some of the information provided by the market. Market prices established by a competitive bidding process indicate where factors are most valuable, whereas within the firm there are usually no prices to indicate which department offers the highest return to a factor. (3) A closely related point is that markets provide agents with powerful incentives to use valuable private (local and/or tacit) information. Much relevant knowledge does not exist in centralized form, but instead is dispersed throughout the economy in the minds of numerous individuals. “Local” information is information possessed by someone at a particular time and place; “tacit” information is information that is difficult to communicate to another person. Local and tacit information is only revealed if the individuals have it also have an incentive to reveal it and act upon it. While markets create powerful incentives for the use of private information (because you can profit directly from the use of your information), it is difficult for contracts to duplicate those incentives.

The point here is that information and incentives problem exist in both the centralized firm setting and the decentralized market setting. The boundary between firm and market depends on the relative weight of the various factors listed above – and other factors that we will discuss in greater depth later in the course. The owners/managers of a firm need to analyze the advantages and disadvantages of centralization at the margin to set the appropriate boundaries for the firm.