Introduction: General Economic Concepts

Almost all resources are scarce. Economics is the study of how resources are used and allocated in the presence of scarcity. Consider the following examples:

i. A household must decide how much food to purchase. For households, scarcity may be represented by a budget constraint that requires that their spending not exceed their income and assets. The household must choose how to maximize the benefit, also known as utility, of the food knowing that each dollar spent on food is a dollar that cannot be spent on something else that also provides utility.

ii. A student must decide how to allocate their time. Like goods and services, time is also a resource. For this student, scarcity is represented by a time constraint: there are only 24 hours in a day. An hour spent studying brings benefits. These benefits must be balanced against the opportunity cost of doing something else. Opportunity cost is the forgone benefit of the next best alternative. Are the benefits from additional studying larger or smaller than those of spending the same time sleeping, watching TV, or quail hunting?

iii. A government must decide how much to spend. Here scarcity is captured by the notion that, in the long run (not always right away), spending must be paid for by taxation.

How economists study the allocation varies both by the type of questions they ask, and the methods they use. The former results in the division between microeconomics and macroeconomics. The latter results in the division between theory and empirical work.

Microeconomics vs. Macroeconomics:

Microeconomics refers to the study of an individual's or relatively small group's economic decisions. Commonly, the unit of analysis may be a firm, household, or single market, a collection of agents (households, firm, policy makers, etc.) whose interactions result in the allocation of a specific good or service. Macroeconomics refers to the economic decisions of an economic system (such as the U.S. economy) as a whole.

Macroeconomics is thus the aggregation (summation) of microeconomic behavior. For this reason, students usually (but not always at Bates) study microeconomics prior to macroeconomics. And for this reason, we will begin this course with a quick foundation in simple microeconomics that is crucial for understanding the macroeconomic heart of the course.

In addition to the preceding formal definition, there are some practical distinction between microeconomic and macroeconomics. These are not rigid rules, exceptions do exist:

1. The two fields usually look at different variables. Microeconomics usually look at prices for specific goods or services, or for the wage for specific types of labor. Macroeconomics instead looks at a price level which is a type of average of prices throughout the economy. They are especially interested in inflation, the rate of change of the price level. Microeconomics usually looks at the quantity of a specific good or service. Macroeconomics instead usually looks at aggregate output (most often measured as Gross Domestic Product) which is the aggregation of all microeconomic production throughout the economy.

2. Macroeconomics tries to explain a broader set of variables than microeconomics. Prices are a good example. In microeconomics, a firm may often be assumed to be solving its profit maximization problem taking wages and prices as given. Often, it is not stated where some of these prices are coming from. In macroeconomics, however, we usually try to explain where all prices come from.[1]

3. Macroeconomics is practiced by macroeconomists, the kindest, bravest, warmest, most wonderful human beings you will ever know in your life. In contrast, 95% of microeconomists hate puppies.

Theory vs. Empirical Work:

This distinction is methodological. This course mostly focuses on economic theory. Theory works as follows. We make a set of assumptions about how the world works. For example, we

[1]For those of you with a more extensive mathematical background, the former is known as partial equilibrium while the latter is known as general equilibrium. I am trying to avoid this language in this class however.

typically assume that households prefer more to less consumption. We then use these assumptions to make inferences about economic behavior and possibly predictions about how different polices might affect economic behavior.

Empirical economics is that which is based on observation. It is thus fueled by data. Unlike much of the natural sciences, most economic data does not result from experiments (although experimental economics is a growing field). Instead, data is collected on variables such as national output, inflation, and unemployment. Statistical techniques, which are extremely important but beyond the scope of this class, are then employed to answer the same types questions addressed by theory.

Important: Do not think of theory and empirical work as substitutes. They are compliments and carefully answering an important economic question usually requires both. You have probably heard the somewhat tired, but true, statement that "correlation does not equal causation." If two variables tend to move in the same direction (think temperature and ice cream sales), it is said that the two variables are "positively correlated." But this does not imply causation (higher ice cream sales surely do not cause warmer weather). If two variables tend to move in the opposite direction , they are said to be "negatively correlated."

Empirical economics has minimal ability to disentangle correlation and causation by itself. It thus needs theory to convincingly make the case that one variable causes another. Empirical evidence is used to test among theories that make competing predictions and inferences.

In the social sciences, there are two main theoretical methodologies. One is the narrative approach which usually entails little math. Mainstream economics has largely rejected the narrative approach. Instead, it relies on another approach, the use of formal models. An economic model is a mathematical simplification of the real world. There are countless factors that impact economic decisions. The goal is not to include all of them in an economic model. Instead, the aim is to approximate the real world by including only the most important or interesting factors. We want to write down a model that explains much, but not all, of the real world but that is also simple enough that we are able to understand how and why it infers what it does.

The process of writing down a formal economic model might take the following form:

Step 1: Make some assumptions. The goal is to write down assumptions that approximate how people really behave. Suppose, for example, that our model includes firms. We will usually assume that firms are reasonably intelligent and correctly make decisions that maximize their profits.

A model is really just a set of assumptions. To determine if a model is appropriate for a real world economic question, we must thus evaluate whether the assumptions are good approximations of actual behavior. In most cases, we do think that firms are trying to maximize profits. Suppose, however, that we are modeling charitable organizations. Because these firms tend to be non-profits, our assumption of profit maximization would be much more dubious. In this case, the model would not fit the question well.

Empirical economics is often used to help judge the validity of a model's assumptions. Suppose we want to model the effect of raising taxes. Should we assume that higher taxes, which reduce after tax income, have only a small effect on a household's desire to work or should we assume that the effect is large. The answer is not obvious but it is important to what the model will predict. To determine which assumption fits better, we could rely on empirical work that attempts to estimate whether actual changes in after tax wages have induced small or large effects on employment. Sometimes, the empirical evidence is clear, sometimes it is not.

Step 2: Use math to solve the model. Solving the model means going from the assumptions to being able to show how one variable affects another. The type of math we use depends on the context. In this class, we will use some graphs and simple algebra. In a graduate class, we might use differential equations, dynamic programming, and a boatload of calculus.

Step 3: Make inferences. Once we have solved the model we can examine how changing one variable affects others. Our first model will be the classic model of supply and demand (a microeconomic model). In this model, we will be able to ask how a change in people's preference for beer affects the price of soda.

We can often use a model to analyze how different policy changes affect the model. Would raising taxes increase national output and the budget deficit? Does printing more money lead to more inflation?

If we make appropriate, empirically plausible assumptions, then our model will make useful predictions about the economic problem that we are examining. If, however, our assumptions are inappropriate, then the model's predictions will not be useful. Don't blindly accept the assumptions that we will make in this course. Think carefully about whether you think they make sense.

Often, there is a tension between simplicity and completeness. Simplicity is a virtue of a model. But we are often tempted to add another variable to a model in order to increase its explanatory ability. This reduces its simplicity. The right balance is often hard to obtain. In this class, we place an extra high value on simplicity because it is probably your first or second exposure to economic models. In more advanced classes, however, we tend to add complexity.

The Textbook's 4 Key Economic Ideas

The textbook, in Chapter 1, discusses three core economic concepts I think are worth highlighting in class. Another is added in Chapter 2.

#1: People are rational. We assume that people use the information that they have to correctly maximize what it is they care about (utility for households, profits for most firms).

Rationality does not imply that people have all the information that they could possibly have. Often, we think about how people make choices when they have incomplete information. Consider a household who must decide whether or not to buy a home. One important factor is whether housing prices will go up or down. Nobody knows this for sure and we need not assume that households do. Instead, we assume they make their best guess about what will happen to housing prices and then intelligently decide whether to buy or rent.

Later in the course, we will talk about the Great Recession. Prior to the recession, the United States saw an unprecedented increase in home ownership rates and housing prices. We want to

understand why housing prices rose as fast as they did. One possible answer is that people were stupid (irrational) and kept buying homes even through housing prices were surely going to eventually decline by a lot. But this answer isn't very interesting because we don't think people are so stupid. Instead, we want to understand how rational people could collectively induce the increase, and then decrease, in housing prices. This question is harder, but more interesting.

Rationality does not imply that people are entirely self-interested. We typically assume that households seek to maximize their utility, a term that just means the total benefit of their economic decisions. But we are free to assume that utility depends on different things. A person's utility surely depends on their own consumption. It also depends on leisure, health, etc. But a parent's utility surely depends on their kids' wellbeing as well. A person may also obtain utility from the overall well-being of society or the quality of the environment. My utility depends (negatively) on Bill Belichick's, it includes spite.

#2: People respond to incentives. If the circumstances of an economic problem change, then we expect people's economic behavior to change as well.

Consider the following example, Currently, average income per person in the U.S. is about $65,000. There is, however, considerable income inequality. For the sake of argument, let us suppose that we decide that the main policy goal should be to completely eliminate income inequality.

One solution would be to require that all income be shared equally. We might then expect that everyone would have income equal to $65,000.

This solution, however, fails to think about incentives. Under this system, any dollar I earn is to be shared with the entire U.S. population of over 300 million people. So I essentially keep none of my income. My incentive to work has now been reduced. We would thus expect people to collectively work much less, which would reduce average income well below $65,000. The policy will almost surely fail. This example illustrates why significantly reducing income inequality without providing bad incentives is hard and overly simplistic solutions are likely to backfire.

Table 1: Utility of Coffee

Cups	Marginal Utility	Total Utility	Average Utility
1	$10	$10	$10
2	$5	$15	$7.5
3	$3	$18	$6
4	$1	$19	$4.25
5	$-4	$15	$3

#3: Optimal decisions are made on the margin. Suppose that I am deciding how many cups of coffee I should drink this morning and that each cup costs $2. Utility refers to the benefit each cup of coffee provides to me:

Table 1 illustrates three measures of utility. The first is marginal utility. This is the additional utility that I get from each cup. Total utility adds up all the marginal utilities. Average utility is total utility divided by the number of cups. Most economic decisions are made based on marginal considerations (in this case, marginal utility).

Should I buy a first cup of coffee? I should because the marginal benefit ($10) exceeds the marginal cost ($2). So I come out $8 ahead.

Should I buy a second cup? If I do, I obtain the marginal (additional) utility of $5 which still exceeds the cost $2. The marginal benefits and marginal costs are the only things that matter. It would make no difference to my decision if the marginal utility from the first cup of coffee were $5 instead of $10. The average utility also is irrelevant.

By the same reasoning, I should buy the third cup. For the fourth cup, however, the marginal utility ($1) is less than the $2 marginal cost. I should not buy this cup.

In the end, I buy three cups. I obtain the total utility of $18 and pay $6.

There are some cases, however, where total cost does matter. Suppose, for example, that I must pay a fixed cost (I have to buy a coffee maker) in order to buy any coffee that day. I will do so if and only if it costs less than $12, the net benefit I get from buying my three cups.

#4: Most economic choices involve tradeoffs[2]

Tradeoffs are an inevitable result of scarcity. Because resources are scarce, consuming or producing more of one good requires that we consume or produce less of another.

Households face tradeoffs when making their choices about how much food to purchase. Each dollar spent on food requires that they spend one dollar less on something else. To optimize they must weigh the benefits of the extra food against those offered by the next best alternative.

Policy makers often face tradeoffs as well. Few policies offer only benefits and economists are skeptical of commentators that promise otherwise. Consider government spending during a recession. As we will discuss later, most economists think that increased spending during a recession reduces unemployment (although there is considerable disagreement over by how much). This benefit must be weighed against the cost of increased debt,. which most economists think is a bad thing. There is a tradeoff.

Another common tradeoff frequently occurs between efficiency and equity. Generally, efficient policies will result in higher levels of per capita national income. Such policies will result, however, in some amount of inequality. Many policies that reduce inequality will, because they change incentives, reduce efficiency, in most cases resulting in a lower average per capita income.[3] The tradeoff is often that more equality reduces efficiency. People and economists disagree on how best to balance this tradeoff.

[2]The text discusses this one more in Chapter 2.

[3]Average per-capita income and efficiency are not exactly the same however. A policy requiring 100 hour work weeks might increase average per capita output but would not be efficient.