Teaching Outlines Chapter 1 Economic Models and Foundations

Economic Foundations and Models

Why can't you have everything you want? I want a Porsche; I want to live in a million dollar home, but I can't. Why? I can't do this because of a simple economic term … Scarcity. I only have a limited amount of funds, and I must use these limited amounts of funds on the many goods and services that are available out there. I have to use my limited funds to put a roof over my head, pay heating and electric bills, cable bills, car payments, insurance for both my car and house, the list goes on and on.

Who lives at home?
Who lives on their own?
Those of you who live on your own do you pay cash for your needs or are you using student loans to cover your expenses?

Those of you who use student loans to pay your way through college I highly, highly recommend that you do as little of this as possible because what you are doing is borrowing against your future. You are setting yourself further and further back with each loan you take out and each dollar you spend of that loaned money. Now I know some of you simply don't have any other option, but what I am saying is do this as little as possible.

Let me give you an example. After I graduated with my bachelor's I was $35,000 in debt from school loans. This equates to a monthly payment of about $400 a month which is greater than my car payment. If I only make the minimum payments I will be paying $400 a month for the next decade; 10 years. Now the only thing I borrowed money for was school, I worked my way through college to pay for everything else. Some of you will graduate here with debt twice that say $70,000 in debt, which equates to a monthly payment of about $800 a month, which is the minimum payment, so you will be paying $800 a month for the ten years following your graduation; that's a mortgage. Good luck trying to buy a house with a student loan bill that large every month.

What I am saying is borrow as little as possible while you're here attending school. You will be that much farther ahead in life.

There is so much scholarship money out there and it is rather easy to obtain. You just need to search for it, Google it.

Alright, so back to the lesson. Scarcity.

Scarcity occurs when unlimited wants (everyone wants everything) exceed the limited resources available to fulfill those wants.

Do you think someone like, let's say, Bill Gates faces scarcity? The answer is yes. Let's say he wanted to buy Hawaii. Does he have enough money to do this? No. Therefore he faces scarcity.

No let's say he has all the money in the world and he could buy anything he wanted. Does he still face scarcity?

The answer is yes. Why?

Time.

We all only have a limited amount of time on this earth, and we must use our limited supply of time to obtain as much of our unlimited wants as we possibly can.

Think about it this way … you have two exams tomorrow that you need to study for, relax it's early in the semester I am sure you don't have any exams coming up. Between now and the time those tests come around there is only a limited amount of time to study. The want? Let's say an A? But who knows, you may need to spend all your time studying for just one of those tests in order to achieve an A … where does that leave you for your other test?

This is where the study of economics comes into play. **Economics** is the study of **Choices** consumers, business managers, and government officials make to attain their goals given their scarce resources.

There are three key economic ideas that will be using as assumptions throughout the semester:

1. People are rational. What does this mean?
2. People respond to incentives.
3. Optimal decisions are made at the margin. What does this mean?

Rational People

People are believed to be rational; this is an assumption and does not mean that economist think everyone knows everything or always makes the "right" decision. It means that economist assume that consumers and firms use all available information as they act to achieve their goals. Rational individuals weigh the costs and benefits of each action, and they choose an action only if the benefits outweigh the costs. If two choices both result in benefits outweighing the costs, they choose the action that results in the largest difference; the action that has a greater net benefit.

Now, as you know not everyone is rational, just watch an episode of cops, but economist make this assumption because it is useful in explaining most of the choices that people make. Later in the semester we will discuss why some people are irrational, and we will cover how you as an individual can avoid making these irrational decisions. One of the more useful tools we will go over this semester, especially for those that don't intend on being economics majors.

People Respond to Incentives

This key economic idea is rather self-explanatory. It is possible to get almost anybody to do almost anything you want them to do if you give them the right incentives.

For example: I wouldn't be here right now if I wasn't being compensated, that compensation provides the incentive for me to be here instead of camping, fishing, at a concert, or doing something else that I love. Now obviously money is not the only incentive. For example I am incentivized to eat right and exercise because I want to have a good body and make my girlfriend want to jump my bones every night. The different types of incentives are infinite. Incentive – anything that motivates or encourages one to do something.

I love teaching and would probably do it for less money than they are currently paying me, but what they are paying me is greater than my minimal incentivized need, and therefore, I am here.

The last of the three economic ideas or assumptions …

Optimal Decisions are made at the Margin

Some decisions are all or nothing decisions; buy the house/not buy the house, move to Erie or commute. These are some of the decisions that I have recently faced and luckily my economic background has taught me the skills necessary to make the right decisions. Decisions, decisions, decisions. We are faced with so many decisions every day of our lives, some big, some small, but regardless, having the tool set necessary to make the right decisions is going to make you better off than just "winging it" or guessing and hoping you made the right decision. "Economics is the art of making the right decisions with the available information."

The example I just used, the all or nothing decisions, are the minority. THE MAJORITY of the decisions we face in life are incremental; doing a little more or a little less of something. Economists use the word **Marginal** to mean "extra or additional". We will be using this term a lot this semester so get to know it and get to know it well.

Two terms we will be suing today as well as throughout the semester are marginal benefit and marginal cost.

MB - is the additional benefit we receive from doing one more of something.
Ex: Benefit received from producing one more good, doing one more sit up etc. etc.

MC – is the additional cost we incur from doing one more of something.
Ex: The cost incurred by producing that additional unit or that additional sit up.

Consider this; I sell cow manure, fertilizer, and I just got a contract offer to fill five truckloads of fertilizer for the upcoming year. However, I am currently at capacity, meaning even if I wanted to I couldn't sell

more, simply put I do not have enough cows to fill five additional truckloads of fertilizer. What do I do? Do I accept the contract and find a way to increase my capacity or do I reject it and continue on my way? I am going to have to do some economic analysis to figure out what I should do. My **MB** would be represented by the additional revenue generated by accepting the contract, and my **MC** would be having to buy more cows to produce the fertilizer more people to shovel the fertilizer … you get the picture. Obviously I am going to do this if the additional (marginal) revenue generated outweighs the Additional (marginal) costs created. But why stop there? I should continue to act this way until my MB is equal to my MC. This way I am not leaving any "money on the table". My benefits are continually greater than my costs up to the point where MB = MC; once this point is reached, than there is no incentive to produce any more cow manure. This type of analysis is called **Marginal Analysis**.

Use marginal analysis to decide if you should partake in a certain action. If MB > MC yes, if MC > MB no, continue to do the action until MB = MC.

This rule is often subconsciously executed. When it comes to everyday decisions we don't perform this type of analysis. Should I eat the sandwich or not? We generally just KNOW if the additional benefit is greater than or less than the additional cost.

However, when it comes business situations firms often have to make careful calculations to determine whether the additional revenue received from the additional output is greater or less than the additional costs associated with the additional output.

So those are three key economic ideas that we are going to base the rest of the semester off of. They are our starting point. The foundation of our house.

So back to scarcity. What does scarcity mean? ….

Scarcity occurs when unlimited wants (everyone wants everything) exceed the limited resources available to fulfill those wants.

Since we live in a world of scarcity all economies face these problems because of their limited amount of economic resources, such as, workers, machines, and raw materials. Since each economy only has a limited number of resources each economy can only produce a limited number of goods and services, and therefore, every society faces something we call **TRADE-OFFS.**

Trade-offs – the idea, that because of scarcity, increasing the production of one good will result in the decrease in production of another (stop writing on board). This is the case because there are only a limited number of resources.

Ex: You are producing paper and fire wood. Each of them uses the raw material of trees in their production. Therefore, in order to produce one more chord of firewood, the must produce less paper.

To produce more of something, you must produce less of something else.

This leads right into the next economic concept; **OPPORTUNITY COST**. The best way to measure the cost of producing one good is the value of what has been given up to produce it.

For example: I decide to produce one Tickle Me Elmo. The cost of producing this good is the value oooooooof, let's say, a micro-processor. Now opportunity cost isn't the sum of everything you could have produced instead of Mr. Elmo, just one item, the most valued item.

The opportunity cost of producing Mr. Elmo is a micro-processor.

Opportunity Cost – the single highest valued alternative that must be given up to engage in an activity.

Another example of an opportunity cost is from my own life. I could have stayed in my family business and made $80,000 a year, but instead I made the decision to come here and to teach you. I gave up $80,000 to come here and teach, and therefore, the opportunity cost, the highest valued alternative I gave up, is that $80,000. I make less now, but I enjoy my job more.

If I making less money now than I was, why did I decide to accept this job? Let's say I make $65,000 now, $15,000 less than I was making. Why did I leave the family business and come here to teach?

The enjoyment I receive now is greater than the difference between my two salaries. That is why it made sense to receive less money. Not everything has to do with money, just most lol.

When weighing your costs and benefits you do not just include monetary values. There are many other implicit items that should go into your analysis; such as your happiness, time, effort, and many other implicit items. Implicit, something that is does not have a physical form.

So each economy faces trade-offs and opportunity costs, which means each economy faces the same three economics questions.

A man is walking through central park and notices that an ice cream stand is giving away free ice cream cones. The man stops at the ice cream stand to wait in line. Since the ice cream cones are free the line is exceptionally long and the man wait 20 minutes for his free ice cream cone.

Is the ice cream cone really free? Why/why not?

The correct answer is no it is not because there is an opportunity cost associated with waiting in line. Time is money and the man just waited 20 minutes. There is a cost associated with ever decision you make because EVERYTHING has an opportunity cost. EVERYTHING that you choose to do, there is

something else that you could have chosen to do. The key is to choose the activity that has a higher value than the opportunity cost.

Every Economy faces the same economic problem

- What to produce?
- How to produce?
- Who will receive the goods and services once produced?

What goods and services will be produced?

This is a simple answer. You do, as the consumer you ultimately decide what gets produced and what doesn't. Obviously you do not directly decide what gets produced and what does not get produced, but intrinsically you do. Since each individual decides on how they are going to use their scarce resources, buy an android or an iPhone, a coffee or water, by making these types of decisions and using your scarce resources to obtain these products or services you are indirectly deciding what gets made and what doesn't. It is a consumer driven market. If the consumer does not want it, they will not spend their limited resources on it, and therefore it will not sell, and therefore it will not get produced or it will stopped being produced.

You do, the consumer, not directly, but indirectly by deciding how to use your scarce resources.

The next question every economy faces …

How will goods be produced?

So, the individual decides what is made, but the firms decide how it will be made. In many cases firms face trade-offs between using more labor or more capital to produce their desired outcome. Where the item is being produced is a heavily weighted variable in deciding how to produce, as is what is being produced.

When referring to where an item is being produced factors such as labor and capital costs are considered. If the object is being produced in Asia, where labor is generally much cheaper than here in the U.S., it is likely that the production process will be more labor intensive. If the production is taking place in the U.S. than it is more likely that production will be more capital intensive because of our high labor costs. Regardless in most process there is some type of mix between labor and capital. The trick is finding the right mix to maximize your R.O.I (return on investment). Finding that mix will not be done in this class, I believe it is covered in Managerial economics which is taught by Dr. Kerry Adzima.

Along with where the item is being produced is what is being produced. Likely, if producing something very small and intricate it will be more capital intensive, and if it is simplistic then it will likely be more labor intensive.

Both of these factors come into play and need to be weighted appropriately in accordance to what is being made and where it being made.

The firms decide how to produce the good or service that the consumer wants.
Ex: the capital labor ratio, how much to use of each.
Could make 100 leg lamps (Christmas story) using 10 machines and one person
Could make 100 leg lamps (Christmas story) using 5 machine and two people
It's up to the producer to decide the how a good will is made.

Who receives?

Here in the U.S. goods are distributed largely based on your level of income, but this becoming less and less the case. The U.S. government has been attempting to make the distribution of income more equal through government programs like Medicare, Medicaid, food stamps, housing assistance, and utility assistance just to name of few of the hundreds of programs. Is this right? The government is taking from some through taxation and then redistributing it to others. This is an important policy question we are faced with today. There are two pathways of thought on the matter. (1) It's my money, I earned it, I should be able to spend it the way I want to. (2) We should take from those that have and give to those that don't; no one should suffer when so many have so much.

Come on lets debate? Who thinks what and why?

In the majority of countries who receives what is produced is based on income. If you want it and can afford it than you can get it. However, in some countries the government is the sole decision maker and decides who gets what.

This leads directly into out next topic. A centrally planned economy versus a market economy.

Centrally Planned Economy vs. Market Economy

The decision on who receives heavily relies on the type of economy a country enacts. Does it participate in a centrally planned economy or does it participate in a market economy?

Centrally Planned – An economy where the government decides how economic resources will be allocated.
Ex: The old Soviet Union, Cuba, and North Korea

Market Economy - An economy in which the decisions of individual households and firms interacting in markets allocate economic resources.
Ex: U.S., Canada, Japan, and Western Europe

*Draw spectrum

Compare

Probably the largest and most notable centrally planned economy was that of the former Soviet Union. In this economy the government decided what goods to produce, how the goods would be produced,

and who would receive the goods once they were produced. Government employees were responsible for managing the factories and the stores. Their objective was to follow the government's orders rather than to satisfy the wants of the consumer. This type of economy is not successful in producing low-cost, high quality goods and services. All centrally planned economies are led by dictators; one man has rule over all. Eventually the low living standards and political oppression led to the collapse of the Soviet Union in 1991. Today only a few, small completely centralized planned economies exist; North Korea and Cuba.

Anyone want to live in of the before mentioned places?
If you want to go have a beer after class it isn't up to you to go spend your scarce resources to obtain one. You can have one if the government allows you to. I don't know about you, but if I want a beer, I want a beer; I don't want to have to hope that the government allows me to have one.

All the high income democracies such as the U.S., Canada, Japan, and Western Europe have market based economies. Meaning privately held firms interacting with consumers, decide what to produce, how to produce, and who gets what is produced. Firms must meet the wants and needs of the consumer or they will end up out of business. Competition is fierce in this type of economy, which in turn increases quality and decreases costs.

Market – Higher quality, lower costs, high competition
Centrally – lower quality, higher costs, no competition

Market economies reward hard work and innovativeness. The harder and smarter you work, the more money you will make, and therefore, the more resources you have to spend on goods and services. Centrally planned economies do not reward hard work and therefore are less prosperous.

This goes back to the beginning of the lesson when we discussed incentives. In a market economy the incentive is there; if you work hard you will be rewarded accordingly. This is why market economies are more successful than centrally planned economies. In a centrally planned economy there is no incentive to work hard. If you work extra hard you will still be compensated in the same way. That doesn't seem fair odes it?

Market economies are more successful than centrally planned economies.

Now there is an in between, and this is what we generally see today.

The Modern World

In the modern world there are no pure examples of a market economy, and there are only two examples of a pure centrally planned economy that remain; Cuba and North Korea. All economies except those two examples are mixed economies, meaning there is some mixture of the two styles. Centrally planned economies saw all the benefits of the market economies and started to shift that way. However, they only let it shift so far because they didn't want to give up their power. Once someone

has power it is pretty hard to take it away from them, and they sure as hell aren't going to willingly give it up. Market economies began shifting away from solely market economies in the 1930's because of the great depression; high unemployment numbers and business failures. The government intervened in an attempt to raise incomes of individuals. But, in order to do that they had to take from those that had and give to those that didn't. They had to "re-allocate" resources at their discretion.

Is this fair? You worked hard for your money, you should get to spend it how you see fit, shouldn't you? Should the government be able to take from you in the form of taxes and re-distribute you're hard earned money in any way that they see fit? Is this right?

Wouldn't this decrease your incentive to work hard?

If you increase equity, efficiency will decrease.

Maybe end here? How much time is left? (1hr 15 minute classes)

Economic Models

Economist use economic models or theories (these words are interchangeable) to analyze difficult real-world issues in a simplified manner. Sometimes these models already exist, and sometimes these models need to be created. Before going out and building your own model, you should always first do something called a literature review to see if a model already exists. Literature review is reading already published papers to see if any have already answered the question at hand. If they have then you can use their model as is, adjust it to better fit your question, etc. etc.

While doing your lit review if you do not come across any papers that answer your question or help you answer your question you would have to develop your own model. There are five steps to doing this and I am sure you have seen them somewhere before in a science class in high school.

Developing a Model

1. Decide on the assumptions to use in developing the model
2. Formulate a testable hypothesis
3. Use economic data to test hypothesis
4. Revise the model if it fails to explain the economic data well
5. Retain the revised model to help answer similar economic questions in the future

The Role of Assumptions

All models have to have some sort of assumptions. Having assumptions help to simplify the complex real world problem allowing it to be analyzed. You cannot analyze an economic issue unless you decrease it complexity, and you do this by adding assumptions to your model. For example, economists

make the assumption that all firms are seeking to maximize profits, and it is assumed that consumers will purchase a basket of goods and services that will maximize their own wellbeing. These are legitimate assumptions, but they are still assumptions because they do not describe the motives of **EVERY** firm or consumer. Remember from last class; one of the three economic ideas, people are rational is also an assumption.

How do you know if the assumptions you place in your model are too simplified or too limiting? You discover this when you form the hypothesis based on these assumptions and test the hypothesis using real world information.

Forming and testing hypothesis in economic models

*All of this data is available to us if you know where to look. Using economic variables we can create an economic model to test our hypothesis.

Economic Variable – Something that is measurable that can have different values.
Ex: Per capita income, population, number of crimes committed per 100,000 People, race by percentage of population or religion

Alight you can a breathe a slight sigh of relief because we will not be creating economic models in this class that will come later on if you decide to take upper level econ classes. I believe the class Dr. Fizel offers covers that; econometrics. In that class you will go through this whole process.

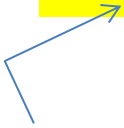
You will:
- Decide on your assumptions
- Generate a hypothesis
- Determine what economic variables you should use in your model
- Gather data pertaining to your economic variables
- Test you hypothesis, and make any necessary revisions

Now who has seen this process of developing a model before in a physics, chemistry or biology class? The reason we use this is economics is because Economics is a social science because it applies the scientific method to study interactions of individuals and how they make decisions.

Another definition of economics …
"Economics, the science behind interactions of individuals and decision making."

After your model has been developed or if you are using an already made model you will do you analysis.

There are two types of analysis.
- **Normative –** an analysis concerned with what ought to be
- **Positive –** an analysis concerned with what is



Which one do we use in economics?

Economics is all about positive analysis because it measures the costs and benefits of different courses of actions.

Let's look at an example of a normative analysis and a positive analysis.

Example of Normative vs. Positive

Let's look at the minimum wage law. Currently the minimum wage law is at $7.25.

There are workers that would have worked for less than this, and therefore they benefit from the law.

Example someone may be willing to shovel snow for $5 an hour, but since there is a minimum wage law they must be paid at least $7.25. Therefore, these people benefit from the minimum wage law.

This is good right? People are receiving more money than they expect.

Like everything in this world there are both positive and negative effects.

At the same time this job pays more than the minimum at which a worker would be willing to work, this law also decreases the number of jobs available because companies shift towards using more machinery instead of human capital. It also may decrease the jobs available because companies can find cheaper labor in different countries.

A positive analysis of the federal minimum wage law uses an economic model to estimate how many workers have lost their jobs because of the law, its effects on the costs and profits of businesses, and the gains to workers receiving wages higher than they otherwise would.

A positive analysis of the minimum wage law would determine how many people lost their jobs because of the law, the effects it has on the costs and profits of a business, and the gains workers receive by receiving a higher wage.

This is where the positive analysis ends and a normative one begins.

The decision on whether or not the minimum wage law is a good idea or a bad idea is a normative analysis and depends on how people evaluate the **Trade-off** involved.

Supporters of the law believe that the losses to employers and unemployed people are less than the benefits received by those who receive higher wages than they otherwise would.

Opponents of the law believe that the losses are greater than the gains.

This law creates winners and losers, instead of allowing the market settle who wins and who looses. The winners being those who receive a higher wage than they otherwise would and the losers being those who are unemployed because of it.

The assessment of who is right or who is wrong depends on that individual person's values and political views.

The normative analysis would say this is the way it should or shouldn't be because …. Politicians use a positive analysis to do their normative analysis.

The positive analysis provided by the economist would play a role in the decision, but can't itself decide the issue one way or another.

What do you think? Is the minimum wage law good or bad? (Class discussion)

If you go back to what we learned last class the minimum wage law is another law that pushes countries farther towards the right hand side of the spectrum because it interferes with true market outcomes. If this law did not exist the market would most efficiently set the hourly wage of the workers to perform the task needed. The more a government interferes with a true market outcome, the farther it shifts to the right hand side of the spectrum.

Distinguishing between Microeconomics and Macroeconomics

Microeconomics – The study of how households and firms make choices, how they interact in markets, and how the government attempts to influence their choices.

Ex: Finding an efficient way to reduce teenage pregnancy, the costs and benefits of approving the sale of a new drug, and analyzing the most efficient way to reduce poverty.

Macroeconomics – The study of the economy as a whole, including such topics as inflation, unemployment, and economic growth.

Ex: Deals with larger issues such as inflation, unemployment, and economic growth.

These two different disciplines are different, but very much so interrelated.

*The total investment by firms in new machinery and equipment determines how rapidly the economy will grow is a macro issue, however, understanding how much equipment
New equipment and machinery firms decide to purchase is a micro issue.

Key economic terms you are going to want to know for this course and for your test are on page 17 and 18. Know these. You can get them directly from your book so I do not want to bore you and waste more class time on reiterating definitions.

They are:

- Entrepreneur
- Innovation
- Technology
- Firm, Company, or Business
- Goods
- Services
- Revenue
- Profit
- Household
- Factors of Production or Economic resources
- Capital
- Human Capital

Appendix

Alright, now we are going to go over some basic math equations and graphs that you're are going to need to be able to handle for this class. This is going to be boring for some of your and eye opener for others. For those of you that this is boring, don't be too upset because this means you have one step up on some of the other students in class, and it is always good to be at least one step ahead of your competition.

Draw a bar, line and circle, graph. Let them know we will primarily be using line graphs for this course.

Line graphs typically measure the relationship between two different variables. In this class those two variables will generally be price and quantity because we will be constantly analyzing the relationship between these two variables.

Does anyone remember from one of your math classes what the equation is to find the slope of a line?

The equation for slope of a line is rise over run, or slope= change in y / change in x. This is an important equation we will be using a lot this semester.

Show the difference between positive and negative relationships between the two variables using positively sloped lines and negatively sloped lines.

Most of the curves we will be using in this class are linear lines in order to keep things simplified. A linear line has the same slope over its entirety.

Just being curious, does anyone know how to find the slope of a non-linear line? You must find the derivative of the line. Relax you won't be using calculus in this class; I just wanted to see if where most of you stand mathematically. When your take upper level economics courses you will be using calculus and you will need to know how to use derivatives, but for this class you won't.

There is another way to find the slope of a non-linear line. You can simply draw a linear line tangent to the non-linear line at the point where you would like to know the slope and then find the slope of that line. This is what derivatives do for you, but this is an estimated approach you can use.

Does anyone know the formula for percentage change?

Percentage change equals ((new-old)/old)*100

Formula for the area of a rectangle? Area for a rectangle = base times height.

Formula for the area of a triangle? Area for a triangle = base times height time half.

Alright so those are the basic math concepts you will need to know for this class. If you knew them then great, if you didn't touch up on them and practice them because you will be using them a lot this semester.

Before we end class today I want to point something out to you. A lot of you are freshman and sophomores and have yet to select a major.

The average starting salary for a person holding a bachelor's degree; $41,701

The average starting salary for a person holding an economics degree; $54,403

*The highest starting salary of any business major. Usually took jobs in securities, commodities, funds, trusts, and financial investments.

Interesting facts

- Currently there are 808,000 (2010) doctors in the U.S. The Health Resources and Service Administration (HRSA) predict that there will be approximately 866,400 in the U.S. by 2020. However, they also predict that the U.S. will need 922,000 doctors by 2020 leaving a shortage of doctors by 55,600.
    - These are the things you need to consider when picking your degree program. Is there going to be a job out there for me when I graduate in my particular field? Consider the current and future demand for the degree that you are going after. Some degrees are more valuable than others.

That concludes today's class. You have a homework and quiz due tonight, and next class we will be beginning chapter 2; trade=offs, comparative advantage, and the market system/. See you all Wednesday.