

Principles of Microeconomics: Chapter 1 What is Micro-Economics? / Some Basic History and Concepts

I. Microeconomics is the Science of Markets

When I was an undergraduate many years ago, I believed that economics was the “science of business.” But I was wrong about that. It is the science of markets, where a market is a network of voluntary exchange, production, and innovation. Because all of these activities (exchange, production, and innovation) are activities undertaken by individuals, economics is a social science.

Economics has connections to other social sciences such as political science and sociology because both governmental policies and widely shared norms have effects on markets. For the most part, economic theory assumes that public policies and norms are “constant” and so can be ignored as long as they remain constant. It is only when either public policies or norms change that their effects on various parts of the great network of exchange, production, and innovation need to be explicitly taken into account.

We all have some informal experience with markets, because we are (nearly) all part of market networks. We buy things at stores and through the internet. Many of us have held or hold jobs in which we produce things—either tangible things or services that others purchase from us both directly (our

employers) and indirectly (their customers). So, we all know a bit about markets from direct experience.

However, very few of us have taken the time to think about how markets work and why they work as well as they do as sources of material comforts, entertainment, and useful technologies. Much of what generates market opportunities is clearly visible, but much is invisible until one thinks carefully about market relationships. At first the more one thinks about market networks the more overwhelming and confusing they seem to be.

There are market connections among billions of individuals, most of which tend to make everyone better off as long ago pointed out by such scholars as Adam Smith in the eighteenth century and Claude Bastiat in the nineteenth century.

A. An Illustrative Story about the productivity of specialization and market networks from Claude Bastiat:

Let us take, by way of illustration, a man in the humble walks of life—a village carpenter, for instance—and observe the various services he renders to society and receives from it; we shall not fail to be struck with the enormous disproportion that is apparent. This man employs his day’s labor in planning boards and making

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tables and chests of drawers. **He complains of his condition; yet in truth what does he receive from society in exchange for his work?**

First of all, on getting up in the morning, he dresses himself; and he has himself personally made none of the numerous articles of which his clothing consists. Now, in order to put at his disposal this clothing, simple as it is, an enormous amount of labor, industry, and locomotion, and many ingenious inventions, must have been employed. Americans must have produced cotton, Indians indigo, Frenchmen wool and flax, Brazilians hides; and all these materials must have been transported to various towns where they have been worked up, spun, woven, dyed, etc.

Then he breakfasts. In order to procure him the bread he eats every morning, land must have been cleared, enclosed, labored, manured, sown; the fruits of the soil must have been preserved with care from pillage, and security must have reigned among an innumerable multitude of people. The wheat must have been cut down, ground into flour, kneaded, and prepared; iron, steel, wood, stone, must have been converted by industry into instruments of labor; some men must have employed animal force, others water power, etc.; all matters of which each, taken singly, presupposes a mass of labor, whether we have regard to space or time, of incalculable amount.

In the course of the day this man will have occasion to use sugar, oil, and various other materials and utensils. He sends his son to school, there to receive an education, which, although limited, nevertheless implies anterior study and research, and an extent of knowledge that startles the imagination.

He goes out. He finds the street paved and lighted. A neighbor sues him. He finds advocates to plead his cause, judges to maintain his rights, officers of justice to put the sentence in execution; all which implies acquired knowledge, and, consequently, intelligence and means of subsistence.

He goes to church. It is a stupendous monument, and the book he carries thither is a monument, perhaps still more stupendous, of human intelligence. He is taught morals, he has his mind enlightened, his soul elevated; and in order to do this we must suppose that another man had previously frequented schools and libraries, consulted all the sources of human learning, and while so employed had been able to live without occupying himself directly with the wants of the body.

If our artisan undertakes a journey, he finds that, in order to save him time and exertion, other men have removed and leveled the soil, filled up valleys, hewed down mountains, united the banks of rivers, diminished friction, placed wheeled carriages on blocks of sandstone or bands of iron, and brought the

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force of animals and the power of steam into subjection to human wants.

It is impossible not to be struck with the measureless disproportion between the enjoyments which this man derives from society and what he could obtain by his own unassisted exertions. **I venture to say that in a single day he consumes more than he could himself produce in ten centuries.**

What renders the phenomenon still more strange is that **all other men are in the same situation.** Every individual member of society has absorbed millions of times more than he could himself produce; yet there is no mutual robbery.

And, if we regard things more nearly, we perceive that the carpenter has paid, in services, for all the services others have rendered to him.

If we bring the matter to a strict reckoning, we shall be convinced that he has received nothing he has not paid for by means of his modest industry; and that everyone who, at whatever interval of time or space, has been employed in his service, has received, or will receive, his remuneration.

The social mechanism, then, must be very ingenious and very powerful, since it leads to this singular result, that **each man, even he whose lot is cast in the humblest condition, has more enjoyment in one day than he could himself**

produce in many ages. (*Harmonies of Political Economy*, pp. 452–54)

B. Understanding Market Networks

Bastiat's description on the productivity of market networks with their specialization, economies of scale, and relatively high innovation rates remains even more true today.

The main puzzle that principles of microeconomics addresses is how do such networks operate, given that there is no central planner? Millions and billions of individuals make independent decisions about what to buy, what to produce, and what to invent and yet the result is not chaos but rather a systematic pattern of life and production that generates material comforts, entertainment, and necessities for essentially all of the persons that participate in those networks. How is this possible? What is it that induces folks to make the choices that lead to productive activities—where productive is not simply producing things, but producing the things that people want and in the quantities that they are willing to pay for?

Anyone can build sandcastles or daisy chains, but not everyone can build a house, undertake a surgery, maintain a car, program a computer, fly an airplane, or invent a smart watch. All

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of which are much more highly valued by most individuals than sandcastles or daisy chains.

The basic answer developed by micro-economics is that prices coordinate the decision of consumers, producers, and innovators so that the most valuable things get invented and produced—where “most valuable” is determined by the preferences and income of consumers. Producing things that are more desired by consumers tends to be more profitable for individual producers and organizations devoted to production of goods to sale (referred to as “firms” in most economic textbooks). And, for anyone that prefers more income to less income, such goods will attract more efforts to produce them than goods that are less profitable to produce and sell.

Similarly, innovators may invent lots of things—but again insofar as most prefer more income to less income, they will tend to focus on the innovations that are likely to be most profitable—e.g. that consumers are willing to pay the most for. Thus, market driven innovation tends to occur with the interests (or expected interests) of consumers in mind. In this way expected profits may be said to determine what both is invented and what is produced, and what is sold. The more profitable a

product tends to be the more innovators and producers try to produce it.

But what determines profits? This is partly determined by the interests of consumers and their willingness to use their income to purchase both things (often called “goods” by economists) or services. The more consumers are willing to pay the higher potential profits are—other things being equal. However, the more firms compete for consumer expenditures, the lower prices tend to be and the lower the profits actually realized tends to be. Thus, the typical prices at which goods and services are sold are an important determinant of profits. The higher the selling price, the higher are profits. The lower the selling price the lower are profits. This is true for both producers and innovators.

Similarly, the higher the price of a good is, the less interested a consumer (buyer) is in purchasing it—and the lower the price of a good is, the more interested a consumer (buyer) in purchasing it. Thus, prices also affect consumer decisions.

When prices rise, firms tend to produce more, and consumers tend to purchase fewer units of the goods produced for sale. When prices fall, firms tend to produce less, and consumers tend to purchase more of the goods produced for sale. These opposite

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effects of prices on firms and consumers sound like a recipe for chaos—but it turns out that for the goods that are routinely produced and sold in markets, there is normally a price at which the purchases of consumers (quantity demanded) equal the quantities produced by firms (their profit maximizing quantities).

Such prices are referred to by economists as “equilibrium prices” and theories of “price determination” provide the core principles of microeconomics.

To understand how prices emerge and coordinate the decision of producers, consumers, and innovators, a series of “models” were gradually worked out by economists over the past two and half centuries. The models abstract from a variety of idiosyncratic features of the decision of firms, innovators, and consumers in order to better understand the main factors that determine equilibrium prices and their ability to coordinate a broad range of decision in market networks.

Those same models can be used to predict how prices, sales, and output levels change when the factors held constant (or abstracted from) change. The first half of the course focuses on the logic of price determination and the second half focuses on the logic of “comparative statics,” which is how equilibrium prices change as public policies such as regulation and taxes

change or when better or worse than usual weather occurs or when major innovations take place.

II. Some Useful Historical Background

Microeconomics emerged as a field of study in the nineteenth century as a relatively small group of people (many, but not all, of them college professors) began to analyze the new, broader scope of commerce in ordinary life.

Prior to 1700, essentially everyone was a farmer, farm hand, or servant. Some owned land, but most worked on land owned by others. Many of the larger farms were largely self-sufficient. They made their own tools (mostly from wood), wove much of their own clothing, and grew most of their own food. There was always some market activity in towns and between towns, but most farmers, farm hands and maids journeyed to town infrequently. Farm hands and maidens were largely paid with room and board and so had little money to spend on the things that might be purchased in town. [Trade without money is called **barter**.]

Commerce took place, but for most people it was a “side dish” rather than the “main course” of their lives. There was always some “commerce” in towns and at local market fairs, but

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only a fairly small fraction of the population lived in towns and depended entirely on commerce for their living.

In northern Europe this pattern of life began to change in the eighteenth century. Commerce began to expand for a number of reasons, ideas about a good life changed. Farming and other technologies improved, and the organization of production and innovation also improved. These innovations tended to make commerce a more efficient and reliable method of meeting consumer wants than it had been in the past. Suffrage expanded which tended to make government policies more determined by middle class voters than noble and royal families. Ideas about a good life changed and norms against commerce diminished in strength.

As a consequence, measured average (real) income (per capita RGNP) rapidly increased in the 18th and 19th centuries. An entirely new pattern of life emerged, which I refer to as the commercial society. At the beginning of the nineteenth century in the West, 90-95% were farmers, by the end of the century only around 10% were. Today only about 2% are.

Commercial organizations (firms) grew larger and more numerous (because of specialization). Many were much larger

than any previous private organizations, because they needed to be large to take full advantage of economies of scale. Many of the new production methods were very capital and knowledge intensive. Many production methods and products of the nineteenth and twentieth centuries were completely new: steam engines, tractors, light bulbs, automobiles, airplanes, computers etc.

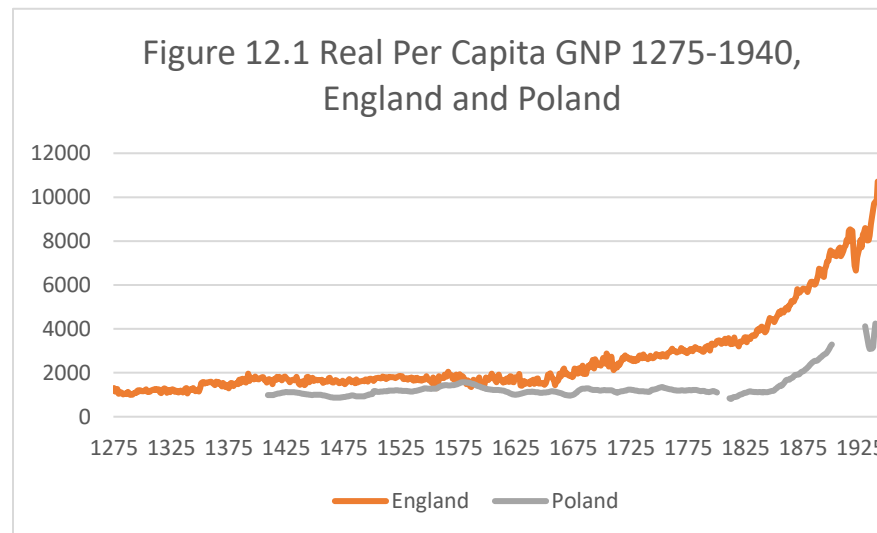
All these and other factors—including broader mass education—increased specialization and allowed new economies of scale to be realized. A great new range of occupations emerged, and more and more persons “earned their living” not as farmers but by hiring themselves out to commercial organizations (firms) in exchange for wages. Urban centers in the West expanded rapidly as families left rural farmlands for jobs in the cities.

And, with money wages being paid, new “retail” organizations emerged to serve the rapidly expanding middle class.

Life was very much different in 1900 than it had been in 1800 for most persons in the West. This highly specialized, interdependent form of life was new, and had become the norm. Most of the rest of the world gradually adopted this system in the

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twentieth century and more or less world-wide market networks developed for a wide variety of products--far more products than had been produced for sale in earlier times.



And so, a **broad range of people, billions of them, became linked together through market trading networks** of many kinds. As a consequence, market activities--economics--is central to most people's life in most parts of the world.

III. Principles of Economics

The first principles of economics books were written in the late eighteenth century. All such books and the courses based on them attempt to explain how the new commercial systems operated. Their aim was similar to that of Physics during that period. They attempted to develop and apply a small number of principles that could provide systematic explanations of how the new commercial societies and their broad networks of exchange operate, and also how they are affected by factors beyond the networks of exchange, production, and innovation that characterize contemporary commercial societies.

New textbooks are introduced every year during the twentieth century, but most are still based on the topics developed by Alfred Marshall's textbooks of the late 1890s and early 1900s.

This course is not based on a textbook but on web notes developed for the course. It is based on such textbooks and much other reading undertaken over the course of my career as an economist. There are readings from a mainstream textbook and a couple of other books, but they are not the "main dish" of this course. Instead, the main dish is the class website and the class lectures which are based upon the class web site.

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Its main goal is the same as other principles of economics courses: to provide the tools that students need to understand markets in a general way and also the models and ideas that you'll need in upper-level economics courses, should you go on in economics or dabble a bit in it.

As an honors course, the course developed for you places a bit more emphasis on what might be called "neoclassical models," which were worked out in the late nineteenth century and during the first half of the twentieth century. Understanding these models will sharpen your intuitions about how markets work and also for economics as a field of study.

The first half of the course develops the models that most principles of economic courses cover. The second part of the course covers more advanced topics that are often left out of principles of economics courses, but which should be both useful to you and which will deepen your understanding of economic outcomes and choice settings.

The aim of all principles of economics course is not to persuade you to favor specific policies or induce you to memorize particular facts, but to provide a variety of logically consistent models that will help you to think more systematically

and carefully about modern market-based relationships and their associated societies.

The remainder of this chapter develops a few ideas that ground the rest of the course.

A. Positive and Normative Economics

For a lot of purposes in economics, it is useful to distinguish between **positive issues**--issues concerning how the world works--and **normative issues**--issues concerning whether the world works in a good or bad way. This is especially true of areas of economics that dealing with the consequences of public policies on markets and incomes. It is possible for people to agree about the future consequences (positive conclusions), yet still disagree about whether a policy is good or bad the ideal policy (normative conclusions). Most of the analysis of the effects of public policies undertaken in this course is positive, although there will be a bit of normative analysis as well.

DEFINITIONS:

A **Positive Statement** is a statement about **what is**, has been or will be. It is a statement about the world.

A **Normative Statement** attempts to evaluate the **desirability** of alternative states of the world.

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Normative conclusions are not always based on “gut reactions” or intuitions, but they may follow from logically consistent theories. Examples include cost-benefit analysis, the Pareto Criteria, and related ideas from utilitarian and contractarian theories of the good or just societies.

Positive conclusions are often based on accepted scientific theories (which may be changed in the future) or one “gut intuitions” such as “that color is really green rather than blue.” In either case, a positive statement is about the world as it is, has been, or will be rather than whether it is desirable or not, or good or bad, or better or worse.

Many positive statements can be assessed to determine whether they are “true” or “false.” Such statements are said to be “operational.” Not every positive statement is true. Indeed, science often makes progress by challenging or extending the “positive claims” of earlier theories previously thought to be true.

Generally, normative statements conclude that a particular policy or state of the world is good or bad, is Pareto optimal or not, should be undertaken or not, etc. because some state of the world is “better” than another. Some of these statements are arguably “true” if one accepts a particular normative theory.

Policy A may be said to be better than policy B after a careful cost-benefit analysis that can be appraised to determine whether it (the cost benefit analysis) yields the results claimed. (Net benefits can be estimated using data, statistical tools, and theory.)

Confusion can occur about whether a statement is positive or normative, in part, because many reasoned normative statements are “consequentialist” and so use positive statements to support their conclusions. For example, policy X may be said to be a bad policy because it increases unemployment. That policy X increases unemployment is a positive statement. The conclusion that X is a bad policy depends on whether you believe unemployment should always be avoided or not—which is to say the use of increase or decreases in unemployment as a normative measure or indicator.

Positive statements are often confused with operational statements. *Operational statements* are statements that can at least conceptually be tested to determine whether they are true or false. Not all positive statements are testable, and moreover, give a coherent normative theory, some normative statements are testable!

Some Puzzles and Examples:

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- The moon is made of green cheese. (p, but false)
- Minimum wage laws always increase unemployment. (p, probably true)
- Tariffs are a bad policy because they reduce consumer welfare. (n, probably true according to cost-benefit analysis)
- Mass transit reduces unemployment. (p, probably true) Mass transit should be subsidized because it reduces air pollution. (n, possibly true)
- Global warming can only be reduced with a high carbon tax. (p. probably false—other policies may also do so)

B. The Use of Models by Economists

The course develops the **geometric tools** that economists use for modeling choices by consumers and firms. These can be used to make a series of predictions about markets, prices, incomes, and innovation. They can also be used to analyze the effects of various public policies and natural shocks. It is interesting to note that the models we cover in class were sufficient for publishing in the top economic research journals until the mid-nineteen seventies, or so. So, although that is no longer true, they provide very general explanations of most economic phenomena.

The models used in this course are **partial equilibrium** ones that assume that much of the world beyond our models is stationary--non changing. This is a way of reducing the complexity of the world down to levels that can be analyzed. (In economics this is often called the “ceteris paribus” assumption.)

It is easier to analyze one person or one market at a time than the whole market or universe at once. It allows us to undertake what economists call comparative statics. If “something” changes, then a change in a market’s equilibrium will occur. , holding other things constant. Among the things that are often held constant are (i) the laws that define the “rules of the game,” (ii) the distribution of wealth, (iii) technology. Of course, in the real world everything is not held constant. However, understanding can often be increased by focusing on a subset of important factors and abstracting from other factors that are deemed less important. Most sciences use this method.

For the most part, we’ll focus on the implications of rational choice and scarcity for market activities and outcomes: prices, production, profits, income, innovation, etc. The main dish of principles of microeconomics is “pure theory,” e.g. “principles” that explain much of the course of prices and their ability to coordinate the activities undertaken in market networks.

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However, we'll also be developing lots of applications for that theory to show how it can be used and why it is used.

Whether the most “important factors” have been identified or not is at least partly an empirical issue—do those factors in fact account for the phenomena that they purport to explain or not? The results of many empirical studies suggest that economic models do in fact capture much that is important. The examples help to demonstrate that the models “work,” they can account for much about the way prices and markets behave through time and in response to changes in circumstances—new policies or worse than average weather etc.

C. The Grounding Ideas of Micro-Economic Models

Microeconomics studies the implications of rational choice in a setting of scarcity. People are not always rational and some goods, such as air, are not always scarce, but the goods traded in market networks are all scarce (otherwise people would not be willing to pay for them) and insofar as individuals and organizations are forward looking, they tend to be rational in the sense that word is used by economists (which is a bit different than its ordinary English usage).

Rational choice can be represented in a variety of ways, but the simplest is that a choice is rational if it is forward looking and attempts to advance some end or move towards a goal. The goal may or may not be reasonable, but if a person or organization acts to systematically advance that goal, then it is “rational” in the sense that economists use the term. For example, a person that attempts to maximize grades is rational. A person that maximizes wealth is rational. A person that tries to care for his or her friends is rational. A person or organization that systematically attempts to maximize profits is rational.

A good is scarce whenever too little of it exists to fully satisfy all possible goals or wants by persons currently living.

- Personal time (human time) is scarce.
- Attention is scarce.
- Wealth is scarce.
- Labor is scarce (since time and people are scarce).
- Knowledge is scarce.
- Most natural resources are scarce.
- Most manufactured goods are scarce.

Perhaps surprisingly, these two characteristics—rationality and scarcity—can be used to construct models that can shed light

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on a wide variety of private choices, choice in markets, choice in politics, and many other choice settings. This is not to say that every human activity can be completely understood using economic reasoning, but it is a rare activity that cannot be better understood using micro economic ideas, geometry, and logic.