

Lesson 2: Section 3

How Do We Satisfy Economic Wants?

Take a quick break from reading this book, and let your eyes wander around wherever you happen to be just now. What do you see? Walls, windows, furniture, books, paper, pens, pencils . . . the list could likely go on and on. None of these goods magically appeared at this moment for your comfort and convenience. All of them were produced to satisfy somebody's wants. The question is, how is this done?

Inputs, Outputs, and the Production Equation

Economists answer this question by looking at the inputs and outputs of the production process. **Inputs** are the scarce resources that go into the process. Economists call these productive resources the **factors of production** and divide them into three basic categories: land, labor, and capital. **Outputs** are the goods and services produced using these resources.

Economists use the production equation to represent the process of combining resources (inputs) to produce goods and services (outputs). In its simplest form, the **production equation** looks like this:

land + labor + capital = goods and services

Some economists consider **entrepreneurship**—the willingness to take the risks involved in starting a business—to be a fourth factor of production. **Entrepreneurs** assemble the other inputs to create new goods and services.

Land Resources: The “Gifts of Nature”

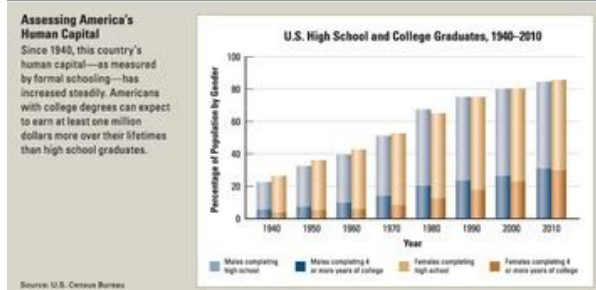
As seen by economists, **land** is far more than real estate. It means all of the “gifts of nature” that are used to produce goods and services. These gifts include such familiar natural resources as air, soil, minerals, water, forests, plants, animals, birds, and fish. Others are less obvious, such as solar energy, wind, geothermal energy, and the electromagnetic spectrum used to transmit communication signals.



Natural resources vary in their abundance and availability. A few, such as sunlight and wind, are **perpetual resources** that are both widely available and in no danger of being used up. Others, including forests, fresh water, and fish, are **renewable resources** that, with careful planning, can be replaced as they are used. A few resources, mostly metals, can be recycled for use again and again. Still others, especially fossil fuels like oil, coal, and natural gas, are **nonrenewable resources**. Once they are used, they are gone forever.

The value of natural resources depends on someone knowing how to plug them into the production process. Vast pools of oil have lain under the surface of Earth for millions of years. But until someone developed the tools and technology needed to extract that oil from deep under the ground and turn it into a useful fuel, it had little value.

Figure 2.3B



Labor Resources: Putting Human Capital to Work

The time and effort people devote to producing goods and services in exchange for wages is called **labor**. This includes both physical labor, such as planting crops and building houses, and mental activity, such as writing legal briefs and programming video games.

The quantity of labor available in a country depends on the size of its population and people's willingness to work. The quality of that labor depends on how skilled these workers are, or what economists refer to as human capital. **Human capital** is the knowledge and skill that people gain from education, on-the-job training, and other experiences. "It is what you would be left with if someone stripped away all of your assets," says economist Charles Wheelan, "and left you on a street corner with only the clothes on your back." What human capital would Mick Jagger be left with in that situation? He could still write and perform songs that people want to hear.

The importance of human capital is almost impossible to overstate. Workers with high human capital are more productive and earn more money than those with few skills. This is why an airline pilot makes more money than a taxi driver, although they offer similar services. Airline pilots are not only more highly trained, but they also move far more people many more miles in a day than do cabbies.

There is a strong **correlation**, or relationship, between a country's level of human capital and its standard of living. In contrast, the correlation between a country's natural resources and living standards is weak. This explains why a country like Japan, which is poor in resources but rich in human capital, is among the world's wealthiest nations, while Nigeria, which is rich in oil but poor in human capital, is among the poorest.

Economist Gary Becker, who won a Nobel Prize for his work in human capital, estimates that about 75 percent of the wealth of a modern economy consists of the education, training, and skills of its people. "We really should call our economy a 'human capitalist economy,' for that is what it mainly is," he says. "Indeed, in a modern economy, human capital is by far the most important form of capital in creating wealth and growth."

Capital Resources: Tools, Machines, and Buildings

When most Americans use the word *capital*, they are thinking about money that they could invest in stocks, bonds, real estate, or businesses to produce future wealth. Economists sometimes refer to money used in this way as **financial capital**.

To an economist, however, money by itself does not produce anything. What matters in the production process are the tools, machines, and factory buildings that money can buy. To avoid confusion, these concrete productive resources are sometimes called **physical capital** or **capital goods**.

Looked at this way, **capital** consists of the tools, machines, and buildings used in the production of other goods and services. That last part—used in the production of other goods and services—matters. If you buy a car to drive to school and social events, it is a consumer good. If you buy a car to deliver pizzas for a restaurant, it is a capital good.

Capital takes a surprising number of forms. It includes tools as simple as a screwdriver and machines as complicated as a supercomputer. Factories, office towers, warehouses, bakeries, airports, and power plants are forms of capital. So are roads, electrical grids, sewer systems, and the Internet.

Since the beginning of the Industrial Revolution, capital has replaced labor in one area after another. This process began in the textile industry in England, where water-powered spinning machines and mechanical looms replaced spinners and weavers in the production of cloth. More recently, automated teller machines and, with the rise of online banking, computers, have taken over many services once handled by bank tellers. Robots have replaced assembly-line workers in automobile assembly plants. Each advance in physical capital, however, has created new needs for labor. Someone has to design, produce, and maintain the new machines.

Putting It All Together: Entrepreneurship

Entrepreneurship is a specialized and highly valued form of human capital. It involves the combining of land, labor, and capital in new ways to produce goods and services. Entrepreneurs perform several roles in the production process, including the four listed below.

Innovator. Entrepreneurs think of ways to turn new inventions, technologies, or techniques into goods or services that people will want.

Strategist. Entrepreneurs supply the vision and make the key decisions that set the course for new business enterprises.

Risk taker. Entrepreneurs take on the risks of starting new businesses. They invest their time, energy, and abilities—not to mention their own and often other people's money—not knowing whether they will succeed or fail.

Sparkplug. Entrepreneurs supply the energy, drive, and enthusiasm needed to turn ideas into realities. As entrepreneur Nolan Bushnell, founder of Atari and Chuck E. Cheese's Pizza Time Theaters, has observed,

The critical ingredient is getting off your butt and doing something. It's as simple as that. A lot of people have ideas, but there are few who decide to do something about them now. Not tomorrow. Not next week. But today. The true entrepreneur is a doer, not a dreamer.

Working Smarter Boosts Productivity



Because all three factors of production are scarce, we will never be able to produce all of the goods and services people might want. But by using these inputs more efficiently, we can increase the productivity of our economy. **Productivity** is a measure of the output of an economy per unit of input. It is determined by dividing total output by one of the three inputs involved in its production: land, labor, or capital.

productivity = output/input

Productivity is stated as a ratio of output per unit of input. For example, in measuring the productivity of a lumber mill, you would begin with its output in a given period of time—in this case, the number of board feet of lumber produced in a week. You would then divide the output by one input, such as the hours of labor needed to produce that output. The mill's productivity would be the ratio of board feet produced per hour.

Because productivity is a ratio of output to input, it can be raised in two ways. The first is by getting more output from the same inputs. In the case of the lumber mill, this might be accomplished by organizing the production process in a more efficient manner. By doing so, the same number of hours of labor (one of the mill's inputs) could produce more board feet of lumber (the mill's output) each week.

The second way to raise productivity is by getting the same output from fewer inputs. Looking again at the lumber mill, this could be done by finding a way to get more board feet of lumber out of each tree that the mill workers harvest. This improvement would enable the mill to produce the same amount of lumber (its output) using fewer trees (an input) and fewer workers to cut down the trees (another input).