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PRINCIPLES OF ECONOMICS: MACROECONOMICS

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E. David Emery

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PRINCIPLES OF ECONOMICS: MACROECONOMICS

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PRINCIPLES OF ECONOMICS: MACROECONOMICS

PREFACE

The study of economics is divided into two main parts, macroeconomics and microeconomics. Although *macroeconomics* — or *macro*, for short — comes from the Greek word for “large,” it is concerned less with the *large* elements in an economy than it is with the collective or *aggregate* elements, regardless of their size. It is the study of how money and aggregate expenditure or investment behavior determine the levels of output, employment, and prices in an entire economy.

Similarly, although *microeconomics* — or *micro*, for short — comes from the Greek word for “small,” it is concerned less with the *small* elements in an economy than it is with the *individual* elements, whether they are small, like the average household, or large, like AT&T or General Motors. It is the study of how the choices of individual decision-making units and the functioning of individual markets determine how society’s scarce resources are allocated and how income is distributed among its members.

The subject of this book is macroeconomics, and its purpose is twofold: first, to acquaint you with the basic subject matter of economics and with the tools of the discipline, and, second, to present you with a complete course in the principles of macroeconomics in the clear, concise format of an outline. Like its companion, **PRINCIPLES OF ECONOMICS: MICROECONOMICS**, this outline is comprehensive enough to be used by itself for independent study, but you will find that many of its features make it an ideal supplement to an introductory college course or textbook on economics.

One of these features is the sample **midterm** and **final examinations** included with this outline. Like most college tests, these sample examinations are designed to measure not only your retention of information but also your understanding of and your ability to apply the knowledge that you have acquired. They are also designed to give you ample exposure to — as well as practice answering — the various types of questions that you are likely to encounter on a typical college exam.

Several other features, all of them practical study aids, appear at the end of each chapter:

RAISE YOUR GRADES This feature consists of a checkmarked list of open-ended, thought-provoking questions. By inviting you to compare concepts, interpret information, and examine the whys and wherefores of chapter material, these questions help you to assimilate ideas and prepare for class discussions, quizzes, and tests.

SUMMARY This feature provides a brief restatement of the main ideas in each chapter, including definitions of key terms. Because it is presented in the efficient form of a numbered list, you can use it to refresh your memory quickly before an exam.

RAPID REVIEW Like the summary, this feature is designed to provide you with a quick review of the principles presented in the body of each chapter. Consisting primarily of true–false, multiple-choice, and fill-in-the-blank questions, it allows you to test your memory and reinforce your learning at the same time. Should you have trouble answering any of these questions, you can locate and review the relevant sections of the outline by following the cross references provided.

SOLVED PROBLEMS Each chapter of this outline concludes with a series of problems that require more than just a simple one-word answer. Some ask you to apply abstract theories to concrete situations; others ask you to analyze and predict the outcome of a set of hypothetical circumstances; still others ask you to prepare graphs, interpret diagrams, analyze data, and perform elementary calculations. To make the most of these problems, try writing your own solutions first. Then compare your answers with those in the book.

Finally, of course, there is the outline format itself, which serves both as a clear guide to important ideas and as a convenient structure upon which to organize your knowledge. That format and the many other practical features of this outline, including the glossary at the back and the numerous examples in every chapter, combine to make it a valuable supplement to your college course work and textbook on the principles of macroeconomics.

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1 *THE ECONOMIC PROBLEM*

THIS CHAPTER IS ABOUT

- ✓ Scarcity
 - ✓ Macroeconomics and Microeconomics
 - ✓ Resources and Production
 - ✓ Production Possibilities Boundaries
 - ✓ Choices and Opportunity Costs
 - ✓ Resource Use: Four Fundamental Choices
-
-

1-1. Scarcity

Our desire for material items such as food, clothing, cars, housing, and highways appears to be almost unlimited both individually and collectively. Yet the means to satisfy those wants—the goods and services we are able to produce—are limited. This is the problem of **scarcity**: our material wants exceed our ability to satisfy them from limited resources. The choices that individuals and societies make in response to scarcity are the subject matter of economics.

Scarcity is a relative term in economics. The coal reserves in the United States may be as high as 1,700 billion tons, yet coal is a “scarce” resource: there isn’t enough coal for all people to have as much as they desire at no cost.

EXAMPLE 1-1: Leonardo da Vinci’s *Mona Lisa* is considered scarce by economists, yet the original artwork *Trains*, crayon on computer paper by 3-year-old Carl Emery, is not. Although there is only one original of each work, one is considered scarce and the other not because scarcity is relative. Not everyone who wants the original *Mona Lisa* can have it, but everyone who wants the original *Trains* (i.e., Carl’s father) can.

A. Economics is the study of how scarce resources are used.

Every introductory economics textbook defines the term *economics* in its own unique way, but all of the definitions have elements in common. A typical definition reads something like this: **Economics** is the study of how individuals and societies choose to use their scarce resources in order to best satisfy their material wants.

There are three key words in this definition: *societies*, *choose*, and *best*. Economics is not just a study of wealth and the means to obtain it. Economists are concerned with the broader problem of how societies use their scarce resources. Scarcity implies the necessity of making choices. Therefore, choices on how to use scarce resources are an important concern of economics. Finally, the adjective *best* suggests that economists are concerned with the optimal or efficient use of resources, and indeed they are.

B. There are four methods to challenge scarcity.

There are four methods commonly used by societies to challenge or alleviate scarcity:

1. full employment of available resources
2. development of resources and technology
3. efficient organization of the production and dissemination of goods
4. redistribution of goods or income among members of society

Although these methods may seem to be no more than common sense, none of them is used consistently by any society. How consistently, for example, do you think resources are “fully employed” in the U.S.? How consistently do you think production is efficiently organized in the USSR? Some of the methods, too, are controversial. For example, do you think every person in the U.S. favors more growth or a redistribution of income to the poor? Clearly different societies place different emphases on the methods they use to challenge scarcity.

The level of resource use or employment is a major focus of this volume. The problem of scarcity has been periodically aggravated in the U.S. and other capitalist countries by large-scale unemployment of resources. For example, the rate of unemployment of the labor force in the U.S. exceeded 10% during the recession of 1981–82. Unemployment of the labor force rose to 24% during the Great Depression of the 1930s. Even during periods of prosperity, our utilization of the labor force has been less than 100%.

1-2. Macroeconomics and Microeconomics

For purposes of instruction and because of theoretical considerations, the study of economics is divided into two main parts: macroeconomics and microeconomics.

- **Macroeconomics** is the study of how money and *aggregate* (total) expenditure and investment behavior determine output, employment, and the price level in an entire economy.
- **Microeconomics** is the study of how the choices made by *individual* decision-making units, such as households and producers, and the functioning of individual markets determine the allocation of society’s scarce resources and the distribution of income.

Thus, as defined above, macroeconomics seems more concerned with how society challenges scarcity through full employment and growth, while microeconomics focuses on efficient organization and reallocation of income. As you will discover, however, the lines are not so clearly drawn.

A basic knowledge of the organization of economic activity and economic systems is necessary to understand modern macroeconomics. The remainder of this chapter and the next four chapters are devoted to providing this background material. You might want to read through this material quickly if you have completed a course in principles of microeconomics.

1-3. Resources and Production

Individuals and societies satisfy their material wants with goods. Goods are produced from resources with the aid of technology. Resources include land, capital, and human resources. Economists give special meanings to all of these terms:

- **good:** any item or service that satisfies a material want
- **resource:** any item used to produce a good
- **land:** any naturally occurring resource used in production (any natural resource)
- **human resource:** any human skill used in production, including labor and entrepreneurial ability
- **capital:** any man-made item used in production
- **technology:** society’s knowledge of production

EXAMPLE 1-2: A recording by your favorite musical group, be it Kiss or the Cleveland Orchestra, is a “good” to you (although it may be a pain to others in society). An acre of farm land and a tree used to produce lumber are both classified as “land” by an economist. The chief executive officer of IBM Corporation is a “human resource” and may provide labor as well as entrepreneurial or managerial ability. A building, a machine, and a road all fall into the economic category of “capital.”

A. Resources are versatile and heterogeneous.

Resources are versatile and heterogeneous. The same set of resources can be used to produce a vast assortment of goods, but some resources, or some units of a resource, are more productive in one use than they are in another. Resources tend to be applied preferentially to more, rather than to less, productive uses.

B. Entrepreneurs are the organizers of production.

Entrepreneurs are individuals who organize production and bear the associated risks. Entrepreneurs perform three functions.

1. They decide what goods to produce in a market economy.
2. They take the initiative in assembling the resources necessary for production.
3. They reap the profits or losses resulting from their decisions.

Entrepreneurs play a critical role in a market economy. As the organizers of production, they must anticipate consumer wants and respond to changing tastes. They must also respond to changes in technology and in the availability of resources.

1-4. Production Possibilities Boundaries

A **production possibilities boundary (PPB)** is a schedule or curve illustrating the various combinations of goods that a society is capable of producing at any given time if technology and resources are fixed and all resources are fully and efficiently employed.

A hypothetical PPB for an economy producing only two goods, guns and butter, is shown in Figure 1-1.

A. A PPB has four important properties.

1. *A PPB is a boundary.* It shows the limit to what a society can produce with the technology and resources at its disposal. A society may wish to have more of all its goods, as shown by Point *E* in Figure 1-1. However, it can't achieve Point *E* with the technology and resources currently available to it. This limit is the essence of scarcity.

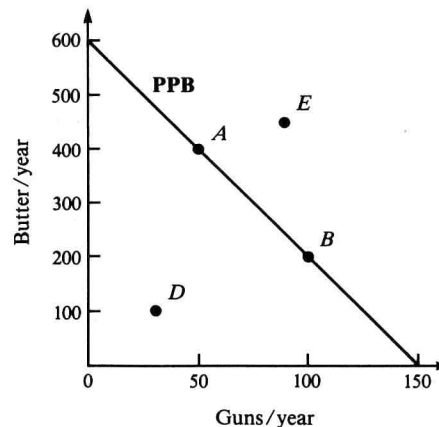


Figure 1-1

A production possibilities boundary (PPB) shows various combinations of two goods that a society is capable of producing.

2. *A PPB illustrates maximum production points when all resources are fully and efficiently employed.* A society can operate inside its boundary, that is, below its potential, if it does not employ all of its resources fully and efficiently. If a society is operating below its potential, it is at a point such as *D* in Figure 1-1.
3. *A PPB has a negative or downward slope.* A negative slope indicates that more of one good can be produced only if less of another good is produced. Thus, movement along a PPB implies a trade-off between goods. For example, if society moves from Point *A* to Point *B* in Figure 1-1, it sacrifices 200 units of butter to acquire 50 additional guns.
4. *A PPB shifts when there is a change either in technology or in the availability of resources.* An increase in the availability of a resource used to produce both guns and butter would shift the PPB outward, as shown in Figure 1-2 on page 4. An improvement in the technology of gun production, but not in the technology of butter production, would shift the PPB outward only on the gun axis, as shown in Figure 1-3 also on page 4.

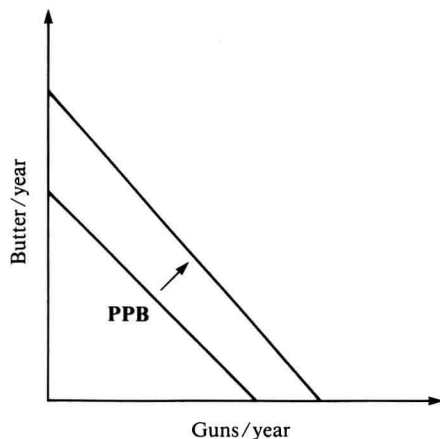


Figure 1-2
An increase in the resources used to produce both guns and butter shifts the PPB outward on both axes.

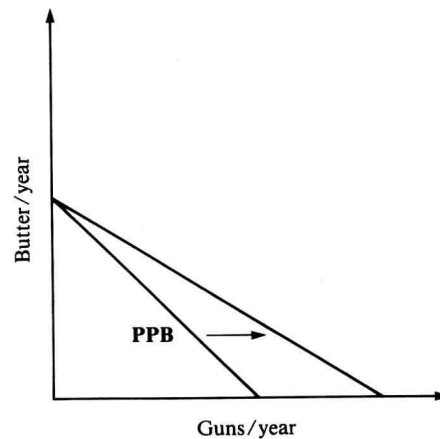


Figure 1-3
An improvement in the technology of gun production shifts the PPB outward only on the gun axis.

B. Today's choices may affect the future position of a PPB.

A society's choices today may affect the position of its PPB in the future. A society may consciously seek to shift its PPB outward by developing resources, improving technology, or both. It may deliberately promote faster growth in its PPB by forgoing consumer goods today and choosing capital goods and research instead.

1-5. Choices and Opportunity Costs

Because it marks the limit of a society's production possibilities, a PPB illustrates two fundamental economic principles: the necessity of choice and the opportunity cost of choosing.

A. Society must make choices.

A PPB demonstrates that a society's resources and technology—and therefore its production possibilities—are limited. Since it cannot produce unlimited quantities of all goods, a society must make choices, both individually and collectively. Choice is inherent in scarcity.

B. Opportunity costs are the values of forgone alternatives.

Choices involve sacrifices or costs. The negative slope of a PPB indicates that if a society chooses to produce more of one good, it must sacrifice or forgo some of another good. Since the other good, the forgone alternative, has a value, economists refer to this sacrifice as the opportunity cost of a good. **Opportunity cost** is the amount of a good or goods that must be sacrificed or forgone to obtain a unit of another good.

EXAMPLE 1-3: If society chooses to move from Point A to Point B in Figure 1-1, it can produce 50 additional guns, but it must sacrifice 200 units of butter. The opportunity cost of each additional gun is thus four units of butter. The converse is also true. If society chooses to move from Point B to Point A, it can produce 200 additional units of butter, but it must sacrifice 50 guns. The opportunity cost of four units of butter is thus one gun.

Opportunity cost is a very important and useful economic concept. It enables economists to estimate costs and to weigh choices in a variety of situations.

EXAMPLE 1-4: The concept of opportunity cost can be used to evaluate two commonly accepted opinions about U.S. involvement in World War II: (1) that the cost of the war was very high, and (2) that the cost of the war, at least the part financed through the sale of government bonds, has been—and continues to be—borne by subsequent generations.

First, consider the cost of the war. To visualize the cost, imagine Figure 1-1 as the PPB of the U.S. at the time. The transition from a peacetime to a wartime economy involved

moving from one point on the PPB to another. The opportunity cost of the war was the value of the consumer goods, the investment goods, and the leisure that had to be forgone to finance the war. Had all our resources been fully and efficiently employed before we entered the war, we might have started, say, at Point A in 1940. Then we would have had to move, say, to Point B in 1941. In that case the opportunity cost of the war would have been very high—higher than it actually was. However, in 1940 we were still recovering from the Great Depression of the 1930s, and our economy was operating *below* its potential, at a point such as D in Figure 1-1. Since we started at a point *inside* the boundary of our production possibilities, the opportunity cost of the war was *less* than it would have been if our economy had been fully employed in 1940.

Next, consider the burden of the cost of World War II. Has it been shifted to subsequent generations? No, the cost of the war was borne by those who sacrificed consumer goods, investment goods, and leisure to finance it. It was borne by people at the time who did without new cars, gasoline, sugar, meat; who worked extra hours; who sacrificed their careers to enter military service. Subsequent generations have inherited a larger national debt because of the deficit financing used during World War II, but we have also inherited the bonds that the government issued when it incurred the debt. When we pay off the debt (the bonds), we repay ourselves.

C. A bowed PPB indicates increasing opportunity costs.

A PPB usually curves or bows away from the origin of a set of axes, as shown in Figure 1-4. The bowed PPB in Figure 1-4 indicates that the number of units of butter that must be sacrificed to obtain an additional gun increases as society moves from Point A to Point B to Point C, and that the number of guns that must be sacrificed to obtain an additional unit of butter increases as society moves from Point C to Point B to Point A. In other words, the opportunity cost of acquiring an additional gun increases with movement along the PPB toward the gun axis, and the opportunity cost of an additional unit of butter increases with movement along the PPB toward the butter axis. This principle is often referred to as the **law of increasing opportunity costs**.

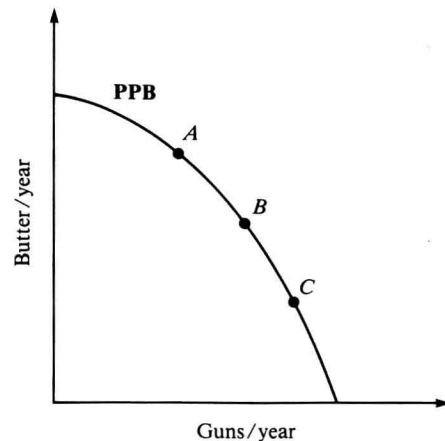


Figure 1-4
A bowed PPB indicates increasing opportunity costs.

D. The heterogeneity of resources contributes to increasing opportunity costs.

The fact that some resources are more productive in one use than they are in another is largely responsible for increasing opportunity costs. (The phenomenon of diminishing returns, which is discussed in greater detail in *Principles of Microeconomics*, also contributes to increasing opportunity costs.)

EXAMPLE 1-5: Some resources, such as farm land in Wisconsin, are better suited to the production of butter than they are to the production of guns. If these resources were withdrawn from the production of butter and applied instead to the production of guns, the output of butter would decline sharply, but the output of guns would not rise proportionately. Thus the opportunity cost of the few additional guns would be very high.

1-6. Resource Use: Four Fundamental Choices

Because of the basic economic problem of scarcity, every society faces four fundamental choices concerning the use of its resources:

1. how much of each good to produce
2. how to produce each good (i.e., what resources and technology to employ)
3. how to divide or apportion the goods it produces among its members
4. how fast to grow (i.e., how rapidly to shift its PPB outward)

These choices are inherent in the economic problem and are therefore universal. Every society, no matter how primitive or how technologically advanced, must make them.

RAISE YOUR GRADES

Can you explain...?

- ☒ why scarcity is a relative term in economics
 - ☒ why different societies use different methods to challenge scarcity
 - ☒ how to classify the problem of poverty: macroeconomic or microeconomic
 - ☒ how an economist's definition of *capital* differs from a layperson's
 - ☒ why entrepreneurs play a critical role in a market economy
 - ☒ what a production possibilities boundary (PPB) indicates
 - ☒ why a PPB has a negative slope
 - ☒ what causes a PPB to shift
 - ☒ what causes a society to move inside its PPB
 - ☒ why economics has been called "the science of choice"
 - ☒ how the opportunity cost of a good is calculated
 - ☒ how the law of increasing opportunity costs affects the shape of a PPB
 - ☒ why the heterogeneity of resources contributes to increasing costs
 - ☒ how a society can promote growth in its PPB
 - ☒ why all societies face four fundamental choices about resource use
-

SUMMARY

1. The basic economic problem is scarcity: our material wants exceed our ability to satisfy them from limited resources. *Economic scarcity* means that the desire for an item is greater than the free availability of the item in nature.
2. *Economics* is the study of how individuals and societies choose to use their scarce resources in order to best satisfy their material wants.
3. The four methods commonly used to challenge scarcity are (1) the full employment of available resources, (2) the development of resources and technology, (3) the efficient organization of the production and dissemination of goods, and (4) the redistribution of goods or income among the members of a society.
4. *Macroeconomics* is the study of how money and aggregate expenditure and investment behavior determine output, employment, and the price level in an entire economy.
5. *Microeconomics* is the study of how choices made by individual decision-making units and the functioning of individual markets determine the allocation of society's scarce resources and the distribution of income.
6. *Goods* are items or services that satisfy material wants. They are produced from resources with the aid of technology.
7. *Resources* are items used to produce goods. Economists often classify resources as land, capital, and human resources.

8. *Land* is any naturally occurring resource (any natural resource) used in production.
9. A *human resource* is any human skill used in production, including labor and entrepreneurial ability.
10. *Capital* is any man-made item used in production.
11. *Technology* is society's knowledge of the production process.
12. Resources are versatile and heterogeneous: they may be used for many different purposes, but some resources are more productive in one use than they are in another.
13. *Entrepreneurs* are individuals who decide which goods to produce, who take the initiative in assembling the necessary resources, and who reap the profits or losses resulting from their decisions.
14. A *production possibilities boundary (PPB)* is a schedule or curve illustrating the various combinations of goods that a society is capable of producing at any given time if technology and resources are fixed and all resources are fully and efficiently employed.
15. A PPB has four important properties: (1) it is a boundary; (2) it can be reached only if all resources are fully and efficiently employed; (3) it has a negative slope; and (4) it shifts when there is a change in technology or in the availability of resources.
16. A society that forgoes consumption today, choosing capital goods and technology instead, will accelerate the growth of its PPB.
17. A PPB illustrates the necessity of making choices: once a society has reached the boundary of its production possibilities, it can increase production of one good only by decreasing production of another good.
18. *Opportunity cost* is the amount of a good or goods that must be sacrificed to obtain a unit of another good.
19. A PPB usually bows away from the origin of a set of axes because of the law of increasing opportunity costs.
20. The law of increasing opportunity costs states that, if a society is operating at the boundary of its production possibilities, the opportunity cost of a good will increase with each additional unit of the good that is produced.
21. Costs increase because of the heterogeneity of resources and the phenomenon of diminishing returns.
22. Every society must make four fundamental choices about the use of its resources: (1) how much to produce, (2) how to produce it, (3) how to apportion it, and (4) how fast to grow.

RAPID REVIEW

Answers

Multiple Choice

1. The basic subject matter of economics is (a) money, (b) capital resources, (c) scarcity, (d) inflation. [See Section 1-1.] c
2. Unpolluted air is a scarce resource because (a) people breathe too much, (b) the quantity freely available is less than the quantity people want, (c) government regulations limit its production, (d) very little is available, especially in cities like Los Angeles. [See Section 1-1.] b
3. (a) Economics, (b) Macroeconomics, (c) Microeconomics, (d) Opportunity cost, is the study of how individuals and societies choose to use their scarce resources to best satisfy their material wants. [See Section 1-1.] a
4. A method *not* commonly used to alleviate scarcity is the (a) redistribution of income, (b) full employment of resources, (c) improvement of technology, (d) reduction of material wants. [See Section 1-1.] d
5. The branch of economics that studies how money and aggregate expenditures determine output, employment, and the price level is called (a) microeconomics, (b) opportunity costs, (c) macroeconomics, (d) PPB. [See Section 1-2.] c