

Fourth Edition

# MICRO- ECONOMICS

A Programmed Book

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# **MICROECONOMICS**

## **A Programmed Book**

*Fourth Edition*

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# Preface

Our aim in writing this book and its companion piece *Macroeconomics* was to provide students, in a brief period of time, with a working knowledge of basic economics. It was our hope that these two books would prove a valuable tool as the primary reading material in courses that were of short duration (e.g., the one quarter course) or as introductory or supplementary material in more comprehensive courses. Both the reactions of instructors who have used the earlier editions and the results of a nationwide experiment\* designed to evaluate their effectiveness lead us to believe that our objectives have been largely fulfilled. In a study involving 48 colleges and universities, students who read these books as supplementary material scored significantly higher than other students on the Test of Understanding College Economics. Furthermore, and of greater importance, students who spent 12 hours studying either of these books learned as much micro or macroeconomics as students who completed seven weeks on the same topics in a conventional course. On the basis of these results, we reached the following conclusion:

We feel that these results have important implications for the organization and teaching of the introductory course. Within the profession many believe that the introductory course should prepare a student to think in-

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\*See our paper "The Efficiency of Programmed Learning in Teaching Economics: The Results of a National Experiment," *American Economic Review*, LIX, No. 2 (May 1969), pp. 217-23.

telligently about major economic problems in modern society and that this goal can best be accomplished by teaching a few basic principles and applying them to a number of important problems. We are in agreement with this view. This study has shown that by using programmed learning materials the basic micro and macroeconomic theory can be taught in a relatively short period of time. Therefore, more time can be devoted to teaching students how to apply the theory to social problems, both by going more deeply into the more important problems and by actually covering those topics scheduled for the end of the term that often fall victim to the school calendar. The use of these materials can have other advantages: First, the student can gain a good overview of the entire course at the very beginning, which helps him to put topics covered in the remainder of the course in meaningful perspective. Second, because a course taught in this manner emphasizes the usefulness of economic theory in a problem-solving context, it promises a positive impact on the most important single factor in the learning process—namely, student attitude towards the subject.

Much of the increase in flexibility and teaching efficiency afforded by this text stems from its characteristics as a programmed book. A program is designed to develop complex ideas in small, carefully constructed steps. Each step, or frame, requires written responses focusing on key concepts, thereby ensuring continuous participation and involvement by the student. Furthermore, because the correct responses appear at the bottom of each page, it is possible for the student to see immediately whether he is grasping the material, thereby either reinforcing his interest or delineating areas that need further work. In this edition, to accommodate typical study patterns, the material has been divided into a larger number of shorter chapters. In addition, the brief tests appended to each chapter have been supplemented with detailed explanations of why the correct answers are correct and the wrong answers wrong.

Because of its analytical nature, economics lends itself well to the programming technique. Much of the material in both micro and macroeconomics can be usefully broken down into frames that have desired responses that are both basic and unambiguous. In this text, we analyze the way a market system will lead to an efficient allocation of resources. In studying the efficiency of such an economic system, situations in which resources will not be efficiently allocated through the market mechanisms are examined. Because the text is intended to give the reader a thorough grounding in basic microeconomic theory, considerable attention is paid to the basic analytical tools. In this edition, we have incorporated many of the suggestions made by instructors and students, as well as alterations indicated by detailed data from our study. A chapter has been added on the government sector. Additional self-test questions plus solutions

have been included to permit students, given their study habits, to assess their economics comprehension.

We are extremely grateful to David C. Hildebrand and Pam Wilder of Prentice-Hall, Inc., for their assistance in preparing this edition for publication.

Keith Lumsden  
Richard Attiyeh  
George Leland Bach

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# 1

## Introduction: The Nature of Economic Problems

Why study economics?

Why has society been willing to pay Tom Watson and Bjorn Borg over \$1 million just to play golf and tennis?

People say we have a shortage of hospitals and doctors but an excess of pornography and drugs. Is this true?

Why is the price of something essential like water so low when the price of something frivolous like diamonds is so high?

Why do we subsidize students at universities who will, on the average, earn high incomes during their working lives?

Why do minority-group members and white females, on the average, receive lower wages than do white males?

If you prefer logical, rather than emotional, responses to these questions, you will find it profitable to study economics. We will find it profitable if you choose this book in your pursuit of knowledge.

Make sure that you fill in the blanks, or delete the wrong responses in blanks where you are given a choice, before comparing your responses with those at the bottom of the page. Reading the book in this way should ensure that you will learn as much microeconomic theory as a fellow student after seven weeks of a typical course. This is your incentive to choose this book over others.

In a programmed text, we proceed from the simple to the complex. Our first example is, therefore, simple, but enlightening.

**1.1**

Suppose your father, wishing to encourage you to study more, made the following proposition: For every point of your grade point average (GPA) this term he will pay you \$4 per day. If your GPA is 2.0, you will receive \$8 per day. If an A is equivalent to 4 points, a B, 3 points, a C, 2 points, and a D, 1 point, an A average would be worth \$ \_\_\_\_\_ per day. Two B's and two C's would be a (2.5/2.0/1.5) GPA and, therefore, would be worth only \$ \_\_\_\_\_ per day.

**1.2**

You realize immediately that the higher your grades, the (higher/lower) your income from your father. Because more time devoted to studying means higher grades, the way to increase your income from your father is to spend (more/less) time studying.

**1.3**

The more time you spend studying, however, the \_\_\_\_\_ time you have left for other income-earning pursuits, such as waiting on tables, baby-sitting, or pumping gas.

**1.4**

Your father surmised that the reason your GPA fell last semester was that you took outside jobs to earn income. He realized that in order to earn such income, you were devoting \_\_\_\_\_ to outside jobs that could otherwise have been spent studying.

**1.5**

Thus, your father's proposition is really an attempt to encourage you to spend \_\_\_\_\_ time studying and \_\_\_\_\_ time on outside jobs.

**Answers**

1. 16 · 2.5 · 10
2. higher · more
3. less
4. time
5. more · less

**1.6**

The more time spent on outside employment, the \_\_\_\_\_ your income from outside sources. However, the more time spent on outside employment, the less time available for study, and the \_\_\_\_\_ your GPA.

Therefore, the more time spent on outside employment, the \_\_\_\_\_ your income from your father.

**1.7**

Suppose each day, on the average, you have six hours that are uncommitted to sleeping, eating, going to class, and pure entertainment. You have \_\_\_\_\_ hours per day that may be used to earn \_\_\_\_\_ by studying or from outside employment.

**1.8**

You know that income from your father depends upon your \_\_\_\_\_, which in turn depends upon the \_\_\_\_\_ you spend studying.

**1.9**

Income from outside employment depends upon the hourly wage paid and the number of \_\_\_\_\_ you are employed.

**1.10**

Because you have six hours to allocate each day, your total daily \_\_\_\_\_ will be composed of GPA income from your father and/or wage income from outside employment. The more hours per day you devote to outside employment, the \_\_\_\_\_ your income from that source, but the \_\_\_\_\_ the number of hours available for study.

**Answers**

6. higher · lower · lower
7. six · income
8. GPA · time
9. hours
10. income · greater · smaller

**1.11**

The smaller the number of hours devoted to study, the \_\_\_\_\_ your GPA, and the \_\_\_\_\_ your income from your father.

**1.12**

Thus, an increase in income from outside employment means a(n) \_\_\_\_\_ in income from your father.

**1.13**

In other words, there is a cost associated with earning income from an outside job that is over and above the work effort involved. This cost is the income that you could have earned by spending that time \_\_\_\_\_. Economists call this *opportunity cost*.

**1.14**

When you are forced to choose from alternatives, you must give up one thing to get another. The best alternative you give up is the \_\_\_\_\_ cost of what you get. There is an opportunity \_\_\_\_\_ in taking an outside job because it is necessary to take time away from something else. It is impossible, given that you have only six hours to study and/or work, to increase time spent working without \_\_\_\_\_ the time spent studying.

**1.15**

Likewise, in this example, it is impossible to increase income from outside employment without \_\_\_\_\_ income from your father. This loss of income from your father is the \_\_\_\_\_ cost of the outside income you earn.

**Answers**

11. lower · lower
12. decrease
13. studying
14. opportunity · cost · decreasing
15. decreasing · opportunity

**1.16**

What your father hopes to accomplish from his proposal is a(n) \_\_\_\_\_ in hours devoted to studying and a(n) \_\_\_\_\_ in hours devoted to outside jobs. He hopes to do this by raising the \_\_\_\_\_ of the outside income you can earn.

**1.17**

Suppose your aim is to earn as high a daily income as possible, either from studying or outside employment or a combination of both. What would you do?

- a. Spend six hours studying.
- b. Spend six hours working.
- c. I do not have enough information to answer the question. (a/b/c) .

**1.18**

Quite correct, you do not yet have enough information. Some of the information necessary to answer the question is how your GPA changes as you vary the time spent studying. Suppose we agree on the relationship shown in Table 1.1:

**Table 1.1****STUDY TIME AND GPA**

<i>Average hours spent studying per day</i>	<i>GPA</i>
6	4.00
5	3.75
4	3.33
3	2.75
2	2.00
1	1.08
0	0.00

**Answers**

16. increase · decrease · opportunity cost
17. c

If you devoted all your uncommitted hours to studying, you would, on the average, study six hours per day; your resultant GPA would be 4.00, and at \$4 per point your father would pay you \$ \_\_\_\_\_ per day. In this case, your income from outside employment would be \$ \_\_\_\_\_. Your total daily income therefore would be \$ \_\_\_\_\_.

### 1.19

Remember, your goal is to earn the highest possible daily \_\_\_\_\_ from both sources combined. Do you now have enough information to decide how to allocate your six hours to achieve this end? (yes/no)

### 1.20

If you devoted five hours to studying, your GPA would be \_\_\_\_\_. Because your father pays you \$4 per point, your income from him would be \$ \_\_\_\_\_.

### 1.21

Now, five hours devoted to studying leaves \_\_\_\_\_ hour(s) free for outside employment. If you can earn only \$0.50 per hour on outside employment, your five hours studying plus one hour on the outside will give you a total income of \$ \_\_\_\_\_ + \$ \_\_\_\_\_, which equals \$ \_\_\_\_\_.

### 1.22

This solution is clearly \_\_\_\_\_ satisfactory to you, compared with studying six hours per day, because your total income is now \_\_\_\_\_ than before.

### Answers

18. 16 · 0 · 16
19. income · no
20. 3.75 · 15
21. 1 · 15 · .50 · 15.50
22. less · lower

**1.23**

If, however, your outside employment paid \$2 per hour, your five hours studying plus one hour working outside would yield a total income of

\$ \_\_\_\_\_, which is higher than the \$ \_\_\_\_\_ from studying six hours per day.

**1.24**

Thus, given that your aim is to maximize (make as large as possible) your daily income, there are several things you must know before deciding how to allocate your six hours per day. First, you must know how much \_\_\_\_\_ you can earn from your father by studying for different amounts of \_\_\_\_\_.

Second, you must know how much \_\_\_\_\_ you can earn by spending different amounts of time working at outside jobs.

**1.25**

The same kind of calculation is made, consciously or subconsciously, when you decide to spend the evening studying in the library or going out on a date. You cannot easily quantify in dollars “the library” versus “a date,” but somehow you make the decision. When you feel studying in the library is worth more to you (in “psychic income”) than going out on a date, you go to the library. Similarly, in this example, where you are trying to maximize \_\_\_\_\_, when you can earn more income by switching a study hour to outside employment, you (should/should not) make that switch.

**1.26**

This simple problem, concerned with the best way to allocate your six hours, is really an economic problem. Economics is concerned with the best way to allocate *scarce resources* among various alternative uses to make some individual or group as well off as possible. In our simple example, the scarce resource to be allocated is (time/income). The alternative uses of your time are outside work and \_\_\_\_\_, and you are as well off as possible when your daily \_\_\_\_\_ is maximized.

**Answers**

- 23. 17 · 16
- 24. income · time · income
- 25. income · should
- 26. time · studying · income

**1.27**

When economists think about the economy as a whole, the scarce resources are all those things that help produce the goods and services we want. Roads, machine tools, schoolteachers, and farmland are examples of \_\_\_\_\_ resources.

**1.28**

Some of the alternatives society faces are more schools or more hospitals, more butter or more guns, more pop records or more classical records. Just as in our simple example income from outside work has an opportunity cost of income from your father, so in the real world there are \_\_\_\_\_ costs. In order to produce more of one good, let us say, spaghetti, it is necessary to give up some amount of other goods. This latter amount, of course, is the \_\_\_\_\_ of the extra spaghetti.

**1.29**

We do not have enough \_\_\_\_\_ to produce all the goods and services everyone wants. It is for this reason that we must choose what to produce, and it is for this same reason that we say the economy's resources are \_\_\_\_\_.

**1.30**

Because resources are \_\_\_\_\_, we cannot have everything we want. Consequently, as a nation we are faced with the economic problem of deciding how to use our \_\_\_\_\_.

**1.31**

Before we try to use economic analysis to understand our complex economy, let us try to master our simple example. That is, before you try to comprehend how society can use its \_\_\_\_\_ to its best advantage, let us solve the economic problem of how to use your scarce resource, which is \_\_\_\_\_, to maximize your daily \_\_\_\_\_.

**Answers**

27. scarce
28. opportunity · opportunity cost
29. resources · scarce
30. scarce · scarce resources
31. scarce resources · time · income



**1.32**

From the information you already have, it is possible to construct a table of figures that will permit you to see the best allocation of working time. This is the allocation that (minimizes/maximizes) your daily income. Assume the hourly wage from outside employment is \$2 per hour.

**1.33**

Table 1.2, showing the relevant information, is incomplete. Fill in the blanks. To do so, you will need to remember that your father is willing to pay to you

\$ \_\_\_\_\_ daily per each point of your GPA.

**Table 1.2****TIME ALLOCATION AND INCOME**

<i>Hours spent in</i>			<i>Daily income</i>		
<i>Employment</i>	<i>Studying</i>	<i>GPA</i>	<i>Employment</i>	<i>Father</i>	<i>Total</i>
<i>(1)</i>	<i>(2)</i>	<i>(3)</i>	<i>(4)</i>	<i>(5)</i>	<i>(6)</i>
0	6	4.00	\$ 0	\$16	\$16
1	5	3.75	2	15	17
2	4	3.33	4	a) _____	b) _____
3	3	2.75	6	c) _____	d) _____
4	2	2.00	8	8	16
5	1	1.08	10	4.32	14.32
6	0	0.00	12	0	12

**1.34**

From Table 1.2, it is possible to determine the allocation of time that maximizes your income. This allocation is \_\_\_\_\_ hours spent studying and \_\_\_\_\_ hours in employment. In this way, you can earn a total of \_\_\_\_\_ per day.

**Answers**

32. maximizes

33. 4 · Table 1.2 a) 13.32 · b) 17.32 · c) 11 · d) 17

34. 4 · 2 · 17.32