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STUDENT LEARNING IN MICROECONOMICS: AN EVALUATED
EXPERIMENTAL COURSE UTILIZING A MANDATORY STUDY GUIDE

Middle Tennessee State University

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AN EVALUATED EXPERIMENTAL COURSE
UTILIZING A MANDATORY STUDY GUIDE

Logan Gerald Fulks

A dissertation submitted to the
Graduate Faculty of Middle Tennessee State University
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for the degree Doctor of Arts

August, 1984

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AN EVALUATED EXPERIMENTAL COURSE
UTILIZING A MANDATORY STUDY GUIDE

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ABSTRACT

STUDENT LEARNING IN MICROECONOMICS: AN EVALUATED EXPERIMENTAL COURSE UTILIZING A MANDATORY STUDY GUIDE

by Logan Gerald Fulks

This study sought to determine the relative value of an economics study guide in the mastery of microeconomics when used in conjunction with the traditional classroom lecture. The research was conducted during the 1984 winter quarter at David Lipscomb College, Nashville, Tennessee. Two classes in principles of microeconomics were used in the study involving 84 students who were primarily classified as sophomores. One class acted as the control group and the other as the experimental group. The study guide was prepared by the writer and consisted of thirteen chapters. Each chapter contained learning objectives, chapter overview, and a series of questions to test the student's understanding of the subject material. The study guide did not contain the answers to the questions, rather the questions were collected, graded, corrected, and then returned to the students. Improvement in the student's knowledge of economics was measured by administering a

pretest and posttest. The test instrument was the "Introductory Microeconomics CLEP Subject Examination 3 CCY" provided by the Educational Testing Service, Princeton, New Jersey.

In addition to test data to measure the increased student cognitive learning level, other variables such as age, sex, grade point average, American Colleges Test scores, college hours completed, and employment status were examined for their effect. Comparisons were made between test scores of the control and experimental group, between male/female scores of both groups, and of male and female scores of the total sample.

No significant difference was found in the cognitive learning rate between those students who used a study guide and those who did not. There was an indication that the female student entered and left the course at a lower level of economic understanding than did the male, although registering as much improvement as the male. Of the variables, only college hours completed appeared to explain differences in the level of performance among the students.

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CHAPTER I

INTRODUCTION

The pace of technology is so rapid that people who remain at their current level of development may find they are soon antiquated. College teachers are no exception, and in the book Accent on Learning: Improving Instruction and Reshaping the Curriculum, Patricia Cross challenges the college teacher to rethink the practice of using the time-honored classroom lecture exclusively as the method of instruction.

Many seem to agree with Cross, for interest in self-paced and individualized instruction is growing among those teaching college level economic courses. Many teachers are beginning to question the efficiency of the "lock-step" curriculum in which all students are expected to move at the same pace, using the same materials and the same teaching techniques.

Teachers do not expect students to be identical in other aspects of their lives, but when it comes to a prescribed curriculum and method of instruction, it appears that many expect one method to fill the needs of all. Cross's thesis is that, due to the student's inadequate mastery of the basic academic skills, instructors must be

willing to experiment with new or different concepts and techniques if they are to remain effective in their roles as teachers.

The Problem

The primary purpose of this study is to determine the effectiveness of a study guide in the mastery of microeconomics when used in conjunction with the classroom lecture. Significant secondary purposes are to determine if student variables such as sex, age, American College Test (ACT) scores and grade point averages are significant factors in the mastery of microeconomics.

Hypothesis

To assist in objectively examining the influence of a study guide on the student's learning experiences, a null hypothesis is advanced for the study. It is hypothesized that, upon completion of the study, one will find no significant difference in the mastery of microeconomics when the performance of one group of students who use a study guide is compared to that of a group which does not use a study guide.

Significance of the Study

The economics teacher of the 1980s does not have to rely solely on the classroom lecture to dispense the information required by the student on a particular subject.

There are currently numerous alternative teaching methods available, many of them involving use of the computer. The computer has been employed in economic instruction in two general ways: (1) Computer Assisted Instruction (CAI) involving games, simulation models, and demonstration routines, and (2) study management systems.¹ Computer Assisted Instruction includes the popular macroeconomic models of the economy in which students try to establish policy guidelines in order to reach specific macroeconomic goals. Although the computer is not a necessity, most games are played utilizing the computer's ability to control stratagem over periods of time. Games tend to emphasize the interaction of various variables found in an economic situation and therefore to teach analytical skills rather than the understanding of economic terms and concepts. A major advantage of CAI is its ability to provide the student with instant feedback. Quick reinforcement of correct responses or explanation of incorrect responses has long been one of the widely accepted principles for improving learning.²

Although CAI and game playing have been enjoyed by students, there is little evidence to prove that their use has improved the understanding of economics. A study

¹John J. Siegfried and Rendigs Fels, "Research on Teaching College Economics: A Survey," Journal of Economic Literature, September 1979, p. 940.

²Ibid.

conducted at Notre Dame during the period 1973-1975 attempted to evaluate the effectiveness of using CAI in teaching principles of economics courses. The results of this study indicated there was no significant difference between students acting as the experimental group and students studying economics in the conventional classroom environments.³

The Computerized Study Management (CSM) concept consists mainly of short review questions that provide instant feedback to students concerning the selection of the correct or incorrect answer. When tests are not successfully passed, CSM provides a suggested course of study designed to strengthen the students in areas where they have proven to be deficient.⁴

A modified form of CSM is the Teaching Information Processing System (TIPS). TIPS was designed to inform the teacher of each student's progress and to indicate those students who are low achievers and those who are high achievers. As a result, the low achievers were given less difficult assignments while the high achievers were given fewer, more difficult assignments. TIPS was found to have a significant positive effect on cognitive learning and proved

³William I. Davisson and Frank J. Bonello, Computer-assisted Instruction in Economic Education: A Case Study (Notre Dame, Ind.: University of Notre Dame Press, 1976).

⁴Siegfried and Fels, p. 943.

to be no more expensive than the conventional method of instruction.⁵

Siegfried and Fels list eight different approaches used in the teaching of college-level economics that range from the use of video equipment to the use of graduate student instructors.⁶ As noted, the vast majority of these new techniques of teaching have a common denominator, and that is the use of computers or video equipment. These techniques, due to their expense, may not be available to the small private college or to the community junior college instructor. This does not mean, however, that the small college instructor does not have access to methods of teaching economics that promise to be more effective than the straight classroom lecture. One such method may be the use of a supplementary student study guide. This teaching aid has been available for many years, but it seems to have been overlooked in the economic education literature.

Recent research published by Siegfried and Fels lists 179 studies or articles on the subjects related to the teaching of economics that were written between 1960 and 1979.⁷ Not one of these articles makes any significant

⁵Allen C. Kelley, "TIPS and Technical Change in Classroom Instruction," American Economics Review, May 1972, p. 426.

⁶Siegfried and Fels, p. 943.

⁷Ibid., p. 960.

reference to the use of a study guide as an aid in the teaching of economics.

The writer conducted a similar review of economic publications which have been primary vehicles for formal discussion on economic education. These included the American Economic Review, Journal of Economic Literature, Economic Education Experiments of Enterprising Teachers, and the Journal of Economic Education. In addition to these journals, Resources in Education, published by Educational Resource Information Center (ERIC), was also reviewed for the years 1978-1983. For the years 1970 through 1983, the remaining journals reported much concerning the use of sophisticated teaching techniques, but they contained no substantial references to the use of the student study guide as an aid to the cognitive learning of economics.

This study examines the effectiveness of a teaching aid that is available to every instructor of economics regardless of the size of the school, and that is the mandatory student study guide. Hopefully, the findings and conclusions of this research will assist those who teach Principles of Microeconomics classes.

Limitations of the Study

To insure that the study is manageable, certain boundaries are established, and there are limitations inherent in the effort as well. The study was performed at

a private, church-related college using only one economics course (two classes), Principles of Microeconomics. Thus, the sample may or may not be representative of microeconomics classes nationwide; and any generalization to the total student population must be regarded only as an implication of the study.

The level of student knowledge of microeconomics was ascertained by using two testing procedures. The first involved the "Introductory Microeconomics Subject Examination 3CCY" provided by the Educational Testing Service, Princeton, New Jersey. This test, consisting of 90 four-part multiple-choice questions, is known as the College Level Examination Program (CLEP). The second procedure involved the use of an examination internally prepared by the author at David Lipscomb College. Other forms of testing might have produced different results.

The classes did not meet at the same hour. The control class met at 9:00 a.m. while the experimental class met at 8:00 a.m. on the same days each week.

Only two classes were used in the study. The control class consisted of 32 students, and the experimental class consisted of 52 students. The use of additional classes with a more even distribution of students could have produced different results.

Assumptions

It was assumed that the CLEP microeconomics test provided by the Educational Testing Service accurately measured the student's level of microeconomic knowledge. The study guide used in this research was also assumed to be typical of the other study guides currently available. Further, it was thought that differences in class sizes and meeting times would have no influence on the student's learning process.

Definition of Terms

Microeconomics. The branch of economics that focuses on the behavior of individual decision makers such as consumers, workers, business firms, and governments, assuming the overall economic environment (the major macroeconomic variables) to be given. It focuses on how the behavior of these decision makers affects the types of goods and services produced, the methods of production, and the distribution of income in the economy.⁸

Study Guide. An aid to the student in learning the concepts, principles, and analytical techniques presented in the textbook.⁹ The typical format includes for each section

⁸Martin Bronfenbrenner, Werner Sickel, and Wayland Gardner, Economics (Boston: Houghton Mifflin Co., 1984), p. G20.

⁹Richard C. Porter and Dennis R. Starleaf, Review Guide and Workbook (Homewood, Ill.: Richard D. Irwin, 1979), p. 1.

studied a set of learning objectives, a summary statement of the subject area, and representative questions.

Other technical terms which are introduced later when measuring the test data are best defined in the statistical context in which they are used.

Organization of the Study

Chapter 1 delineates the study by stating the basic problem and its significance, establishing boundaries and outlining an organization, and hypothesizing about expected findings.

Chapter 2 reviews relevant literature concerning the teaching of economics.

Chapter 3 presents a detailed description of the data collection and research procedures along with the statistical techniques used in the evaluation and analysis of the data.

Chapter 4 presents an analysis of the primary data obtained from the testing procedure and an analysis of the secondary data obtained from the student questionnaire.

Chapter 5 contains the summary, conclusions, and implications.

CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

An examination of recent literature revealed little that dealt directly with an evaluation of the effectiveness of a study guide in the mastery of microeconomics when used in conjunction with the classroom lecture. A number of doctoral studies dealt with related matters such as whether or not the use of a handbook of economic materials by a teacher enhances the student's understanding of economics¹ and the relative effectiveness of using programmed and conventional textbooks as supplements to the classroom lecture in teaching mathematics.²

Numerous articles were found concerning the teaching of economics by methods such as the case study approach,³

¹Eugene Bowman, "Experimental Study in General Business Classes of the Effect of a Teacher's Handbook of Economic Materials on Student Economic Understanding" (Dissertation, University of Iowa, 1972).

²Jerry F. Reed, "The Relative Effectiveness of Programmed and Conventional Textbooks as Supplements to Classroom Lecture in the Teaching of Elementary Modern Mathematics" (Dissertation, Mississippi State University, 1971).

³Victor R. Fuchs and Aaron W. Warner, "The Case Method Approach to Teaching Elementary Economics," The

and computer-managed, self-paced system of instruction.⁴ However, the literature was basically void on the use of a student's study guide in teaching the principles of economics courses, which further justifies the current research.

Courses Combining Lectures with Other Methods

Possibly the most closely related previous research was the study by Paden and Moyer conducted at the University of Illinois during the 1968-1969 school year.⁵ The study centered around a one-semester course in principles of economics that involved approximately 1,000 students per semester. The study attempted to measure the effectiveness of three different methods of teaching economics; namely, the use of television (TV) lectures, live lectures, and programmed learning materials. Although students in all sections had access to an outline-study guide, those using the programmed materials were not required to buy a standard textbook.

Teaching of Elementary Economics (New York: Holt, Rinehart and Winston, 1960), p. 8.

⁴James W. Marlin, Jr., and James F. Niss, "The Advanced Learning System, A Computer-managed, Self-paced System of Instruction: An Application in Principles of Economics," The Journal of Economic Education, Summer 1982, p. 26.

⁵Donald W. Paden and M. Eugene Moyer, "The Relative Effectiveness of Three Methods of Teaching Principles of Economics," The Journal of Economic Education, Fall 1969, p. 33.

In both the television and live sections, lectures were given twice each week. The third hour was spent with a graduate teaching assistant in a quiz-discussion session. The students in the programmed learning section were also scheduled for one quiz-discussion session each week. During two other hours in the week, a staff member was available to answer any questions the programmed student might have.

Each student was given an initial test developed by Paden and Moyer that consisted of 189 multiple choice questions--questions that were designed to test economic concepts covered in the course by the three research groups. In addition to this test, each student was administered Form B of the Test of Economic Understanding (TEU). The cumulative test scores of each student were then available for use in the regression analysis section of the study.

In addition to the test scores, data on selected personal characteristics of the students were also collected. These data included information such as sex, class rank, number of hours of mathematics completed, major field of study, average number of hours spent each week in the study of economics, number of absences, student's score on the American College Test (ACT), and the occupation and educational level of parents.

With but one exception, Paden and Moyer found the average of the programmed learning group to be higher on the

total test score, the TEU, and on the measure of improvement during the semester than the average score of either the live or TV sections. The one exception related to the area of student improvement. But, after adjustments for ability and other variables were applied, the programmed learning group again showed a higher mean score than the other two groups.

However, Paden and Moyer found that none of the differences were statistically significant. Their conclusion was that the three methods of teaching economics were approximately equally effective in teaching content knowledge, insofar as the mastery of content was accurately measured by the tests used in the research study.

The findings of the Paden and Moyer study seem to have some credence, since they are consistent with studies conducted in 1966 by Lumsden⁶ and by McConnell.⁷ The Lumsden study was designed to measure the effectiveness of programmed learning in microeconomics that involved about 100 students who had not previously taken a college-level economics course and about 130 students who had taken the

⁶Keith G. Lumsden, "The Effectiveness of Programmed Learning in Elementary Economics," American Economic Review, May 1967, pp. 87-93.

⁷Campbell R. McConnell, "An Experiment with Television in the Elementary Course," American Economic Review, May 1968, pp. 122-130.

introductory macroeconomics course.⁸ The students, while remaining within their original groups, were further divided into three matched groups called A, B, and C. Students in group A received only programmed materials, and those in group C received only the basic textbook. Students in group B, using their regular textbooks and attending lectures covering the same material, were taught in the conventional manner. All the students were permitted to attend question sessions and consult their teachers on areas of difficulty. At the end of one month, all students were administered the same examination that consisted of true-false and essay questions. While there was no significant difference in their performance on the the objective portion of the examination, group A students achieved considerably higher total scores.

All students then returned to the conventional method of instruction and were administered a common examination at the conclusion of the course. Group A students again received higher grades than did either group B or group C. As a result, Lumsden could not be certain whether or not programmed instruction singularly accounted for group A's superior performance. The earlier McConnell study which was conducted in the mid-1960s was more certain in its conclusions. It found that students can "acquire an understanding

⁸Ibid.

of elementary economics equally well in large or small lecture sessions or through televised instruction."⁹

A study conducted in 1974 at North Texas State University was designed to measure the impact of four different teaching methods on the students' cognitive learning of microeconomics.¹⁰ The four methods employed in this research were games and simulations, closed-circuit television, programmed learning, and the conventional classroom lecture approach.

Over 100 students were randomly assigned to different research groups, with each group receiving all four teaching methods. The students were tested before and after exposure to each teaching method by the researchers who administered parts of the Test of Understanding in College Economics (TUCE). As in other cited studies, the researchers found that "there was no significant differential impact attributable to delivery systems on increased economic understanding."¹¹ There was one finding, however, that did indicate "a significant interactive relationship" between cognitive learning and the degree to which the students using the

⁹McConnell, p. 130.

¹⁰Luker Williams, Marianne Bonds, Watt Black, and Thomas C. Holland, "The Quasiexperimental Study of the Differential Impact of Four Delivery Systems on Economic Understanding," The Journal of Economic Education, Spring 1975, p. 134.

¹¹Ibid., p. 136.

programmed materials perceived the materials to be beneficial in preparing for tests.¹² A final conclusion to the study was that even if no one method used separately produced significant differences, a multiple set of delivery systems could be beneficial, with the most effective combination being programmed learning and games and simulations.¹³

Courses Without Lectures

Based on the findings of the earlier McConnell study,¹⁴ McConnell and Lamphear asked the question, "Is it possible that [students] are capable of grasping principles of economics without any lecture at all?"¹⁵ The study by McConnell and Lamphear suggests that the present lecture system evolved during a period of time when textbooks and other pedagogical aids were not readily available. Since this situation no longer exists, is it possible that today's college students, with the aid of textbooks, study guides, programmed materials, and readings, can learn the principles of economics without the aid of the classroom teacher?

¹²Ibid., p. 136.

¹³Ibid.

¹⁴McConnell, p. 130.

¹⁵Campbell R. McConnell and Charles Lamphear, "Teaching Principles of Economics Without Lectures," Journal of Economic Education, Fall 1969, p. 20.

Stated in the terms of economics, "What is the opportunity cost to the student of spending some 45 hours per semester listening to lectures?"¹⁶

In a study which was conducted in the Fall 1967-1968 semester at the University of Nebraska, 440 students were given the option of studying the principles of economics course without attending any classroom lectures. Eighty-six students chose this option, and the remaining 354 students elected to take the course by viewing closed circuit televised lectures.

The testing program used to measure the students' cognitive learning in the study involved subjecting each group of students to identical examinations, some prepared internally by the University and others prepared externally by persons outside the University. The internal testing program consisted of 170 five-option, multiple-choice questions designed especially for the University of Nebraska economics course. These questions were administered as three 50-question, hour examinations and as a 20-question segment of the final examination.

The external testing program consisted of examination materials prepared by economics teachers not associated with the University of Nebraska and therefore not specifically

¹⁶Ibid.

designed for its particular economics course. Two externally prepared examinations were involved. Forms A and B of the Test of Economic Understanding were administered, as were a series of 90 four-option, multiple-choice questions. The latter were provided by the Committee for a Test of Understanding in College Economics and they were administered at the end of the course, comprising the major portion of the final examination. Mean scores and standard deviations were calculated both for the group which attended TV lectures and for the group which did not attend lectures. Results of this analysis indicated that, in the internal testing program, the group without lectures scored more than three points higher than the lecture group on the total testing program and slightly higher on each of the three component parts.

The same analysis was applied to scores on the external testing program. Again, the scores of the group receiving no lectures were slightly higher than those of the lecture group, but computed values indicated that the mean differences were not significant at the .10 level.

As a result of their research, McConnell and Lamphear conclude that students taking the principles of economics course with lectures and those taking the course without lectures performed equally well on an intensive battery of objective examinations. This generalization applies to both

the total internal testing program and the external testing program with but one exception. In general, however, the researchers stated that it is "safe to conclude that the two groups performed equally well".¹⁷

Summary

Although a survey of recent literature in economics revealed little that dealt directly with the use of student study guides, the survey did suggest that variations in methodology and materials could make some difference in student performance. It was clear that all research does not provide support for individualized and self-paced instruction, but this does not mean that the only effective method of teaching economics is the traditional classroom lecture. Even in those cases where no significant statistical difference in cognitive learning could be proved in experimental courses, there were almost always some positive results, such as improved student attitude toward the study of economics.

¹⁷Ibid., p. 30.

CHAPTER III

METHOD AND PROCEDURE

Development of Study Guide

A major undertaking in this research project was the preparation of the study guide used by the students that comprised the experimental group. The study guide consists of thirteen chapters and is shown as appendix A. Each chapter contains learning objectives, chapter overview, and a series of questions to test the student's understanding of the subject material. The study guide differs from most of those commercially available in that the answers to the questions are not included as a part of the guide.

Assuming that other economics teachers would not develop their own personal study guide but would use available published material, the writer reviewed eleven currently published microeconomic study guides and developed this guide as a composite of styles. Therefore, the study guide used in this research does not vary significantly in content or format from those currently used by students in other colleges and universities.

The study guide used in this research does, however, cover specific areas included in the Principles of Microeconomics course taught at David Lipscomb College and

reflects the writer's view as to areas of course difficulty and importance. Appendix B contains the complete list of economics study guides reviewed during the preparation of this composite guide. Care was used in selecting the review questions included in the study guide so that no duplication of questions would exist on any of the regularly scheduled classroom examinations.

Selection of the Control and Experimental Groups

The students used were those who registered for the winter quarter 1984, 8 a.m. and 9 a.m., Principles of Micro-economics course taught by the writer. Fifty-two students registered for the 8 o'clock class and 32 for the 9 o'clock class. Based on the assumption that students in large classes do not learn as well as students in small ones, it was decided to take the conservative approach and use the large class as the experimental group and the small one as the control group.

Use of the Study Guide

The reasons for and nature of this research project were explained in detail to both classes during the first classroom session. Students were told that the 8 o'clock class would be required to complete each written homework assignment contained in the study guide, while the 9 o'clock class would be given only the normal reading assignments.

The members of the control class were not furnished the student study guide and no further reference concerning the study guide was made to them. A regular classroom syllabus was given to both the experimental and control groups, and it is shown as appendix C.

Each assignment in the study guide was collected the day following the completion of the appropriate textbook chapter. The homework was graded, with correct answers indicated, and returned to the student prior to the scheduled test covering the assigned material. In an effort to motivate the students to correctly complete each assignment, the average grade of all study guide assignments was equated to one test score in calculating the student's final grade.

Selection of Research Instrument

A primary undertaking in this study was the selection of a research instrument possessing reliability and content validity and containing items considered to be basic in measuring the student's level of cognitive learning of microeconomics. A commercial, standardized instrument prepared and distributed by the Educational Testing Service, Princeton, New Jersey, was found to meet these criteria and was therefore selected as the basic research instrument.

The research instrument, "Introductory Microeconomics CLEP Subject Examination 3CCY," is widely used and accepted by colleges and universities throughout the United States as

an accurate measure of the student's basic understanding of microeconomics. Due to the extreme necessity of maintaining security over the test material, the test cannot be included as an appendix to this research project. Appendices D and E are letters from B. W. Balch, chairman of this writer's doctoral committee, and Barry Druesne, program director of the Educational Testing Service, setting forth the stipulations and restrictions on using the examination.

Recognizing the possibility that the externally prepared CLEP test might not accurately measure the improvement in cognitive learning, the writer administered a series of five internally prepared examinations. The results were analyzed in a manner identical to the method used for the CLEP tests.

Use of Research Instrument

As noted, the CLEP examination was administered by the writer to 84 students who had enrolled in two Principles of Microeconomics courses at David Lipscomb College. The pretest was administered in January 1984, at the beginning of the winter quarter, to measure the student's basic level of microeconomics understanding. In March 1984, at the end of the winter quarter, the test was administered again as a posttest in an attempt to measure the degree of improvement in the student's basic economics understanding.

The test was divided into two parts, with each part consisting of 45 four-part, multiple-choice questions, for a total of 90 multiple-choice questions. Fifty minutes were allowed to complete each section of the test. The pretest was administered on two consecutive days during the normal classroom period, while the posttest was administered in two consecutive 50-minute periods.

Students were encouraged to answer only those questions which they were confident that they knew, as the test was graded by assigning one point for each correct answer and subtracting one-fourth point for each incorrect answer. It was therefore mathematically possible for a student to receive a negative or minus score. At the time that both the pretest and posttest were administered, the purpose of the study was explained to the participants, as well as the nature of the test and the procedures they were to follow.

As the course progressed, five periodic examinations prepared by the author were administered. Each of these tests consisted of 33 four-part, multiple-choice questions.

Collecting Other Data

Since factors other than the completion of a student study guide may affect the cognitive learning, other data were collected from students in both the experimental and control groups. These were considered secondary data for the analysis and they consisted of items such as age, sex,

quarters in school, grade point average, and major and minor areas of study. Appendix F is a copy of the questionnaire used in collecting this additional demographic information.

Statistical Treatment of Data

Two approaches were utilized to check the basic hypothesis of this study, one using primary test data and the other using secondary demographic data. First, a test of differences was run between the mean improvement in the average CLEP scores of each class. The mean improvement for each class was computed by averaging the differences between the posttest and pretest scores. The appropriate null hypothesis was that the mean improvement of the experimental class would be less than for the control class. A higher improvement score for the experimental group that was statistically significant would suggest a difference in scores which could not be attributed to chance alone and would lead to the conclusion that students benefited from the use of a study guide. The null hypothesis would therefore be rejected. (A similar comparative analysis of average mean scores on the five internal examinations was also made to check the null hypothesis.)

Based upon the possibility that unspecified differences between the two classes could cause test score improvement to vary, a second approach was taken involving an examination of student demographic data. These data were

obtained from a student questionnaire, and they included scores on college entrance exams, college credit hours completed, student employment, and academic major. Statistical tests of these data also were performed for the purpose of identifying explanatory factors.

Combining the two approaches permits one to determine what improvement, if any, a study guide would make and, in addition, to determine the contributions of other demographic factors to the student's cognitive learning process.

CHAPTER IV

STATISTICAL ANALYSIS OF DATA

Statistical Testing of Primary Data

The data collected during this experiment were analyzed in two different phases. The first phase consisted of the statistical testing of the null hypothesis. During this phase of analysis, the increased cognitive learning achievements of the students involved in this study were compared by using the standard statistical t-test procedure.

The t test was especially appropriate for this comparison, for its value lies in its ability to determine if the measured difference between the two groups is due to mere chance or to the fact that the samples came from different populations. The null hypothesis set forth earlier is as follows: "Upon the completion of the study, one will find no significant difference in the mastery of microeconomics when the performance of one group of students who use a study guide is compared to that of a group which does not use a study guide."

To test this hypothesis, the degree of cognitive learning improvement of both the experimental and control group had to be determined. Therefore, an arithmetic mean improvement score was calculated for each of the two groups of students by measuring the statistical differences between

the scores achieved on the pretest and posttest. These calculations revealed that the mean improvement score for the control group was 2.50 points higher than the improvement score for the experimental group.

With the mean improvement score for each group used as the point of reference, the standard t -test procedure was utilized to determine if the 2.50 mathematical difference between the two classes represented a statistical significant difference. The data from the t test are given in Table 1.

Table 1
 t Test on Differences Between CLEP
Pretest and Posttest Scores

Group	Mean	SD	N	DF	t
Control	23.91	11.203	32	84	-1.11 ^a
Experimental	<u>21.41</u>	9.452	54		
Difference	2.50				

^aNot significant at the .05 level of confidence.

The t value obtained from this test was -1.11. The critical value for 84 degrees of freedom¹ was calculated

¹Vincent E. Cangelosi, Phillip H. Taylor, and Philip F. Rice, Basic Statistics: A Real World Approach (New York:

to be 1.99 for the .05 level of confidence. Thus, the computed t value of -1.11 was not statistically significant at the .05 level of confidence and the hypothesis was therefore accepted as stated. The acceptance of this hypothesis would tend to indicate that the use of a study guide did not contribute significantly to the increased cognitive learning level of those students that comprised the experimental group, when compared to the results achieved by the control group.

With recognition of the possibility that the externally prepared CLEP test did not accurately measure the level of improved cognitive learning, the hypothesis was again tested by using the average mean scores received by each of the groups on internally prepared regularly scheduled examinations. Five regularly scheduled classroom examinations were administered in both classes. Each examination consisted of 33 four-part multiple-choice questions that were specifically designed by this writer to cover the assigned course materials. As before, the average mean score for the control group was higher than for the experimental group, in this instance by 2.95 points. Data from the t test are given in Table 2.

West Publishing Company, 1979), p. 48, defines the term "degrees of freedom" as the number of variables that can change freely in a given set of variables, in this case, $N-2$.

Table 2
T Test on Examination Scores

Group	Mean	SD	N	DF	<u>t</u>
Control	78.16	8.99	32	83	-1.21 ^a
Experimental	<u>75.21</u>	11.87	53		
Difference	2.95				

^aNot significant at the .05 level of confidence.

The t value obtained from this test was -1.21. At the .05 level of confidence and with 83 degrees of freedom, the critical value was computed to be 1.99. Thus, the obtained t value of -1.21 was not statistically significant at the .05 level of confidence.

The results thus obtained, by administering both internal and external tests, seem to be in agreement; that is, the use of the study guide did not contribute significantly to the increased level of cognitive learning.

Statistical Testing of Secondary Data

As noted, there were no statistically significant differences observed between the average mean scores of the experimental and control groups. It was observed that the mean scores of the control group were numerically higher on both the externally and internally prepared examinations.

This can be observed by examining the data contained in Tables 1 and 2.

The mean score improvement based on the CLEP exams of the experimental class was 21.41 and the mean score of the control group was 23.91, a numerical difference of over two points. On the mean internal examination scores, the control group again scored almost three points higher; the experimental group achieved a mean of 75.21 while the control group scored 78.16.

In an effort to identify the possible reason or reasons for this apparent and unexpected difference, two additional t tests were run, using comparative data for the two groups of students. The first test conducted was to determine if the native abilities of the two groups might differ. An indicator of such ability is a student's college grade point average. Thus a comparison was made of the students' grade point averages (GPAs). The data from this t test are given in Table 3.

The t value obtained from this test was .08. The critical value calculated for 82 degrees of freedom was 1.99. Again the t value of .08 was not statistically significant, suggesting that the students' GPAs did not contribute to the mean score difference.

Perhaps the difference in performance between the two groups could be explained in terms of how much knowledge of

Table 3
T Test on GPA

Group	Mean	SD	N	DF	<u>t</u>
Experimental	2.87	.48	54	82	.08 ^a
Control	<u>2.86</u>	.54	30		
Difference	.01				

^aNot significant at the .05 level of confidence.

economics the students possessed upon entering the classes. To check this possibility, a t test was run using the mean scores received on the CLEP pretest. The data from this t test are given in Table 4.

Table 4
T Test on Pretest

Group	Mean	SD	N	DF	<u>t</u>
Control	13.47	9.301	32	84	-.23 ^a
Experimental	<u>13.02</u>	8.279	54		
Difference	.45				

^aNot significant at the .05 level of confidence.

The calculated t value using the pretest mean scores as the point of reference was -.23. The critical value for 84

degrees of freedom proved to be 1.99. Hence the t test of $-.23$ was not statistically significant. Prior knowledge of economics is therefore eliminated as a possible explanation.

Statistical Analysis of Data Based on Sex

Since the results of the preceding series of tests did not help in identifying the possible sources contributing to the numerical test differences, the data concerning the experimental and control groups were rearranged so that the test scores received by the male and female members of the experimental group could be compared to the scores received by the male and female members of the control group, respectively.

Tables 5 and 6 contain the results of the t tests computed for the 45 male members of the experimental and control groups. Table 6 contains the data from the t test utilizing the difference between the pretest and posttest scores on the mean improvement score.

As shown in table 5, the numerical difference of 3.19 proves to be not statistically significant. A calculated t value of -1.04 with 43 degrees of freedom compared to a critical value for t of 2.02 makes this obvious.

Similar results are obtained in comparing the male mean scores for the five scheduled class examinations. The data resulting from this t test are contained in Table 6.

Table 5

T Test on Difference Between Male
Pretest and Posttest Scores

Group	Mean	SD	N	DF	<u>t</u>
Control	24.88	12.47	16	43	-1.04 ^a
Experimental	<u>21.69</u>	8.12	29		
Difference	3.19				

^aNot significant at the .05 level of confidence.

Table 6

T Test on Male Examination Scores

Group	Mean	SD	N	DF	<u>t</u>
Control	79.13	9.17	15	42	-.59 ^a
Experimental	<u>76.90</u>	13.16	29		
Difference	2.23				

^aNot significant at the .05 level of confidence.

Again, the calculated t score of -.59 does not prove to be significant at .05 level of confidence.

Tables 7 and 8 contain the data resulting from the appropriate t test computed for the 40 female members of the experimental and control groups. Table 7 presents the data concerning the mean improvement score, and Table 8 contains the data concerning the five scheduled class

Table 7
T Test on Differences Between Female
 Pretest and Posttest Scores

Group	Mean	SD	N	DF	<u>t</u>
Experimental	21.08	10.96	25	38	.13 ^a
Control	<u>20.60</u>	11.24	15		
Difference	.48				

^aNot significant at the .05 level of confidence.

Table 8
T Test on Female Examination Scores

Group	Mean	SD	N	DF	<u>t</u>
Control	75.80	8.03	15	37	-.86 ^a
Experimental	<u>73.17</u>	10.00	24		
Difference	2.63				

^aNot significant at the .05 level of confidence.

examinations. Again, when the computed t values are compared with the critical value of 2.02, the results show no significant difference.

Since the statistical analysis of male versus male and female versus female revealed no significant difference, a series of tests was conducted to measure the difference

between the male and female students. In addition to measures of mean improvement and examination scores, male versus female GPAs also were examined as well as pretest and posttest results. Although this procedure did not produce any answer as to why the control group scored higher on its mean improvement and examination scores, it did reveal some interesting statistics. The data concerning this examination are contained in Tables 9 through 13 and are summarized in this section.

Table 9
T Test on Differences Between CLEP
Pretest and Posttest Scores

Group	Mean	SD	N	DF	<u>t</u>
Male	23.35	9.45	43	77	.82 ^a
Female	<u>21.44</u>	11.28	36		
Difference	1.91				

^aNot significant at the .05 level of confidence.

Table 10
T Test on Examination Scores

Group	Mean	SD	N	DF	<u>t</u>
Male	77.77	12.00	43	77	1.27 ^a
Female	<u>74.69</u>	9.02	36		
Difference	3.08				

^aNot significant at the .05 level of confidence.

Table 11
T Test on GPAs

Group	Mean	SD	N	DF	<u>t</u>
Female	2.93	.48	36	77	-.82 ^a
Male	<u>2.84</u>	.49	43		
Difference	.09				

^aNot significant at the .05 level of confidence.

The individual t tests conducted on the mean improvement (table 9), examination (table 10), and GPAs (table 11) were uniformly not statistically significant at the .05 level of confidence; however, the t tests conducted on the pretest and posttest separately did prove to be significant at the .05 level, based on the critical value of 1.94.

Tables 12 and 13 indicate that the females entered the course with a lower level of economic understanding, and ended the course at a lower level of understanding than did their male counterparts. However, the degree of improvement as measured by the difference between the pretest and the posttest showed that the females increased their understanding level at a rate which compares favorably to that for males. By comparing the pretest and posttest means in

Table 12
T Test on Pretest

Group	Mean	SD	N	DF	<u>t</u>
Male	15.37	8.77	43	77	2.37 ^a
Female	<u>10.94</u>	7.67	36		
Difference	4.43				

^aSignificant at the .05 level of confidence.

Table 13
T Test on Posttest

Group	Mean	SD	N	DF	<u>t</u>
Male	38.72	13.74	43	77	2.12 ^a
Female	<u>32.39</u>	12.53	36		
Difference	6.33				

^aSignificant at the .05 level of confidence.

Tables 12 and 13, one observes that the female posttest mean of 32.39 is almost triple the pretest mean of 10.94. The relative improvement for males was not as great. This may indicate that while the females have had less prior contact or interest in economics, once they are formally exposed to the subject they are capable of understanding economics as well as their male counterparts.

Student Demographic Data

Other related data collected during this study are shown in Tables 14 and 15. These data may contain one possible answer as to why the measurement of improvement in mean scores for the control group was numerically higher, although not statistically significant, than the mean score for the experimental group who used the student study guide. The control group may have had more time to adjust to the requirements of college than did the experimental group. This conclusion is based on the fact that 67.3 percent of the students in the experimental group had completed five quarters or less of college, while only 34.4 percent of the students in the control group had completed five quarters or less (refer to the cumulative percentage in table 14). This difference can also be seen by examining the average number of quarter hours completed by each group. Table 15 indicates that, upon entering the course, students in the control group had completed an average of 85.13 quarter

hours compared to only 65.77 quarter hours by students in the experimental group. Also, the table shows that the GPAs were identical for both groups, a fact which further explains why the GPA was not a significant explanatory variable earlier in the analysis. The average age for the two groups was almost identical as well.

Table 14
Quarters Completed in School

Quarters Com- pleted	Control Group			Experimental Group		
	Fre- quency	Percent		Fre- quency	Percent	
		Fre- quency	Cumu- lative		Fre- quency	Cumu- lative
2	3	9.4	9.4	5	9.1	9.1
3	2	6.3	15.6	1	1.8	10.9
4	1	3.1	18.8	3	5.5	16.4
5	5	15.6	34.4	28	50.9	67.3
6	4	12.5	46.9	6	10.9	78.2
7	1	3.1	50.0	2	3.6	81.8
8	9	28.1	78.1	5	9.1	90.9
9	0	0	78.1	2	3.6	94.5
10	2	6.3	84.4	2	3.6	98.2
11	4	12.5	96.9	0	0	98.2
12	1	3.1	100.0	1	1.8	100.0
Total	32	100		55	100	

Table 15
Data on Students by Treatment Group

Discipline Data	Total Sample	Control Group	Experimental Group
GPA			
Mean	2.87	2.87	2.87
SD	.50	.54	.48
Age			
Mean	20.07	20.19	20.00
SD	3.05	1.26	3.72
Hours Completed			
Mean	72.77	85.13	65.77
SD	35.91	43.95	28.59

Summary

The basic hypothesis set forth in this study was that upon completion of the study one will find no significant difference in the mastery of microeconomics when the performance of one group of students who use a study guide is compared to that of a group which does not use a study guide. This hypothesis was tested by using two different approaches. The first involved measuring the improvement in the students' level of cognitive learning. The improvement score was obtained by subtracting the score received on the externally prepared pretest from the score received on the externally prepared posttest. An aggregated mean improvement score was then calculated for each group and the significance of the difference was measured, using the

standard t-test technique. This test indicated no significant difference existed and therefore resulted in the acceptance of the hypothesis as stated.

The second approach used to test the hypothesis involved calculating the average mean scores received by each group on the five internally prepared regularly scheduled examinations. The testing of this data also revealed that no significance difference existed between the two groups and the acceptance of the hypothesis was again indicated.

After the initial testing of the primary data was completed, a series of t tests was then run using secondary data such as GPAs and sex. The procedure involved comparing the males and females of the control group to males and females of the experimental group. Additional tests were conducted that compared males versus males and females versus females. The final part of the research involved the use of demographic data such as quarters completed in school, age and quarter hours completed prior to entering the principles of economics course. Although age provided no explanation for the higher performance of the control group, quarters completed in school and total hours completed before enrolling did appear to offer an explanation.

While this related data may be of some interest and may suggest areas requiring further research, the primary

results of this study are quite clear. The use of a student study guide in the study of microeconomics did not provide any statistically significant benefit in the cognitive learning level of those students that comprised the experimental group.

CHAPTER V

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

Summary

The purpose of this study was to assess the effectiveness of a study guide in the mastery of microeconomics when used in conjunction with the classroom lecture. The evaluation covered the 1984 winter quarter at David Lipscomb College and included two Principles of Microeconomics classes. One class served as a control group and the other class served as an experimental group.

The study guide used by the students in the experimental class consisted of thirteen chapters and was prepared by the writer to coincide with the material normally covered in a Principles of Microeconomics course. It therefore reflected the writer's views as to areas of difficulty and importance.

The basic hypothesis established for this study was that upon completion of the study one would find no significant difference in the mastery of microeconomics when the performance of the experimental group who used the study guide was compared to that of the control group which did not use a study guide. Analysis of the data resulted in acceptance of the hypothesis.

The primary research instrument used to measure the students' level of improvement was the "Introductory Micro-economics CLEP Subject Examination 3CCY," prepared and distributed by the Educational Testing Service, Princeton, New Jersey. This multiple-choice test was administered to the experimental and control groups at the beginning of the winter quarter and then again at the very end of the quarter.

Individual student improvement scores were obtained by subtracting the score received on the pretest from the score received on the posttest. With this improvement score as a base, a mean improvement score was then calculated and aggregated for each of the two groups involved in this study.

An alternative method used to obtain data to test the hypothesis involved comparing the average mean score received by each group on five internally prepared and regularly scheduled examinations. Both of these methods produced consistent results. Secondary demographic data also were collected from student questionnaires and subjected to analysis.

The t test was the primary statistical technique used to check the hypothesis, since it had the capability of determining the significant difference between the two

groups--the group that utilized the study guide and the group that did not.

Conclusion

Analysis of the experimental/control group variation in CLEP improvement scores as well as the variation in the mean scores from the internal examinations revealed that there was no statistically significant difference in student performance. This finding indicates that the use of the study guide by students studying microeconomics did not contribute to their understanding of economics, a finding consistent with other related studies involving nontraditional approaches to economics. Studies previously conducted by other researchers involving the use of self-paced, computer-assisted instruction, programmed learning, conventional live classroom lectures, and even courses taught entirely without lectures, found no significant difference in the ability of the students to understand the basic principles of economics. Thus students engaged in the study of economics at the principles level seem to achieve about the same level of understanding regardless of the teaching vehicle used by the instructor.

Implications

Certain implications emerged in the course of this study that may prove to be of interest to those who desire to conduct further research in the teaching of economics.

1. Further research may be indicated concerning the level of male-female economics understanding when entering the principles course. An effort should be made to determine if, in fact, the female student enters the principles course with a lower level of economics awareness or understanding than her male counterpart.

2. The area of proper class enrollment size may prove to be of interest. A study could be conducted to determine if classroom size is a significant factor in the student's learning experience.

3. Research may be indicated in the area of student maturity as related to his/her ability to understand economics principles. Student maturity as used here refers to the number of hours completed or the number of semesters completed at the time the student enrolls in his/her first principles of economics course.

APPENDICES

APPENDIX A

STUDY GUIDE

The study guide for Principles of Microeconomics prepared by the author of this paper for the Fall 1984 semester course at David Lipscomb College is reproduced on the following pages.

PRINCIPLES OF MICROECONOMICS

STUDY GUIDE

Fall, 1984

Instructor: L. G. Fulks

Preface

This study guide has been prepared to assist you in your study of the "principles of microeconomics."

This guide will provide you with a set of Learning Objectives for each section of study. You should study the material found in your textbook and this study guide until these Learning Objectives are clearly understood.

Each section of this study guide will contain an overview of the subject matter and may include a series of true-false, completion or multiple choice questions.

These review questions will be assigned as homework during this course and must be completed and handed in at the assigned time. The homework will count as one test score in arriving at the final grade for this course.

If you have any questions that you cannot answer or are not clear after a thorough study of the text and this study guide, write them down and ask them at the appropriate time during the class lecture.

Contents

Part I Introduction to Economics and the Pricing System

- Chapter 1. Supply and Demand
- Chapter 2. The Pricing System
- Chapter 3. Private Business Organization

Part II Markets, The Firm, and Resource Allocation

- Chapter 4. Demand and Supply Elasticity
- Chapter 5. Utility Theory -- Consumer Choice
- Chapter 6. Businesses and Their Cost
- Chapter 7. The Firm: Perfect Competition Model
- Chapter 8. The Firm: Monopoly Model
- Chapter 9. The Firm: Monopolistic/Oligopoly Models

Part III Derived Demand and General Equilibrium

- Chapter 10. Labor: Perfect Competition Model
- Chapter 11. Labor: Monopoly Model
- Chapter 12. Rents, Interests, and Profits
- Chapter 13. General Equilibrium Model

1. Supply and Demand

Learning Objectives

After you study chapter 3 of your text and complete this section of your study guide you should be able to explain:

1. How supply and demand theory helps solve basic economic problems.
2. How the concepts of supply and demand work and express your response in tabular and graphic form.
3. The difference between changes in supply (demand) and changes in quantity supplied (demanded).
4. The basic determinants that cause a shift in the supply and demand curves.
5. The theory of market equilibrium and how the theory of supply and demand moves the market toward equilibrium.

Chapter Overview

The relationship between the price of a good and quantity demanded is usually represented graphically as a downward sloping curve. A change in the price of an item causes movement up or down this curve and is referred to as a change in quantity demanded. A change in determinants other than price, such as consumer income, taste preferences, or the price of other goods causes the entire demand curve to shift or change its position and is called a change in demand.

The relationship between the price of a good and the quantity supplied is usually represented graphically as an upward sloping curve. A change in market price received by the supplier causes movement up or down along the supply curve. This movement is referred to as a change in quantity supplied. Changes in determinants other than price such as production costs may cause the entire supply curve to shift or change its position. This movement is called a change in supply.

When the quantity which the consumer wants to buy at a specific price is exactly the same quantity which producers are willing to supply at that same specific price, this is referred to as equilibrium. When a market is at equilibrium, there is no excess or shortage of goods supplied or demanded.

True-False Questions

- T F 1. Surpluses drive competitive prices up; shortages drive them down.
- T F 2. If demand increases and supply simultaneously decreases, equilibrium price will rise.
- T F 3. The rationing function of prices refers to the fact that government must distribute any surplus goods which may be left in a competitive market.
- T F 4. An "increase in the quantity supplied" is caused by a decline in production costs.
- T F 5. "Supply" refers to the amount of a product which a producer will offer in the market at some particular price.
- T F 6. An increase in demand accompanied by an increase in supply will increase the equilibrium quantity but the effect upon equilibrium price will be indeterminate.

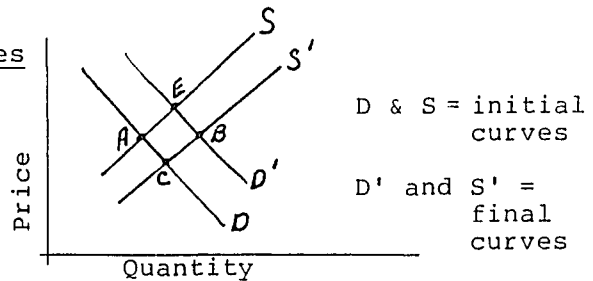
Multiple Choice Questions

1. Which one of the following will cause the demand curve for 7-Up to shift to the left?
- (a) A fall in the price of Cokes
 - (b) A rise in the price of 7-Up
 - (c) Both (a) and (b)
 - (d) A decrease in the supply of 7-Up
 - (e) An increase in the supply of 7-Up
2. An improvement in a competitive seller's technology is likely to result in:
- (a) A shift of his supply curve to the right
 - (b) An increase in his supply
 - (c) A willingness and ability on his part to supply a larger quantity than before at any given price
 - (d) A willingness and ability on his part to supply the same quantity as before at a lower price
 - (e) All of these
3. An increase in the price of product X resulted in a decrease in the demand for product Y. This indicates that products X and Y are:
- (a) Substitute goods
 - (b) Complementary goods
 - (c) Inferior goods
 - (d) Superior goods
 - (e) Unrelated goods

4. An increase in the price of product B resulted in an increase in the demand for product C. This indicates that products B and C are:
 - (a) Substitute goods
 - (b) Complementary goods
 - (c) Inferior goods
 - (d) Superior goods
 - (e) Normal goods
5. A substantial increase in the price of butter is likely to result in:
 - (a) An increase in the demand for margarine
 - (b) A decrease in the demand for margarine
 - (c) An increase in the quantity demanded of margarine
 - (d) A decrease in the quantity demanded of margarine
 - (e) No change in the demand for margarine
6. Other things remaining the same, an increase in the price of Chevrolets will cause the demand curve for Fords to:
 - (a) Shift to the right
 - (b) Shift to the left
 - (c) Remain unchanged
 - (d) Become more curved
7. Other things remaining the same, an increase in the price of cameras will cause the demand curve for film to:
 - (a) Remain unchanged
 - (b) Become more straight
 - (c) Become more curved
 - (d) Shift to the left
 - (e) Shift to the right
8. Which one of the following will cause the demand curve for gasoline to shift to the right?
 - (a) A fall in the price of gasoline
 - (b) A rise in the price of cars
 - (c) A fall in the price of cars
 - (d) An increase in the supply of gasoline
 - (e) A decrease in the supply of gasoline
9. For most commodities, purchases tend to rise with increases in buyers' incomes, and to fall with decreases in buyers' incomes. Such commodities are known as:
 - (a) Inferior goods
 - (b) Direct goods
 - (c) Average goods
 - (d) Normal goods
 - (e) Luxury goods

10. For some commodities, purchases tend to decrease as the buyer's income increases. Such commodities are known as:
- (a) Common goods
 - (b) Inferior goods
 - (c) Inverse goods
 - (d) Normal goods
 - (e) Convenience goods

Exhibit 1 Supply and Demand Curves



11. In Exhibit 1:

- (a) Supply has decreased and the equilibrium price has decreased
- (b) Supply has decreased and the equilibrium price has increased
- (c) Demand has decreased and the equilibrium price has decreased
- (d) Demand has decreased and the equilibrium price has increased
- (e) None of these

12. In Exhibit 1:

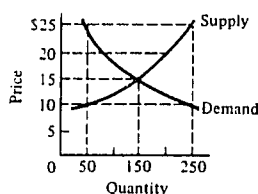
- (a) An increase in demand has more than offset an increase in supply
- (b) The final equilibrium price is higher than the initial equilibrium price
- (c) The final equilibrium quantity is larger than the initial equilibrium quantity
- (d) Points A and B denote the initial and final equilibrium points, respectively
- (e) All of these

13. In Exhibit 1, suppose that an increase in the demand for the product had been exactly matched by an increase in its supply. The result would have been:

- (a) An increase in the equilibrium price and quantity
- (b) A decrease in the equilibrium price and quantity
- (c) An unchanged equilibrium price but a larger equilibrium quantity
- (d) An unchanged equilibrium quantity but a higher equilibrium price
- (e) A higher equilibrium price and a lower equilibrium quantity

14. In Exhibit 1, suppose that an increase in the demand for the product had been exactly matched by a decrease in its supply. The result would have been:
- (a) A lower equilibrium price and quantity
 - (b) A higher equilibrium price and quantity
 - (c) An unchanged equilibrium price and quantity
 - (d) A higher equilibrium price and an unchanged equilibrium quantity
 - (e) An unchanged equilibrium price and either a higher or lower equilibrium quantity

Exhibit 2 Supply and Demand Curves



15. In Exhibit 2, a price of \$25 per unit will result in:
- (a) No surplus or shortage
 - (b) A surplus of 50 units
 - (c) A surplus of 200 units
 - (d) A surplus of 250 units
 - (e) Quantity demanded exceeding quantity supplied
16. In Exhibit 2, a price of \$10 per unit will result in:
- (a) A shortage of 50 units
 - (b) A shortage of 200 units
 - (c) A shortage of 250 units
 - (d) No surplus or shortage
 - (e) Quantity supplied exceeding quantity demanded
17. In Exhibit 2, a surplus of 200 units will occur at a price of _____ and a shortage of 200 units will occur at a price of _____.
- (a) \$15; \$10
 - (b) \$15; \$15
 - (c) \$15; \$25
 - (d) \$25; \$10
 - (e) \$25; \$15
18. In Exhibit 2, if there are no restrictions on the actions of buyers and sellers, the market price and quantity will tend toward:
- (a) \$25 and 50 units, respectively
 - (b) \$25 and 250 units, respectively
 - (c) \$15 and 150 units, respectively
 - (d) \$10 and 50 units, respectively
 - (e) \$10 and 250 units, respectively

19. In Exhibit 2, the lowest price per unit that sellers would be willing to accept for 50 units is:
- (a) \$25
 - (b) \$15
 - (c) \$10
 - (d) \$0
 - (e) Impossible to determine from the given data
20. In Exhibit 2, the highest price per unit that buyers would be willing to pay for 250 units is:
- (a) \$0
 - (b) \$10
 - (c) \$15
 - (d) \$25
 - (e) Impossible to determine from the given data

Exhibit 3 Supply and Demand Schedules

Price (per unit)	Quantity demanded (units)	Quantity supplied (units)
\$ 3	80	20
5	60	40
6	50	50
7	40	60
8	30	70
10	10	90
11	0	100

21. In Exhibit 3, the equilibrium price is ____ and the equilibrium quantity is ____.
- (a) \$6; 50 units
 - (b) \$6; 100 units
 - (c) \$5; 100 units
 - (d) \$5; 20 units
 - (e) Under \$5; over 50 units
22. In Exhibit 3, if the quantity demanded at each price doubles:
- (a) The quantity supplied at each price will double
 - (b) The equilibrium price will rise
 - (c) The equilibrium price will remain the same
 - (d) The quantity supplied at \$6 will be 100 units
 - (e) The equilibrium price will fall
23. In Exhibit 3, if the quantity supplied at each price doubles:
- (a) The quantity demanded at \$6 will be 100 units
 - (b) The quantity demanded at each price will double
 - (c) The equilibrium price will fall
 - (d) The equilibrium price will remain the same
 - (e) The equilibrium price will rise

24. The law of demand is illustrated by a demand curve that is:
- (a) Horizontal
 - (b) Downward-sloping
 - (c) Vertical
 - (d) Upward-sloping
 - (e) None of these
25. If the demand curve for produce C is downward-sloping, an increase in buyers' incomes is likely to result in:
- (a) An increase in demand
 - (b) An increase in quantity demanded
 - (c) A decrease in demand
 - (d) A decrease in quantity demanded
 - (e) No change in demand or in quantity demanded

2. The Pricing System

Learning Objectives

After studying chapter 4 of your text and completing this section of your study guide, you should be able to explain:

1. How the price system works in allocating scarce resources among various uses.
2. How prices communicate market information to buyers and sellers.
3. How profits signal the need to move economic resources from one use to another use.
4. The differences between technical efficiency and economic efficiency.
5. How the price system acts as an allocator of economic resources.

Chapter Overview

This chapter of the text answers the questions on how the pricing system helps determine what will be produced, how it will be produced and for whom it will be produced.

What the producer will produce depends upon which goods will generate the greatest profit. This, of course, is based on how much the consumer will pay for the product, and how much the producer must pay for the use of the factors of production.

How goods are produced depends on the price of the factors of production, since firms must produce their goods as cheaply as possible. Therefore, firms will utilize those factors of production that permit them to produce the item at the lowest possible cost.

The answer to the question, "For whom will the goods be produced?" is quite simple--for those who are willing and able to pay the highest price to obtain the goods.

When comparing technical and economic efficiency, we should remember that technical efficiency tells us how goods should be produced, while economic efficiency tells us what goods should be produced.

True-False Questions

- T F 1. If firms have sufficient time to enter and leave industries, economic profits will be maximized.
- T F 2. The wants of consumers are expressed on the demand side of the product market.
- T F 3. Costs can be defined as total income payments made to workers, land owners, and capital suppliers less normal profits.
- T F 4. If firms in any industry fail to earn normal profits, firms will leave the industry.
- T F 5. The guiding function of prices indicates that at equilibrium prices neither product surpluses nor shortages can occur.
- T F 6. The "invisible hand" refers to the many indirect controls which the Federal government imposes in a system of mixed capitalism.

Multiple Choice Questions

1. Under the price system, prices are:
- (a) conveyors of information
 - (b) determined by the interactions of supply and demand in voluntary exchange
 - (c) indicators of the relative scarcity of resources and products
 - (d) all of the above
2. If a firm does not employ the most efficient or least costly method of production, which of the following would not be a consequence?
- (a) the firm's profits will be less than if efficient production methods were used
 - (b) other firms in the same industry who do produce efficiently will be able to sell the product at a lower price
 - (c) the firm will be hiring fewer resources and thus spending less than other firms
 - (d) other firms are likely to enter the market and produce the product at a lower cost
3. All of the following except one are factors determining the share of total output, within the economy, that is received by any household. Pick the exception:
- (a) the prices fetched in the marketplace for the household's resources
 - (b) the prices that must be paid by households for the products they purchase

- (c) the total value of the products produced by the economy
 - (d) the quantities of resources sold by households
4. Transactions costs are:
- (a) costs associated with the process of exchange
 - (b) always paid by the consumers of a product
 - (c) always paid by the producers of a product
 - (d) added to the costs of production and borne partially by sellers and buyers
5. The price system:
- (a) aids in the determination of what goods and services will be produced
 - (b) helps business people decide what resources to use in the production process
 - (c) influences which goods and services people in the economy will ultimately receive
 - (d) all the above
6. Suppose butter is currently selling for \$1.20 a pound while margarine is selling for \$.96 a pound. If the government levies a tax of \$.20 a pound on both butter and margarine, then:
- (a) the relative price of butter will rise
 - (b) the relative price of margarine will rise
 - (c) there will be a decrease in the quantity demanded of margarine, other things constant
 - (d) Both (a) and (c)
 - (e) Both (b) and (c)
7. In the prisoner-of-war camp application, which of the following were reasons why cigarettes came to be used as money?
- (a) cigarettes are relatively durable
 - (b) since many prisoners liked to smoke, cigarettes had "value in use"
 - (c) cigarettes are easily stored and/or transported
 - (d) all the above features of cigarettes served to lower the transactions costs of exchange and thus led to their use as money
8. If the profits of firms in the record industry began to decline, you would expect:
- (a) resources to flow out of the record industry
 - (b) more firms to enter the record industry to force existing firms to produce more efficiently
 - (c) more resources would be devoted to record production in an effort to lower costs
 - (d) increased dollar rates paid by consumers to have little impact on the resources devoted to the production of records

9. If there is an increase in the amount of pollution emitted by firms in the steel industry with no increase in the cost borne by these firms:
- (a) you could conclude that pollution caused no serious problem
 - (b) you could conclude that purchasers of steel were unwilling to bear the costs of pollution
 - (c) pollution is an externality in this market since producers or purchasers of steel do not bear the costs of pollution
 - (d) the price system is not functioning as our theory predicts

Completion Questions

Supply the missing information:

1. The price system answers the following three questions about resource allocation:
 - a. _____
 - b. _____
 - c. _____
2. The price system is based on the premise of _____.
3. The opportunity cost or price that is paid in an exchange is referred to as the _____.
4. A _____ encompasses the exchange arrangements between buyers and sellers.
5. Organized markets exist primarily because they lower the _____ of exchanges.
6. _____ are the difference between the costs of production of an item and the price that it fetches in the marketplace.
7. _____ relates to production decisions that do not willfully waste resources, while _____ relates to production decisions that minimize the costs of production.
8. Supporters of the price system argue that our price system provides a great deal of individual _____ and induces _____.
9. Critics of the price system cite _____, potential shortages of _____, unequal _____ and lack of _____ as major problems.

3. Private Business Organization

Learning Objectives

After studying chapter 5 of your text and completing this section of your study guide, you should be able to explain:

1. The difference between a plant, a firm and an industry.
2. The general changes in the compositions of industry that has taken place in the United States.
3. The different forms of business organization that exist in the United States.
4. The general forms that most corporations use in financing its business activities.

Chapter Overview

The private section consists of three principal types of business firms: proprietorships, partnerships and corporations. The corporation advantages over the other two forms include limited liability, unlimited life and greater ability to raise large sums of money.

The corporation is able to raise money by issuing various kinds of securities such as common stock, preferred stock, and bonds.

The selling of stock to obtain long-term financing is riskless because there is no legal obligation on the part of a firm to pay dividends or repurchase the stock. Dividends paid to shareholders are not tax deductible to the firm and must therefore be paid from profit or after tax income.

Bonds are generally a cheaper means of obtaining financing because the interest paid to obtain the finances is tax deductible and therefore paid from pre-tax dollars. The bonds are in indebtedness of the firm and must be repaid and are therefore more risky.

A proprietorship is a business owned by one person and a partnership is any business owned by two or more persons. These two forms of business organizations compose the largest percent of U. S. business.

When we talk about a plant, we are talking the physical establishment that manufactures or distributes a commodity. The firm is the business organization that owns and operates one or more plants. The industry then is a group of firms producing similar products, such as the food industry, auto industry or health care industry.

Completion Questions

Supply the missing information:

1. A _____ is the physical establishment that produces a good or service while the _____ is the business organization that owns and operates the _____.
2. Economists refer to a group of firms producing similar products as a(n) _____.
3. The three major forms of business organizations are:
 - a. _____
 - b. _____
 - c. _____
4. _____ is a disadvantage of both proprietorships and partnerships.
5. Greater _____ is an advantage of both partnerships and corporations.
6. The two major disadvantages of corporations are:
 - a. _____
 - b. _____
7. Corporations obtain long-term financing for capital requirements by selling:
 - a. _____
 - b. _____
 - c. _____
8. The general term, _____, is used to refer to the evidence of investment by individuals and institutions in firms or the government.

Multiple Choice Questions

1. The most common type of business organization in the United States is:
 - (a) corporation
 - (b) partnership
 - (c) proprietorship
 - (d) limited corporation
2. Your aunt had owned a business for several years, but because of hard economic times her establishment went bankrupt. Your aunt lost everything she had, including many of her private assets. You point out that:

- (a) her losses could have been avoided if she had had a good attorney
 - (b) her losses could have been limited if she had incorporated her business
 - (c) if she had started a partnership, she could have avoided all losses
 - (d) she should not have lost her personal assets
3. If you wished to start a corporate form of business to deliver pizzas on your campus, you would have to:
- (a) go before the corporate board in your state and take an oath
 - (b) register your company with a state agency and choose a board of directors
 - (c) obtain permission from the federal government
 - (d) obtain permission from the governor of your state
4. A major difference between common stock and preferred stock is that:
- (a) common stock and preferred stock are simply two terms for the same thing
 - (b) common stock pays no dividends while preferred stock does
 - (c) common stock pays dividends while preferred stock pays interest
 - (d) common stock provides voting rights in corporate affairs for its holders while preferred stock does not
5. The major advantage of long-term financing by the issuance of additional common stock is:
- (a) the ease of sale of the new shares
 - (b) the vast amount of money that may be raised
 - (c) dividend payments are not made on new issues
 - (d) the low risk to the corporation, since there is not obligation of payments to stockholders
6. The major advantage of long-term financing by the sale of bonds is:
- (a) the relative cost advantage to the firm, since bond interest is tax-deductible
 - (b) the low risk involved in selling bonds
 - (c) the absence of dividend requirements when bonds are issued
 - (d) the length of the maturity period for bonds
7. The major advantage of a tax-sheltered pension plan is:
- (a) no taxes are paid on the sheltered money
 - (b) only minimal taxes are paid on the sheltered money
 - (c) taxes are postponed to a later time when an individual is likely to be in a lower tax bracket
 - (d) taxes are withheld but returned at a later date when the pension matures

8. Pick the true statement from those listed below:

- (a) A plant is defined as a group of firms working toward a common production goal.
- (b) The corporate form of business organization represents the largest fraction of U.S. businesses.
- (c) Partnerships offer limited liability to their owners.
- (d) An industry is a group of firms that produce products that are similar or used for similar purposes.

4. Demand and Supply Elasticity

Learning Objectives

After studying chapter 21 of your text and completing this section of your study guide, you should be able to explain:

1. Define price elasticity of demand and explain its usefulness.
2. Explain how the size of the price elasticity determines the customer responsiveness to a change in price.
3. Differentiate among elastic, unitary elastic, and inelastic demands.
4. Explain the determinants of price elasticity of demand.
5. Define price elasticity of supply and explain its usefulness.
6. Define income elasticity of demand and explain its usefulness.

Chapter Overview

The laws of supply and demand explain the relationship between price and quantity supplied and price and quantity demanded. However, it does not explain the extent such increase or decrease in prices affects the supply or demand for an item. To do this, we use the concept of elasticities.

Price elasticity of demand measures the sensitivity of the amount consumers will demand based on a change in price. Price elasticity of demand is defined as the percentage change in quantity demand divided by the percentage change in price. If this division equals 1 (one) it is called unitary elastic. If greater than 1 (one) it is elastic and less than 1 (one) it is inelastic.

Income elasticity of demand measures the relationship between the percentage of change in the quantity of a good purchased and the percentage change income. Income elasticity of demand tells us how responsive the demand for a product is to a change in consumer income.

Elasticity of supply measures the sensitivity of supply to changes in price. Supply elasticity is classified into the same three groups as demand elasticity: elastic, unitary elastic, and inelastic.

Completion Questions

1. When the price of good X rises from \$2.00 to \$2.10, the quantity demanded of good X falls from 3,000 to 2,800. The price elasticity of demand for good X equals _____. The demand for good X is (elastic, inelastic) _____.
2. When income increases from \$80 billion to \$81 billion, the quantity demanded of good X increases from 3,000 to 3,050. The income elasticity of demand for good X equals _____. When computing the income elasticity of demand, the price of good X is held _____.
3. The total amount spent on a good is not affected by its price if the price elasticity of demand equals _____. The total quantity demanded of a good is not affected by its price if the price elasticity of demand equals _____.
4. If the government imposes a \$1 tax on a commodity, it will obtain the most revenue from the tax if the commodity's price elasticity of demand equals _____. The largest burden of the tax is borne by consumers if the price elasticity of demand equals _____.
5. Whether a price cut results in an increase in the total amount spent on a commodity depends on the _____.
6. If the demand for a commodity is price inelastic, then the price elasticity of demand is _____.
7. The income elasticity of demand is the percentage change in the quantity demanded resulting from _____ increase in total _____.
8. If the cross elasticity of demand is positive, two commodities are _____.
9. The demand for a commodity is _____ when the price increase or decrease results in no difference in the total amount spent on the commodity.
10. The _____ is the percentage change in quantity demanded resulting from a 1 percent change in price.
11. During a (long, short) _____ period, demand is likely to be more sensitive to price than over a (long, short) _____ one. The longer the period, the (easier, harder) _____ it is for consumers and business firms to substitute one good for another.

True-False Questions

- T F 1. An increase in the subway fare in Philadelphia will increase the total amount spent on bus fares in Philadelphia.
- T F 2. An increase in the price of fishing licenses will reduce the total amount spent on fishing licenses.
- T F 3. The demand for an appendectomy is likely to be less price elastic than the demand for aspirin.
- T F 4. If the price elasticity of demand of product Y equals infinity, and if the government imposes a tax of \$1 per unit on product Y, none of the tax will be shifted to consumers.
- T F 5. If the quantity demanded of product Z falls by 5 units whenever the price of product Z increases by 1 dollar, the price elasticity of demand for product Z is 5.
- T F 6. The consumer almost always responds to an increase in a commodity's price by reducing the amount of it he consumes.
- T F 7. If the demand for a commodity is price elastic, an increase in its price will lead to an increase in the total amount spent by consumers on the commodity.
- T F 8. A commodity's income elasticity of demand may be positive or negative.
- T F 9. The income elasticity of demand for food is very high.
- T F 10. The price elasticity of demand is expressed in terms of relative, not absolute, changes in price and quantity demanded.
- T F 11. The price elasticity of demand is a measure of the sensitivity of quantity demanded to the price of other commodities.
- T F 12. The demand for a commodity is price elastic if the price of demand is less than 1.

5. Utility Theory - Consumer Choice

Learning Objectives

After studying chapter 22 and appendix D of your text and completing this section of your study guide, you should be able to:

1. Explain the meaning of the term "utility."
2. Explain the law of diminishing marginal utility.
3. Understand how a consumer maximizes his utility.
4. Use the law of diminishing marginal utility and consumer equilibrium theory to derive a demand curve.
5. Understand the principles of the indifference curve.

Chapter Overview

The theory of utility assumes the consumer is able to determine which products or group of products gives him the greatest satisfaction. Therefore his choice or preference for goods will be those that give him the greatest satisfaction. This consumer's preferences can be represented by a utility index.

Utility, then, is a number that indexes (or measures) the level of satisfaction received by the consumer from a particular good or grouping of goods.

The goal of the consumers is to make choices that will maximize total utility. To do this, the consumers must keep two things in mind. First, the value of any good is equal to the increase in satisfaction obtained from consuming the good. This increased satisfaction is called "marginal utility." Second, sooner or later the consumption of an additional unit of a good will increase the consumer's satisfaction less than the consumption of the previous unit. For example, the consumption of a twelfth piece of pizza may add less to total utility than the eleventh piece did. This situation is called the "law of diminishing marginal utility." It explains why people consume a variety of goods and not just one good.

Given these conditions, how can consumers maximize their utility with a given amount of expenditure? If every good had the same price per unit, consumers would need to determine only the marginal utilities obtained from consuming each unit of each good. Then they could make their purchases according to which goods give them the highest marginal utility. But because each good does not have the same price, consumers must consider each price as well as marginal utility, before making a choice. For example, a pound of steak may yield a marginal utility of 120 units and cost \$1. Milk, at

50 cents per bottle, may yield a marginal utility of 80 units for the first bottle and 70 units for the second. Consumers may prefer 1 pound of steak to a bottle of milk but they can buy two bottles of milk for the price of 1 pound of steak. A dollar spent on steak adds only 120 units of utility but a dollar spent on milk adds 150 units of utility. Milk is clearly the better buy because it gives the higher marginal utility per dollar of expenditure. Thus when consumers make their purchases, they should always buy the good that yields the highest marginal utility per dollar of expenditure.

Multiple Choice Questions

1. When total utility is a maximum, marginal utility is:
 - (a) Rising
 - (b) At its average value
 - (c) A maximum
 - (d) A minimum
 - (e) Zero

2. Suppose that the total utilities corresponding to the first five units consumed of a product are 10, 15, 19, 22, 24, respectively. The marginal utility of the third unit is:
 - (a) 15
 - (b) 19
 - (c) 4
 - (d) 3
 - (e) None of these

3. According to the theory of utility, as more units of a good are acquired, the consumer's marginal utility:
 - (a) Always continues to rise
 - (b) May rise at first, but must eventually diminish
 - (c) May rise at first, but must eventually become constant
 - (d) May diminish at first, but must eventually rise
 - (e) Remains constant

4. Given two commodities X and Y, their prices P_X and P_Y , and a constant marginal utility of money MU_m , a consumer will maximize utility by allocating expenditures such that:
 - (a) $MU_X/P_Y = MU_Y/P_X$
 - (b) $P_Y/MU_X = P_X/MU_Y$
 - (c) $MU_X/P_X = MU_Y/P_Y$
 - (d) $MU_X = P_X = MU_Y = P_Y = MU_m$
 - (e) $MU_X = MU_Y = P_X = P_Y = MU_m = 0$

5. A serious shortcoming of utility theory is that:
 - (a) Utility is subjective, not objective
 - (b) Utility cannot be measured in cardinal numbers
 - (c) Products are assumed to be divisible
 - (d) All of the above are serious shortcomings
 - (e) None of the above

6. Suppose that a consumer purchases a combination of commodities X and Y such that $MU_X/P_X = 20$ utils per dollar and $MU_Y/P_Y = 10$ utils per dollar. In order to maximize utility the consumer should:
 - (a) Buy more of X and less of Y
 - (b) Buy more of Y and less of X
 - (c) Buy more of both X and Y
 - (d) Buy less of both X and Y
 - (e) Buy more of X and more of Y

- (a) Buy less of X and more of Y
 - (b) Buy more of X and less of Y
 - (c) Buy more of both X and Y
 - (d) Buy less of both X and Y
 - (e) Not buy either X or Y
7. Suppose that a consumer purchases a combination of commodities A and B such that $MU_A/P_A=50$ utils per dollar and $MU_B/P_B=30$ utils per dollar. In order to maximize utility the consumer should:
- (a) Buy less of both A and B
 - (b) Buy more of both A and B
 - (c) Buy more of A and less of B
 - (d) Buy less of A and more of B
 - (e) Not buy either A or B
8. A curve showing the various combinations of two commodities that would be equally satisfactory or yield the same total utility to a consumer at given prices and at a given level of income is:
- (a) A price-consumption curve
 - (b) An indifference curve
 - (c) An income-consumption curve
 - (d) A total utility curve
 - (e) A marginal utility curve
9. If market prices remain the same, there will be as many price lines as there are:
- (a) Income levels
 - (b) Indifference curves
 - (c) Commodities
 - (d) Commodity prices
 - (e) Buyers
10. If a consumer moves upward along an indifference curve, his total utility:
- (a) First increases, then decreases
 - (b) First decreases, then increases
 - (c) Increases
 - (d) Decreases
 - (e) Remains constant
11. If a consumer moves downward along an indifference curve, his total utility:
- (a) First decreases, then increases
 - (b) First increases, then decreases
 - (c) Decreases
 - (d) Increases
 - (e) Remains constant

12. The rate at which a consumer is willing to replace one commodity for another along an indifference curve is measured by the:
- (a) Slope of the demand curve
 - (b) Steepness of the income-consumption curve
 - (c) Marginal rate of substitution
 - (d) Elasticity of demand
 - (e) Price line
13. In terms of indifference curves, an increase in total utility is represented by:
- (a) A shift to the right
 - (b) A shift to the left
 - (c) A movement upward along a curve
 - (d) A movement downward along a curve
 - (e) A movement toward the middle of a curve
14. As a consumer moves upward along an indifference curve, giving up some of X to get more of Y, his MRS of X for Y:
- (a) Becomes infinite
 - (b) Goes from negative to positive
 - (c) Increases
 - (d) Decreases
 - (e) Becomes zero
15. How many indifference curves does a consumer have at any given time?
- (a) One
 - (b) Two
 - (c) Three
 - (d) Infinitely many
 - (e) Impossible to say

6. Businesses and Their Costs

Learning Objectives

After studying chapter 23 of your text and completing this section of your study guide, you should be able to:

1. Understand the economic meaning of cost.
2. Explain the difference between economic profit and accounting profit.
3. Understand the relationship between costs and levels of production.
4. Distinguish between short and long run costs in the decision-making process.

Chapter Overview

Firm is defined in this chapter as an organization that brings together the various factors of production to produce a good or service for the purpose of making a profit.

Profit is the difference between the total revenues received by a firm and the total cost involved in producing the good or service. Total costs in economic terms includes opportunity costs. Opportunity cost of using resources in a certain way is the value of what these resources could have produced if they had been used in the best alternative way.

Costs are incurred when a good or service is produced. The production of a good requires the combining of productive inputs (simplified here into labor and capital) in a technologically appropriate way to obtain output. This technical input-and-output relationship is called the production function. Economists have observed that as the quantity of one input is increased bit by bit (the other input being held constant), the output increases at a slower and slower rate. This illustrates the law of diminishing marginal returns. The marginal return for a production input is called its marginal physical product. Diminishing marginal returns help to determine the shape of cost curves.

A firm's costs can be illustrated graphically as a function of the amount of output produced, either in the short run or the long run. In the short run a firm has variable costs and fixed costs. Variable costs vary according to amount of output, just as

the money paid out for lemons depends on how much lemonade you make. Fixed costs do not vary with output (although, they are allowed to vary with time). The rent on your lemonade shop does not depend on average fixed cost. Variable cost divided by total quantity is average variable cost. Likewise, total cost divided by quantity is average total cost. Note that total cost = fixed cost + variable cost, and average total cost = average fixed cost + average variable cost.

Marginal cost is the change in total costs brought about by a unit change in output. There is a precise relationship between the marginal cost curve and the average cost (total and variable) curves. Both the ATC and AVC curves are U-shaped, and the MC curve cuts them (from below) at their minimum points. Thus, minimum average total cost is the point where $MC = ATC$. Also note that the marginal cost curve is the mirror image of the marginal product curve, reflecting diminishing marginal returns.

Up till now we have been dealing with a firm's short-run costs. In the long run, all costs are variable. When you draw a series of SRAC curves, each reflecting a different firm size, the "envelope" of these curves forms the long-run average cost curve (sometimes called the planning horizon).

In the long run, when you increase both factors of production proportionately, as opposed to holding one constant as in the short-run case, you see returns to scale. If output increases more than the input factors, this is increasing returns to scale (descending portion of LAC curve). Constant returns to scale occurs when output and inputs increase by the same proportion (minimum point of LAC). Decreasing returns to scale occurs when output increases less than inputs (ascending portion of LAC curve). Increasing returns to scale can occur when a firm increases specialization or improves machinery, or because of transportation or physical plant dimension factors. Decreasing returns to scale may occur when the firm size begins to reduce the effectiveness of management and communication problems arise.

Returns to scale is a technical relationship based on the production function. Another measure of the effect of scale changes is economics of scale. This measures the effect of factors external to the firms on the change in output. If, for example, the price of a factor falls as more is purchased, then the firm would experience economies of scale in the long run as output is increased.

Multiple-Choice Questions

1. When economies of scale outweigh diseconomies:
 - (a) The average total cost curve declines
 - (b) The average variable cost curve declines
 - (c) The long-run average cost curve declines
 - (d) The marginal cost curve declines
 - (e) All of these
2. When economies of scale are outweighed by diseconomies:
 - (a) The long-run average cost curve rises
 - (b) The marginal cost curve declines
 - (c) The average total cost curve declines
 - (d) The average variable cost curve declines
 - (e) All of these
3. When a total product curve is increasing at an increasing rate, its corresponding marginal product curve is:
 - (a) Vertical
 - (b) Horizontal
 - (c) Rising
 - (d) Falling
 - (e) Negative
4. When a total product curve is increasing at a decreasing rate, its corresponding marginal product curve is:
 - (a) Rising
 - (b) Falling
 - (c) Vertical
 - (d) Horizontal
 - (e) Negative
5. In terms of a firm's long-run average cost or planning curve, at any output less than the long-run optimum it will be cheaper for the firm to:
 - (a) "Underuse" a larger short-run plant
 - (b) "Overuse" a smaller short-run plant
 - (c) Disregard its ATC curve
 - (d) Produce at minimum AVC
 - (e) Produce at minimum MC
6. The long run is a period:
 - (a) Long enough to vary plant capacity
 - (b) More than one week
 - (c) More than one month
 - (d) At least one year or longer
 - (e) Long enough to establish economic policies

7. The term "production function" refers to the:
- (a) Use of machines in production
 - (b) Relationship between inputs and outputs
 - (c) Purposes and functions of production
 - (d) Role of labor unions in manufacturing
 - (e) Effects of automation on productivity
8. If the units of variable input in a production process are 1,2,3,4, and 5, and the corresponding total outputs are 10, 15,19,22, and 24, respectively, the marginal product of the third unit is:
- (a) 3
 - (b) 4
 - (c) 15
 - (d) 19
 - (e) 22

Exhibit 1 Cost Schedule of a Firm

Output quantity	Total fixed cost	Total variable cost
0	\$9	\$ 0
1		5
2		8
3		10
4		11
5		12

9. In Exhibit 1, the average fixed cost of producing 5 units is:
- (a) \$0
 - (b) Greater than \$0 but less than \$2
 - (c) Greater than \$9 but less than \$12
 - (d) \$12
 - (e) Impossible to determine
10. In Exhibit 1, the average variable cost of producing 3 units is:
- (a) \$0
 - (b) \$3.33
 - (c) \$5.25
 - (d) \$8.75
 - (e) \$10.50
11. In Exhibit 1, the marginal cost of producing the third unit is:
- (a) \$0
 - (b) \$1
 - (c) \$2
 - (d) \$8
 - (e) \$10

12. In Exhibit 1, the total cost of producing 5 units is:
- (a) Less than \$9
 - (b) \$9
 - (c) \$12
 - (d) \$21
 - (e) More than \$21
13. In Exhibit 1, the average total cost of producing 2 units is:
- (a) \$4
 - (b) \$8
 - (c) \$8.50
 - (d) \$9
 - (e) \$17
14. Which of the following represents a long-run adjustment:
- (a) U.S. Steel increases its production by 10 percent
 - (b) Ford Motor Company lays off 1,000 workers
 - (c) General Motors contracts to produce 20,000 tanks for the Army
 - (d) Aluminum Company of America sells one of its manufacturing plants to Reynolds Aluminum
 - (e) State university admits 500 new students
15. Which of the following, if any, is not an outlay or explicit cost?
- (a) Wages
 - (b) Executive salaries
 - (c) Raw materials expenditures
 - (d) Interest payments
 - (e) None of these (i.e., all are outlay or explicit costs)
16. The short run is a period:
- (a) Less than one week
 - (b) Less than one month
 - (c) Less than one year
 - (d) Long enough to vary output but not plant capacity
 - (e) Long enough to make economic adjustments
17. Those costs which accountants do not record in a company's books are:
- (a) Fixed costs
 - (b) Variable costs
 - (c) Explicit costs
 - (d) Opportunity costs
 - (e) Direct costs

18. A firm's economic profit is equal to its receipts in excess of:
- (a) Direct costs
 - (b) Fixed costs
 - (c) Variable costs
 - (d) Outlay costs
 - (e) Economic costs
19. Another name for opportunity costs is:
- (a) Accounting costs
 - (b) Explicit costs
 - (c) Alternative costs
 - (d) Indirect costs
 - (e) Direct costs

7. Firm Perfect Competition Model

Learning Objectives

After studying chapter 24 of your text and completing this section of your study guide, you should be able to:

1. Explain and list characteristics of a perfectly competitive model.
2. Answer the question, "How much should the firm produce?"
3. Understand the role profit plays in the resource allocation process.
4. Explain how the firm decides when to operate or shut down its operations.
5. Understand how to derive an industry supply curve using the marginal revenue curve.

Chapter Overview

In perfect competition there are large numbers of producers of a particular good, and no one firm is of sufficient size to control or significantly influence the market. The individual firm cannot affect the market price of its product and takes the price as "given," and is referred to as a "price taker." Each individual firm is aware of market conditions and can enter or exit the industry without external restraint.

The market demand and supply curves determine the equilibrium price for a good. The individual competitive firm faces this price as a perfectly elastic demand curve for its own product (because its relative smallness with respect to the industry guarantees that it can sell all it wants at the equilibrium price). Since price is given, the firm must only decide how much to produce. Production occurs at the point where profits are maximized. That is, the firm maximizes the difference between revenues ($P \times Q$) and costs.

To determine the point at which profit is maximized, the firm must look at its marginal revenue. Marginal revenue is the additional revenue brought about by selling one more unit of the product. Because the perfectly competitive firm faces a perfectly elastic demand curve, marginal revenue is simply equal to price. As long as the marginal revenue exceeds the marginal cost of a unit of product, that unit will be produced. At the point where

marginal revenue equals marginal cost, the firm is maximizing profit. Producing beyond this level of output will serve only to reduce the firm's profit, since additional revenues from the sale of the additional output are exceeded by the additional costs of the output. Consequently, a firm should continue to increase its output up to the point where $MR = MC$.

If $MR = MC$ at the point of minimum ATC, then zero profits are being made. This is called the short-run breakeven point. Remember that the opportunity cost of capital (i.e., a normal rate of return) is being covered at this point. If $MR = MC$ at the point of minimum AVC, losses are being incurred. This point is the short-run shutdown point. If price falls below this level, the firm would shut down immediately because revenues from any level of output would not be sufficient to cover variable costs. In this case, the firm's losses would be greater than the fixed costs the firm would lose by shutting down. Above this point (but below ATC), however, the firm remains in business in the short run although it is incurring losses. However, the firm is minimizing losses so that they are less than those incurred by an immediate shutdown.

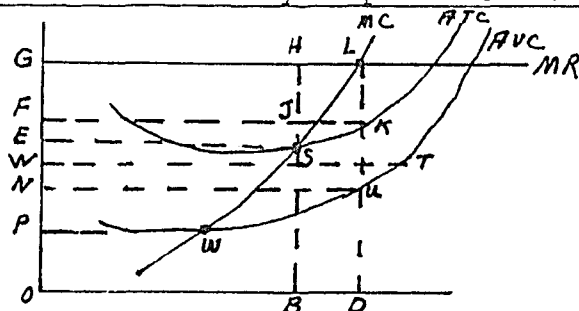
Using this cost data, we can pinpoint the competitive firm's short-run supply curve: it is the portion of the MC curve that lies above the AVC curve. At every price above this point, the quantity the firm will produce is traced by the marginal cost curve. The supply curve for the entire industry is formed by summing the supply curves for each individual firm in the industry.

It is the intersection of the industry supply curve with the market demand curve that determines market price. If this price is low enough that firms in the industry are suffering losses, then in the long run some firms will exit the industry. This reduces industry supply and thus raises the market equilibrium price. If the market price is high enough that firms in the industry are making a profit, more firms will enter the industry, increasing supply and thus lowering the market price. A perfectly competitive industry is in long-run equilibrium when price is equal to minimum long-run average costs for all firms in the industry. At this point, no firms are eager to enter or leave the industry.

Note that the shape of the long-run industry supply curve is dependent upon the economies of scale. The long-run industry supply curve is found by observing the pattern of equilibrium prices over time as demand increases. In the short run, as demand increases and price rises, existing firms will enjoy economic profits. This causes new firms to enter the industry and an expansion of output, which in turn shifts the short-run industry supply curve outward. A new equilibrium price will result, which will constitute a point on the long-run industry supply curve. This new equilibrium point will be at a higher level of output, but price may be higher (upward-sloping LR supply), the same (horizontal LR supply), or lower

(downward-sloping LR supply). An industry where the LR supply curve is upward-sloping (increasing cost industry) faces diseconomies of scale. If the LR supply curve is downward-sloping (decreasing cost industry), then the industry has economies of scale.

Exhibit 1 Perfectly Competitive Firm Short Run



Multiple-Choice Questions

- In Exhibit 1, the firm's total revenue from the sale of its most profitable level of output is:
 - OGLD
 - OGHB
 - BH
 - DL
 - Impossible to determine
- In Exhibit 1, the firm's total economic profit at its most profitable level of output is:
 - OGHB
 - EFJS
 - EHGS
 - JHLK
 - FGLK
- In Exhibit 1, when the firm is in short-run equilibrium, its total fixed cost is:
 - NFKU
 - OFKD
 - ONUD
 - UK
 - A negative amount
- In Exhibit 1, the lowest price which will yield only normal profits is the distance:
 - OG
 - OF
 - OE
 - ON
 - OP
- In Exhibit 1, the firm will produce in the short run if the price is at least equal to the distance:
 - OG
 - OF
 - OE
 - ON
 - OP

- (a) OG
 - (b) OF
 - (c) OE
 - (d) ON
 - (e) OP
6. In Exhibit 1, the firm will shut down in the short run if the price falls below:
- (a) OG
 - (b) OF
 - (c) OE
 - (d) ON
 - (e) OP
7. In Exhibit 1, the firm's supply curve is:
- (a) The entire MC curve
 - (b) The rising part of MC beginning at the shutdown point
 - (c) The rising part of MC beginning at the point where the firm starts earning normal profit
 - (d) The MC curve below the shutdown point
 - (e) Impossible to determine
8. The condition which assures that the additional cost of the resources used by a firm to produce the last unit of a product is just covered by the sacrifice made by consumers to acquire the product is:
- (a) $MC = P$
 - (b) $MC = \text{Zero}$
 - (c) $MC = ATR$
 - (d) $MR = LRAC$
 - (e) $MR = ATC$
9. When a firm's MC curve is rising, the condition which assures that the firm is either maximizing profits or minimizing losses is:
- (a) $MC = ATC$
 - (b) $MC = AVC$
 - (c) $MC = ATC$
 - (d) $MR = LRAC$
 - (e) $MR = AR$
10. The condition which assures that a firm is faced with a perfectly elastic demand curve is:
- (a) $MC = MR$
 - (b) $MR = AR$
 - (c) $AR = MC$
 - (d) $ATC = MC$
 - (e) $ATC = AVC$
11. The condition which always assures that a firm is earning only normal profits is:

- (a) $MC = P$
 - (b) $MC = MR$
 - (c) $ATC = MC$
 - (d) $ATC = AR$
 - (e) $MC = AR$
12. A condition which tells you that a firm is combining the variable resources available to it with its given plant so as to produce at the least cost per unit is:
- (a) $MC = ATC$
 - (b) $MC = AR$
 - (c) $MC = P$
 - (d) $MR = AR$
 - (e) $MR = P$
13. A perfectly competitive firm maximizes profit at the output where:
- (a) Marginal cost equals price
 - (b) Marginal cost equals marginal revenue
 - (c) Marginal cost equals average revenue
 - (d) Marginal cost intersects the firm's demand curve
 - (e) All of these
14. If a firm in perfect competition sells 10 units of output at a market price of \$5 per unit, its marginal revenue per unit is:
- (a) \$5
 - (b) More than \$5 but less than \$50
 - (c) \$50
 - (d) \$250
 - (e) Infinite
15. For a firm in perfect competition, it is always true that:
- (a) Average total cost equals marginal cost
 - (b) Average total cost equals average revenue
 - (c) Demand equals average total cost
 - (d) Average revenue equals marginal revenue equals price
 - (e) Average revenue equals marginal revenue equals average total cost
16. A characteristic of perfect competition is:
- (a) Many sellers and few buyers
 - (b) Many buyers and few sellers
 - (c) Heterogeneous products
 - (d) Incomplete resource mobility and market knowledge

17. If an industry's demand for the resources it employs is an insignificant proportion of the total demand, the industry's long-run supply curve will tend to be:
 - (a) Vertical
 - (b) Horizontal
 - (c) Upward-sloping
 - (d) Downward-sloping
 - (e) Indeterminate
18. If an industry's demand for the resources it employs is a significant proportion of the total demand, the industry's long-run supply curve will tend to be:
 - (a) Horizontal
 - (b) Vertical
 - (c) Upward-sloping
 - (d) Downward-sloping
 - (e) Indeterminate
19. If an industry's long-run supply curve is downward-sloping, the industry is characterized by:
 - (a) Low overhead cost
 - (b) Constant cost
 - (c) Decreasing cost
 - (d) Increasing cost
 - (e) Negative cost
20. One of the characteristics of a perfectly competitive price system is that:
 - (a) It assures an equal distribution of income
 - (b) It reflects all social costs of production
 - (c) It prevents the attainment of full employment
 - (d) It encourages production of a wide variety of products
 - (e) None of these
21. A firm can realize an economic or pure profit only when:
 - (a) Marginal cost equals marginal revenue
 - (b) Marginal cost equals price
 - (c) Average total cost is less than average revenue
 - (d) Net revenue is rising
 - (e) Net revenue is at a maximum
22. At the output where a firm's average total cost equals its average revenue, the firm is:
 - (a) Earning a normal profit
 - (b) Incurring an economic loss
 - (c) Earning an economic or pure profit
 - (d) Earning more than a break-even return
 - (e) Earning less than a break-even return

8. Monopoly Model

Learning Objectives

After studying chapter 25 of your text book and completing this section of your study guide, you should be able to:

1. Define the term, "monopoly."
2. Understand why a monopolistic producer is able to charge a price higher than marginal revenue.
3. Explain how a monopolist chooses the profit-maximizing level of output.

Chapter Overview

Sellers are said to have monopoly power if they face a downward-sloped demand curve; but a seller has a monopoly only if it is the sole producer of a product. A monopoly producer is the industry.

For the monopolist, the rule that defines the profit-maximizing output is simple: $MR = MC$. Greater profit can always be achieved by expanding output if the additional revenue generated by selling one more unit of output exceeds the additional cost incurred by producing it. The rule is the same for price takers (that is, companies in pure competition) and price makers (that is, companies with market power). The difference between these two kinds of firms lies not in the maximum-profit rule, but in the shape of the demand curve. In pure competition, the demand curve is horizontal and hence profit maximization requires the output at which $P = MR = MC$. For any business with market power, the demand curve is downward-sloping, and hence P is always greater than MR , while MR equals MC still defines the profit-maximizing output.

The magnitude of marginal revenue can be directly related to the three elasticity ranges on a straight-line demand curve. Where demand is elastic (above the midpoint), marginal revenue is positive. At the point of unitary elasticity (midpoint on the demand curve), marginal revenue is zero. In the inelastic region (below the midpoint), marginal revenue is negative. This gives a hint as to the profitable operating region for a monopolist: where elasticity of demand is greater than or equal to one.

By subtracting average total cost from price and multiplying the result by quantity, the monopolist's profit is found. Note that unlike the perfectly competitive firm, where economic profits are zero in the long run, no such generalization can be made about monopoly. A monopolist may make profits or suffer losses, depending on the particular long-run cost and demand situation to those with relatively more elastic demand and those with relatively less elastic demand, price discrimination can take place. Price discrimination is a situation in which the seller is able to sell the product to different consumers or groups of consumers at different prices, depending on what each buyer is willing to pay. This allows the seller to extract a larger total payment for the product as compared with the single-price case, thereby forcing monopoly profits higher than otherwise.

Multiple-Choice Questions

1. The monopolistic firm's demand curve:
 - (a) is perfectly inelastic.
 - (b) coincides with its marginal revenue curve.
 - (c) is perfectly elastic.
 - (d) is less elastic than a purely competitive firm's demand curve
2. If an imperfectly competitive firm is selling its 100th unit of output for \$35, its marginal revenue:
 - (a) will be greater than \$35.
 - (b) will be less than \$35
 - (c) will also be \$35
 - (d) may be either greater or less than \$35
3. Which of the following statements is incorrect?
 - (a) A pure monopolist's demand curve is the industry demand curve.
 - (b) A monopolistic firm produces a product for which there are no close substitutes.
 - (c) The monopolist's marginal revenue is less than price for any given output greater than 1.
 - (d) A monopolist's preeminent market position ensures economic profits.
4. A pure monopolist's demand curve:
 - (a) lies below its marginal revenue curve.
 - (b) lies above its marginal revenue curve.
 - (c) coincides with its marginal revenue curve.
 - (d) is kinked at the profit-maximizing price.
 - (e) is perfectly inelastic.
5. For an imperfectly competitive firm:
 - (a) the marginal revenue curve will lie below the demand curve because any reduction in price applies only to the extra units sold.
 - (b) the marginal revenue curve will lie below the demand curve because any reduction in price applies to all units sold
 - (c) the marginal revenue curve will lie above the demand curve because any reduction in price applies to all units sold.
 - (d) total revenue is a straight, upsloping line because a firm's sales are independent of product price.
6. For an imperfectly competitive firm:

- (a) marginal revenue will become zero at that output where total revenue is at a maximum.
- (b) the demand curve will intersect the horizontal axis at the point where total revenue is at a maximum.
- (c) the demand and marginal revenue curves will coincide.
- (d) the marginal revenue curve will lie above the demand curve.

Answer the next two questions on the basis of the demand schedule shown below:

<u>Price</u>	<u>Quantity demanded</u>
\$7	1
6	2
5	3
4	4
3	5

7. The marginal revenue obtained from selling the third unit of output:
 - (a) is \$5
 - (b) is \$3
 - (c) is \$1
 - (d) is \$6
 - (e) cannot be determined from the information given
8. At the point where 3 units are being sold, the elasticity of demand:
 - (a) is greater than unity.
 - (b) is less than unity.
 - (c) suggests that the market is purely competitive.
 - (d) cannot be estimated.
9. A monopolistic firm has a sales schedule such that it can sell 10 prefabricated gas stations per week at \$10,000 each, but if it restricts its output to 9 per week, it can sell these at \$11,000 each. The marginal revenue of the tenth unit of sales per week is:
 - (a) \$1,000
 - (b) \$10,000
 - (c) \$9,000
 - (d) -\$1,000

Answer the next three questions on the basis of the following demand and cost data for a pure monopolist:

<u>DEMAND DATA</u>		<u>COST DATA</u>	
<u>Price</u>	<u>Quantity demanded</u>	<u>Output</u>	<u>Total cost</u>
\$5.50	3	3	\$ 5
5.00	4	4	6
4.50	5	5	6.50
3.85	6	6	7.50
3.35	7	7	9
2.90	8	8	11
2.50	9	9	14

10. Equilibrium price for the monopolist will be:
- (a) \$4.50
 - (b) \$3.85
 - (c) \$3.35
 - (d) \$2.90
 - (e) \$5.00
11. The equilibrium level of output will be:
- (a) 5 units
 - (b) 6 units
 - (c) 7 units
 - (d) 8 units
 - (e) 4 units
12. The monopolist will realize a:
- (a) loss of \$14
 - (b) loss of \$9.50
 - (c) profit of \$16
 - (d) profit of \$7.50
 - (e) profit of \$8.50
13. Given the same unit cost data, a monopolistic producer will charge:
- (a) a lower price and produce a larger output than a competitive firm.
 - (b) a lower price and produce a smaller output than a competitive firm.
 - (c) a higher price and produce a smaller output than a competitive firm
 - (d) a higher price and produce a larger output than a competitive firm.
 - (e) the same price and produce the same output as a competitive firm
14. In the long run a pure monopolist will maximize profits by producing that output at which marginal cost is equal to:
- (a) price.
 - (b) average cost.
 - (c) average variable cost.
 - (d) marginal revenue.
 - (e) average total cost.
15. With respect to the pure monopolist's demand curve it can be said that:
- (a) price exceeds average revenue at all outputs.
 - (b) marginal revenue equals price at all outputs.

- (c) demand is perfectly inelastic.
- (d) price exceeds marginal revenue at all outputs greater than 1.
- (e) the stronger the barriers to entry, the more elastic is the monopolist's demand curve.

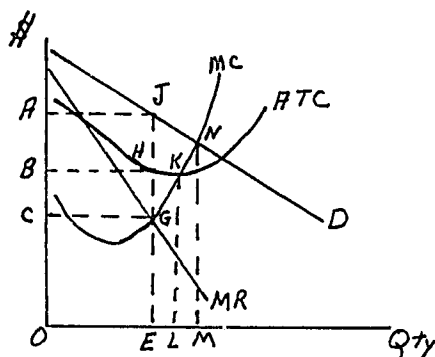
16. The monopolist's demand curve is:

- (a) perfectly elastic.
- (b) perfectly inelastic.
- (c) of unit elasticity throughout.
- (d) identical with the industry demand curve.
- (e) nonexistent

17. "Economies of being established" refers to the fact that:

- (a) existing producers frequently own patents which are inaccessible to newly created producers.
- (b) existing firms may exclude potential competitors through the ownership or control of supplies of essential materials.
- (c) new firms may find it difficult and costly to obtain money capital to finance advertising, and to establish marketing outlets
- (d) many existing monopolies are protected by government franchises.

Answer the next four questions on the basis of the following diagram:

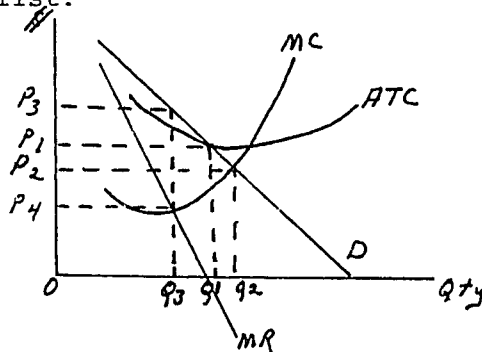


18. In order to maximize profits or minimize losses this firm should produce:

- (a) OE units and charge price OB.
- (b) OL units and charge price LK.
- (c) OM units and charge price NM.
- (d) OE units and charge price OA.
- (e) OE units and charge price OC.

19. In equilibrium total revenue will be:
- (a) OEHB.
 - (b) OEGC.
 - (c) OAJE.
 - (d) NM times OM.
20. In equilibrium total cost will be:
- (a) OEHB.
 - (b) OEGC.
 - (c) OAJE.
 - (d) NM times OM.
21. In equilibrium the firm will realize:
- (a) a loss equal to ABHJ.
 - (b) a loss of JH per unit.
 - (c) a loss of GH per unit.
 - (d) an economic profit of ACGJ.
 - (e) an economic profit of ABHJ.
22. Which of the following statements is correct?
- (a) Purely monopolistic sellers break even in the long run.
 - (b) The pure monopolist maximizes profits by producing that output at which the differential between price and average cost is the greatest.
 - (c) In seeking the profit-maximizing output the pure monopolist tends to underallocate resources to its production.
 - (d) The pure monopolist will maximize profits by producing at that point on the demand curve where elasticity is unity.

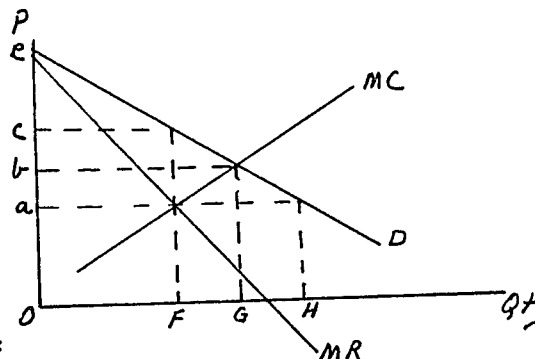
Answer the next four questions on the basis of the following diagram for a pure monopolist:



23. If the monopolist is unregulated, it will maximize profits by charging:
- (a) price OP_4 and producing output OQ_3
 - (b) price OP_1 and producing output OQ_1
 - (c) price OP_2 and producing output OQ_2
 - (d) price OP_3 and producing output OQ_3
 - (e) a price above OP_3 and selling a quantity less than OQ_3
24. Pure monopoly means:
- (a) a large number of firms producing a differentiated product
 - (b) a single firm producing a product for which there are no close substitutes.
 - (c) a standardized product being produced by many firms.
 - (d) any market wherein the demand curve to the firm is downsloping
25. In equilibrium which of the following conditions are common to both unregulated monopoly and to pure competition?
- (a) $P = MR$
 - (b) $AR = ATC$
 - (c) $MR = MC$
 - (d) $MC = AC$
 - (e) $MC = P$
26. The demand curve faced by a pure monopolist:
- (a) is more elastic than that faced by a single purely competitive firm.
 - (b) has the same elasticity as that faced by a single purely competitive firm.
 - (c) is less elastic than that faced by a single purely competitive firm.
 - (d) may be either more or less elastic than that faced by a single purely competitive firm.
27. A pure monopolist:
- (a) always realizes an economic profit.
 - (b) will realize an economic loss if MC intersects the downsloping portion of MR .
 - (c) will realize an economic profit if ATC exceeds MR at the equilibrium output.
 - (d) will realize an economic profit if price exceeds ATC at the equilibrium output
28. If a pure monopolist is producing at that output where $P = ATC$, we can conclude that:

- (a) it will be realizing an economic profit.
 - (b) it will be producing less than the profit-maximizing level of output.
 - (c) it will be realizing losses.
 - (d) its economic profits will be zero.
29. A pure monopolist's short-run equilibrium position is such that price:
- (a) always exceeds ATC.
 - (b) will equal ATC.
 - (c) may be greater or less than ATC.
 - (d) equals marginal revenue.
30. The short-run equilibrium position of a pure monopolist is characterized by:
- (a) $P = ATC$.
 - (b) $P = MC$.
 - (c) $MC = AVC$.
 - (d) $MC = ATC$.
 - (e) none of the above

Answer the next three questions on the basis of the following diagram for a pure monopolist.



31. Monopoly price will be:
- (a) 0a.
 - (b) 0b.
 - (c) 0c.
 - (d) 0e.
32. Monopoly output will be:
- (a) 0f.
 - (b) 0g.
 - (c) 0h.
 - (d) between 0f and 0g.

33. Monopoly profit:
- (a) will be ac per unit.
 - (b) will be bc per unit.
 - (c) will be ae per unit.
 - (d) cannot be determined from the information given.
34. Which of the following is characteristic of a pure monopolist's demand curve?
- (a) It is the same as the market demand curve.
 - (b) Price and marginal revenue are equal at all levels of output.
 - (c) Its elasticity is 1 at all levels of output.
 - (d) Average revenue is less than price.

9. Monopolistic Competition/Oligopoly Models

Learning Objectives

After studying chapter 26 of your text book and completing this section of your study guide, you should be able to:

1. Understand the characteristics of the monopolistic competition model.
2. Explain how monopolistic competitions determine the equilibrium price-quantity.
3. Understand the characteristics of the oligopoly market.
4. Explain how oligopoly competitions determine the equilibrium price-quantity.
5. Understand the difference between perfect competition and imperfect competition models.

Chapter Overview

If you place pure competition on one end of a continuum and monopoly on the other end, the area in between represents that of monopolistic competition and oligopoly. In monopolistic competition the firms produce a product that has a real or perceived uniqueness resulting in other firms producing less than perfect substitutes.

The three main characteristics of monopolistic competition are (1) the existence of numerous sellers operating in a competitive market, (2) products that vary in quality or design and permit the differentiation of products, and (3) the existence of advertising.

The monopolistic competition firm also produces at the point when MR equals MC . The point is determined the same as in the monopolistic model. In the short run the firm may produce at either a loss or profit. In the long run, equilibrium is reached at the point of zero economic profit or at the point when $MC = MR$ is just tangent to the ATC curve. In reality, an industry always moves toward equilibrium, but rarely if ever reaches it.

The fourth basic economic market model is oligopoly. An oligopolistic industry has a few, large firms that act interdependently with regard to price and output. The development of

oligopolies is due in part to firms merging to take advantage of economies of scales.

If the total sales of the four largest firms exceeds 50% of the total industry sales, the industry is considered to be oligopolistic.

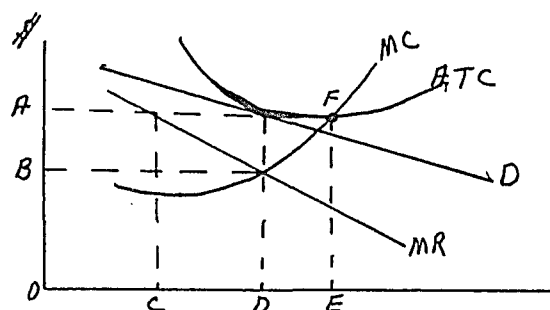
Remember, in all non-pure competitive models, the MR is always less than the output price.

Multiple Choice Questions (Monopolistic Competition)

1. Monopolistically competitive firms:
 - (a) persistently realize economic profits in both the short run and long run.
 - (b) may realize either profits or losses in the short run, but tend to realize a normal profit in the long run.
 - (c) tend to incur persistent losses in both the short run and long run.
 - (d) realize normal profits in the short run, but losses in the long run.
2. Under monopolistic competition entry to the industry is:
 - (a) blocked.
 - (b) more difficult than under pure monopoly.
 - (c) more difficult than under pure competition, but not nearly as difficult as under pure monopoly.
 - (d) completely free of barriers.
3. Monopolistic competition means:
 - (a) a few firms producing a standardized product.
 - (b) many firms producing differentiated products.
 - (c) a large number of firms producing a standardized product.
 - (d) a market situation wherein competition is based entirely on product differentiation and advertising.
4. Monopolistic competition resembles pure competition because:
 - (a) barriers to entry are either weak or nonexistent.
 - (b) both industries entail the production of differentiated products.
 - (c) in both instances firms will operate at the minimum point on their long-run average cost curves.
5. A monopolistically competitive firm has a:
 - (a) perfectly elastic demand curve.
 - (b) perfectly inelastic demand curve.
 - (c) highly inelastic demand curve.
 - (d) highly elastic demand curve.

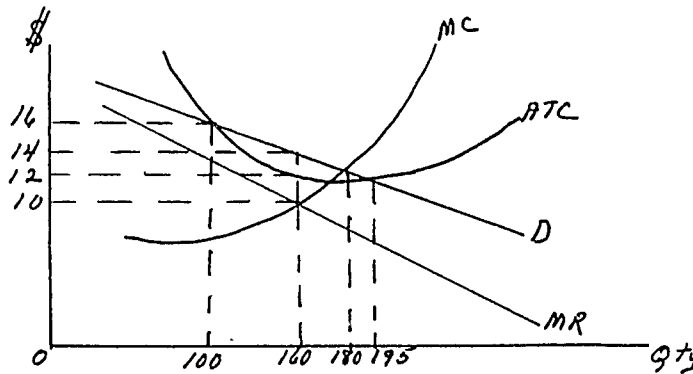
6. The monopolistically competitive seller's demand curve will tend to become more elastic:
 - (a) the smaller the number of competitors.
 - (b) the larger the number of competitors.
 - (c) the greater the degree of product differentiation.
 - (d) the more significant the barriers to entering the industry.
7. Which of the following is not a basic characteristic of monopolistic competition?
 - (a) a relatively large number of sellers
 - (b) product differentiation
 - (c) unlikelihood of collusion
 - (d) recognized mutual interdependence
 - (e) the use of trademarks and brand names
8. The "wastes of monopolistic competition" refers to the tendency for:
 - (a) monopolistically competitive sellers to engage in misleading advertising.
 - (b) monopolistically competitive industries to be overpopulated
 - (c) advertising costs to retard technological advance and product development.
 - (d) monopolistic sellers to realize diseconomies of scale.
9. Advertising expenditures in the United States are currently about:
 - (a) \$10 to \$11 billion per year.
 - (b) about \$44 billion per year.
 - (c) \$1 to \$2 billion per year.
 - (d) 10 to 12 percent of GNP per year.
10. The monopolistically competitive seller maximizes profits by producing at the point where:
 - (a) marginal revenue equals average cost.
 - (b) price equals marginal revenue.
 - (c) marginal revenue equals marginal cost.
 - (d) average costs are at a minimum.
 - (e) total revenue is at a maximum.
11. Which of the following is not characteristic of long-run equilibrium under monopolistic competition?
 - (a) price exceeds marginal cost
 - (b) price is equal to average cost
 - (c) marginal cost equals marginal revenue
 - (d) price equals minimum average total cost

Answer the next three questions on the basis of the following diagram for a monopolistically competitive firm:



12. Long-run equilibrium price will be:
 - (a) 0B.
 - (b) 0A.
 - (c) EF.
 - (d) Above 0A.
13. Long-run equilibrium output will be:
 - (a) 0C.
 - (b) 0D.
 - (c) 0E.
 - (d) greater than 0E.
14. If more firms would enter the industry and product differentiation would weaken:
 - (a) the demand curve would become less elastic.
 - (b) equilibrium output would decline and equilibrium price would fall.
 - (c) equilibrium output would decline and equilibrium price would rise.
 - (d) the demand curve would become more elastic.
 - (e) resource misallocation would become more severe.
15. In long-run equilibrium a monopolistically competitive firm's price will:
 - (a) exceed both MC and ATC.
 - (b) exceed MC, but equal ATC.
 - (c) exceed AC, but equal MC.
 - (d) be less than both MC and AC.

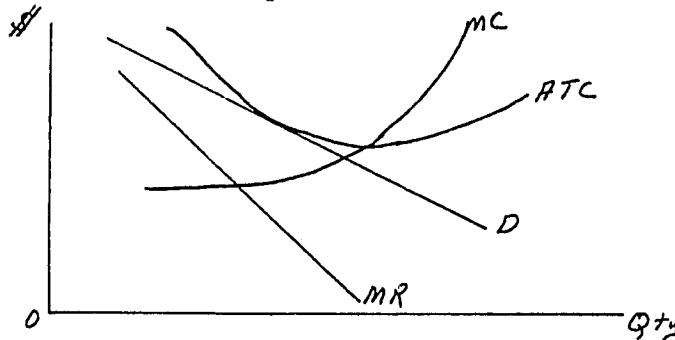
Answer the next four questions on the basis of the following diagram for a monopolistically competitive firm in short-run equilibrium. Assume the firm is part of an increasing-cost industry.



16. This firm's profit-maximizing price will be:
 - (a) \$16.
 - (b) \$14.
 - (c) \$12.
 - (d) \$10.
17. The equilibrium output for this firm will be:
 - (a) 100.
 - (b) 160.
 - (c) 180.
 - (d) 195.
18. This firm will realize an economic:
 - (a) profit of \$360.
 - (b) profit of \$600.
 - (c) profit of \$320.
 - (d) loss of \$280.
 - (e) loss of \$320.
19. In the long run firms will:
 - (a) enter this industry, causing both demand and ATC to rise.
 - (b) enter this industry, causing demand to fall and ATC to rise.
 - (c) enter this industry, causing demand to rise and ATC to fall.
 - (d) leave this industry, causing both demand and ATC to rise.

20. The possibility of a long-run equilibrium for a monopolistically competitive firm wherein economic profits are zero is based upon the assumption of:
- (a) product differentiation and development.
 - (b) the weakness of barriers to entry.
 - (c) a perfectly elastic product demand curve.
 - (d) rising marginal costs.
21. In the short run a monopolistically competitive firm's economic profits:
- (a) will always be zero.
 - (b) are always positive.
 - (c) may be positive, zero, or negative.
 - (d) will be maximized where price equals average cost.

Answer the next two questions on the basis of the following diagram:



22. In long-run equilibrium this firm will:
- (a) realize an economic profit.
 - (b) realize a loss.
 - (c) go bankrupt.
 - (d) break even.
23. In long-run equilibrium production for this firm is:
- (a) optimally efficient.
 - (b) more efficient than in a purely competitive market.
 - (c) less efficient than in a purely competitive market.
 - (d) greater than would occur under pure competition.
24. When a monopolistically competitive firm is in long-run equilibrium:
- (a) economic profits are zero and price equals marginal cost.
 - (b) normal profits are zero and price equals marginal cost.
 - (c) marginal revenue equals marginal cost and price equals average total cost.
 - (d) production takes place where ATC is minimized.

25. The larger the number of firms and the smaller the degree of product differentiation:
- (a) the more elastic is the monopolistically competitive firm's demand curve.
 - (b) the less elastic is the monopolistically competitive firm's
 - (c) the larger will be the monopolistically competitive firm's fixed costs.
 - (d) the greater the divergence between the demand and the marginal revenue curves of the monopolistically competitive firm.
26. Which of the following is not characteristic of monopolistic competition?
- (a) easy entry to the industry
 - (b) production at minimum ATC in the long run
 - (c) product differentiation
 - (d) relatively large numbers of sellers
27. In the long run new firms will enter a monopolistically competitive industry:
- (a) until all firms are incurring losses.
 - (b) until economic profits are zero.
 - (c) until minimum average total cost is achieved.
 - (d) even though losses are incurred in the short run.
 - (e) provided economies of scale are being realized.
28. If some firms leave a monopolistically competitive industry, the demand curves of the remaining firms will:
- (a) shift to the right.
 - (b) become more elastic.
 - (c) shift to the left.
 - (d) be unaffected.

Multiple Choice Questions (Oligopoly)

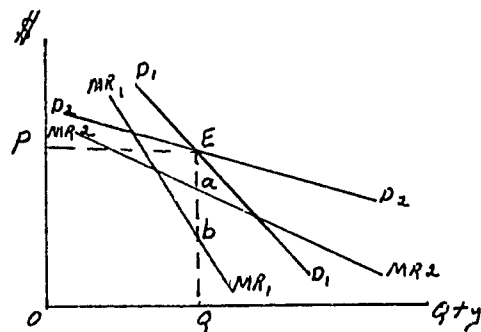
1. The kinked demand curve of an oligopolist is based on the assumption that:
- (a) other firms will determine their pricing and output policies in collusion with the given firm.
 - (b) there is no product differentiation.
 - (c) competitors will ignore a price cut but follow a price increase.
 - (d) competitors will match both price cuts and price increases.
 - (e) competitors will follow a price cut but ignore a price increase

2. Under which of the following market structures will equilibrium price be equal to marginal cost?
 - (a) pure competition
 - (b) pure monopoly
 - (c) monopolistic competition
 - (d) oligopoly
3. Which of the following is a unique feature of oligopoly?
 - (a) nonprice competition
 - (b) product differentiation
 - (c) advertising expenditures
 - (d) mutual interdependence
4. Under which of the following market structures are prices likely to be least flexible?
 - (a) pure competition
 - (b) pure monopoly
 - (c) monopolistic competition
 - (d) oligopoly
5. Suppose the only three existing manufacturers of widgets signed a written contract by which each agreed to charge the same price for products and to distribute their products only in the geographic area assigned them in the contract. This best describes:
 - (a) price leadership.
 - (b) a gentlemen's agreement.
 - (c) a cartel.
 - (d) multiproduct pricing.
 - (e) cost-plus pricing.
6. The "kinked demand curve" describes a situation in which an oligopolist will be:
 - (a) anxious to lower price but not to increase price.
 - (b) anxious to increase price but not to lower price.
 - (c) anxious to either increase or lower price.
 - (d) interested in maintaining the going price unless there is a drastic change in costs.
7. "Mutual interdependence" means that each firm:
 - (a) produces a product similar but not identical to the products of its rivals.
 - (b) produces a product identical to the products produced by its rivals.
 - (c) must consider the reactions of its rivals when it determines its price policy.
 - (d) faces a perfectly elastic demand for its product.

8. Which of the following statements is correct?
- (a) Active and frequent price competition between firms is a basic characteristic of oligopoly.
 - (b) Most of the important technological advances of the last half century are attributable to the research efforts of large oligopolistic corporations.
 - (c) The practice of price leadership is almost always based upon a formal written agreement.
 - (d) A cartel is usually a written agreement among oligopolists which sets product price and determines each firm's market share.
9. The social implication of countervailing power is that:
- (a) monopolies on both sides of a given market may engage in collusive activity to exploit consumers
 - (b) price, output, and resource allocation might be more socially desirable with monopoly on both sides of a market rather than only on one.
 - (c) the Federal government should focus its attention upon positions of countervailing power.
 - (d) it causes monopolistically competitive industries to evolve in the direction of oligopoly or pure monopoly.
10. If the several oligopolistic firms which comprise an industry behave collusively, the resulting price and output will most likely resemble that of:
- (a) pure competition.
 - (b) monopolistic competition.
 - (c) pure monopoly.
 - (d) bilateral monopoly.
11. Which of the following is an illustration of differentiated oligopoly?
- (a) retail stores in large cities
 - (b) the typewriter industry
 - (c) the steel industry
 - (d) bilateral monopoly.
12. Which of the following industries is an illustration of homogeneous oligopoly?
- (a) soaps and detergents
 - (b) typewriters
 - (c) aluminum
 - (d) cigarettes
 - (e) household laundry equipment

13. In an oligopolistic market:
- (a) only a few dominant firms are present.
 - (b) products may be standardized or differentiated.
 - (c) each firm considers how rivals might react to its price policies.
 - (d) all of the above are true.
14. If an oligopolist is faced with a marginal revenue curve
- (a) demand is relatively inelastic.
 - (b) it is selling a differentiated product.
 - (c) it is selling a standardized product.
 - (d) its demand curve is kinked.
 - (e) it is colluding with its rivals to maximize joint profits.
15. Monopolistic competition and oligopoly are alike in that:
- (a) nonprice competition is common to both.
 - (b) strong mutual interdependence exists among firms in both market models.
 - (c) the kinked-demand analysis is applicable in both instances.
 - (d) the number of firms is approximately the same in both cases.
16. The kinked demand curve model of oligopoly:
- (a) assumes a firm's rivals will ignore any price change it may initiate.
 - (b) assumes a firm's rivals will match any price change it may initiate.
 - (c) embodies the possibility that changes in unit costs will have no effect upon equilibrium price and output.
 - (d) assumes a firm's rivals will ignore a price cut but match a price increase.

Answer the next four questions on the basis of the following diagram for a noncollusive oligopolist. We assume that the firm is initially in equilibrium at point E where the equilibrium price and quantity are P and Q.



17. Which of the following statements is correct?
- (a) Demand curve D_2 is based upon the assumption that rivals will match any price change initiated by this oligopolist.
 - (b) Demand curves D_1 and D_2 both assume that rivals will match any price change initiated by this oligopolist.
 - (c) Demand curves D_1 and D_2 both assume that rivals will ignore any price change initiated by this oligopolist.
 - (d) Demand curve D_1 is based upon the assumption that rivals will match any price change initiated by this oligopolist.
18. If it is assumed that the firm's rivals will ignore any price increase but match any price reduction, then the firm's demand curve will be:
- (a) D_2ED_2
 - (b) D_1ED_1
 - (c) D_2ED_1
 - (d) D_1ED_2
 - (e) indeterminate
19. Given the assumption of the previous question, the firm's marginal revenue curve will be:
- (a) MR_1bMR_1
 - (b) MR_2aMR_2
 - (c) MR_2abMR_1
 - (d) D_1ED_2
20. Given this same assumption, over what range might marginal cost rise without disturbing equilibrium price and output?
- (a) Qb
 - (b) Qa
 - (c) ab
 - (d) bE

Answer the next five questions on the basis of the following diagram:

21. This diagram portrays:
- (a) collusive oligopoly.
 - (b) pure monopoly.
 - (c) noncollusive oligopoly.
 - (d) monopolistic competition.
 - (e) pure competition.
22. Equilibrium output is:
- (a) Of.
 - (b) Og.
 - (c) Oh.
 - (d) Oj.
23. Equilibrium price is:
- (a) 0a.
 - (b) 0b.
 - (c) 0c.
 - (d) 0d.
 - (e) 0e.
24. This firm's demand and marginal revenue curves are based on the assumption that:
- (a) rivals will ignore a price increase, but match a price decrease.
 - (b) rivals will match a price increase, but ignore a price decrease.
 - (c) rivals will match both a price increase and a price decrease.
 - (d) rivals will ignore both a price increase and a price decrease.
 - (e) the firm has no immediate rivals.
25. In equilibrium the firm:
- (a) is realizing an economic profit of bd per unit.
 - (b) is realizeing a loss.
 - (c) should close down in the short run.
 - (d) is realizing an economic profit of ad per unit.

10. Labor: Perfect Competition Model

Learning Objectives

After studying chapter 28 of your text book and completing this section of your study guide, you should be able to:

1. Understand the general rule employers should follow to obtain maximum profits in hiring additional labor.
2. Find the profit-maximizing rate of employment for a perfectly competitive firm.
3. Find the profit-maximizing rate of employment for non-perfect competitive firms.
4. Explain the major determinants of the labor supply curve and its general slope.

Chapter Overview

The first assumption that is made in this chapter is that the firm buys its factors of production in a perfectly competitive market and sells its output in a perfectly competitive market. Therefore, the producer will continue to hire labor to the point that marginal benefit just equals the marginal cost.

The marginal cost associated with the additional unit of input is referred to as the marginal factor cost. The benefit received, or value of marginal produce (VMP) is calculated by multiplying the marginal physical product (MPP) by the selling price of each unit of output. The VMP curve is actually the demand curve for the variable input factor of production.

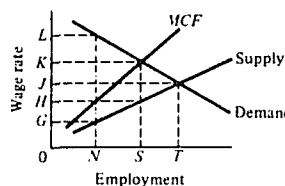
Since the marginal factor cost (MFC) is constant in this model, we can find the equilibrium quantity of the variable factor of production by locating the intersection of the VMP curve and the MFC curve. Therefore, the level of employment of the variable factor, in this case, labor, that equals the level at which VMP equals MFC is a profit-maximizing level of employment for the variable input factor.

If we modify the analysis such that the firm sells its output in a monopoly market, then the marginal revenue product (MRP) curve is the firm's input demand curve. MRP is defined as the change in a firm's total revenue that occurs as a result of hiring an additional unit of a variable factor of production. MRP differs from VMP because the price at which the additional output of the variable factor can be sold is not constant for a monopolist. Since a mono-

polist faces a downward sloping demand curve, in order to sell additional output the monopolist must lower the selling price of all units to be sold. Hence, the marginal revenue associated with selling output is not equal to the price per unit of the output but to some amount less than the price per unit. This implies that MRP will be less than VMP. Short-run profits are maximized in this situation, when the firm chooses the employment level of the variable factor such that MRP equals MFC. Notice that in this case, the variable factor receives compensation that is less than that factor's VMP.

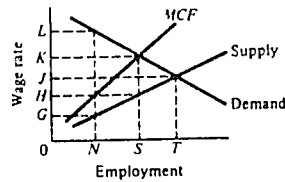
Multiple-Choice Questions

1. In a perfectly competitive labor market, the aggregate supply curve of labor is:
 - (a) Vertical
 - (b) Horizontal
 - (c) Upward-sloping
 - (d) Downward-sloping
 - (e) Nonexistent
2. In a perfectly competitive labor market, the equilibrium-wage level is determined by:
 - (a) Supply and demand
 - (b) Large firms
 - (c) Large unions
 - (d) Both large firms and large unions
 - (e) The interaction of all firms and all unions
3. In a perfectly competitive labor market, the equilibrium quantity of labor is determined by:
 - (a) Collective bargaining between unions and management
 - (b) Large unions
 - (c) All unions acting together
 - (d) The interaction of large unions and large firms
 - (e) Supply and demand
4. In a perfectly competitive labor market and output market, the supply curve of labor to each firm is:
 - (a) Perfectly inelastic
 - (b) Relatively inelastic
 - (c) Unit elastic
 - (d) Relatively elastic
 - (e) Perfectly elastic
5. In a perfectly competitive labor market and output market, each firm can hire:
 - (a) Only a fixed amount of labor at the going wage
 - (b) All the labor it wants, but only by outbidding its competitors
 - (c) Larger quantities of labor at rising wages per worker
 - (d) Larger quantities of labor at decreasing wages per worker
 - (e) Larger quantities of labor at going market wages per worker
6. If this were a perfectly competitive market, the equilibrium-wage rate would be:
 - (a) OH
 - (b) OJ
 - (c) OK
 - (d) OL
 - (e) impossible to determine



7. If this were a perfectly competitive market, the equilibrium-employment level would be:

- (a) Between ON and OT
- (b) ON
- (c) OS
- (d) OT
- (e) impossible to determine



8. The supply curve of a factor for a firm that is in perfect competition in the input and output markets is:

- (a) Perfectly elastic.
- (b) Perfectly inelastic.
- (c) Relatively elastic.
- (d) Relatively inelastic.
- (e) Unit elastic.

9. The demand curve for a factor of a firm that is a perfect competitor in both the input and output markets will normally be:

- (a) Horizontal.
- (b) Vertical.
- (c) Upward-sloping.
- (d) Downward-sloping.
- (e) U-shaped.

10. If a firm is hiring a variable input at a point where MFC is less than MRP:

- (a) It should hire more of the input in order to maximize profit.
- (b) It should hire less of the input in order to maximize profit.
- (c) It is hiring the right amount of the input in order to maximize profit.
- (d) The input is being paid what it is worth to the firm.
- (e) There is not enough information to tell.

11. The elasticity of demand for a factor will be greater:

- (a) The higher the price of final product.
- (b) The lower the elasticity of demand for final product.
- (c) The larger the proportion of total production cost which is absorbed by the factor.
- (d) The fewer the number of substitutes there are for the factor.
- (e) The greater the productivity of the factor.

Circle the correct response:

11. Suppose you manage a firm that sells its output in a competitive market. If you wish to maximize profits, you will hire workers:
 - a. as long as the value of each new worker's marginal product is positive
 - b. until diminishing returns set in
 - c. as long as the value of each new worker's marginal product is greater than or equal to the going wage rate
 - d. as long as total revenues exceed total costs

13. Now suppose you manage a firm that is a monopoly producer. If you wish to maximize profits, you will hire workers:
 - a. as long as total revenues exceed total costs
 - b. until diminishing returns set in
 - c. as long as the value of each new worker's marginal product is greater than or equal to the going wage rate
 - d. as long as the marginal revenue product of each new worker hired is greater than or equal to the wage that must be paid that worker

14. Consider a particular industry that hires a relatively small number of seismologists and a relatively large number of unskilled field hands. Which of these two inputs is most likely to have the more elastic demand and why?
 - a. Other things equal, the demand for seismologists will be more elastic, since only a few are hired.
 - b. Other things equal, the demand for seismologists will be more elastic, since there are few substitutes for this type of input
 - c. Other things equal, the demand for unskilled field hands will be more elastic, since they are easier to hire in the long run
 - d. Others things equal, the demand for unskilled field hands will be more elastic, since there are an abundance of potential substitutes.

15. You would expect the demand for labor curve to shift in all but one of the following situations. Pick the exception.
 - a. The demand for the final product changes.
 - b. The price of a closely related product in the output market changes.
 - c. The price of labor changes.
 - d. Some new machinery is bought that raises the marginal physical product of labor.

16. For a firm in an imperfectly competitive output market, the MRP curve is the firm's demand for labor curve because,
- under the assumption of profit maximization, the MRP curve shows the profit-maximizing quantity of labor for each alternative wage
 - the MRP curve shows the cost of labor services for all levels of output
 - the MRP curve measures the productivity of labor
 - the MRP curve is not necessarily the demand-for-labor curve under the profit-maximization assumption
17. If you were asked to explain how to determine the optimal mix of inputs for a firm that uses several, you could best answer by saying that,
- a firm should choose the mix of inputs such that equal values of all inputs are used
 - a firm should choose the mix of inputs such that the most money is spent on the most productive input
 - a firm should choose the mix of inputs such that the MPP per dollar spent on each input is equal
 - a firm should choose the mix of inputs that generates the greatest total revenues
18. Suppose a firm is currently employing a quantity of a variable input such that the MFC is less than the MRP for this quantity of the input. If this firm desires to maximize profits, it should
- reduce its employment of this particular factor
 - continue to use its present quantity of the factor, since it is currently doing as well as could be expected
 - increase in its employment of this particular factor
 - We do not have enough information to make a reliable recommendation.
19. A study has shown that a particular firm using only labor and capital is currently minimizing its costs of producing 5000 units of output per week. The output of the firm sells for \$1.50 per unit. Labor costs \$4 per unit per week and has a marginal physical product of 8 units of output per week. Capital has a marginal physical product of 32 units of output per week. From this information, we can determine that capital must cost:
- \$4 per unit per week
 - \$8 per unit per week
 - \$16 per unit per week
 - \$32 per unit per week

20. Suppose the wage rate for skilled workers in a particular industry is three times the wage rate for unskilled workers in the same industry. Then a profit-maximizing, cost-minimizing firm would adjust the quantity of each type of labor until,
- the marginal physical product of the unskilled labor was $1/3$ that of the skilled labor
 - three times as much unskilled labor was used
 - $1/3$ as much unskilled labor was used
 - the marginal physical product of both types of labor reached equality
21. Consider the market for each of the following inputs. Which is likely to have the most elastic demand?
- economics professors
 - lawyers
 - x-ray technicians
 - street-corner flower salespersons
22. According to the application on sex-related discrimination in the labor market, V. Fuchs found that
- the data support the hypothesis of male employer discrimination
 - considering the possibility of customer discrimination added nothing to the overall explanation of male-female wage differentials
 - one important determinant in male-female wage differentials was age and marital status
 - role differentials between males and females do not account for any of the male-female wage differential

Problems

1. In the table below you are given information about a firm operating in a competitive market. Consider all factors of production fixed at the moment, with the exception of labor services. The other factors of production cost the firm \$50 per day, which may be thought of as a fixed cost. Assume the firm is a profit maximizer.

Labor input (workers per day)	Total physical product (units per day)	Marginal physical product (units per worker)	Value of marginal product (\$ per worker)
0	0	_____	_____
1	22	_____	_____
2	40	_____	_____
3	56	_____	_____
4	70	_____	_____
5	82	_____	_____
6	92	_____	_____
7	100	_____	_____
8	106	_____	_____

- a. Assume that the firm sells its output at \$3 per unit. Complete the last two columns in the table above.
- b. If the going market wage is \$36 per day, the firm will hire _____ workers per day and produce _____ units of output.
- c. Given your answer to part (b), the firm will have total revenues of _____ per day and total costs of _____ per day.
- d. The above will result in a (profit/loss) _____ of _____ per day.

11. Labor: Monopoly Model

Learning Objectives

After studying chapter 29 of your text book and completing this section of your study guide, you should be able to:

1. Identify the major types of unions.
2. Understand some of the goals and objectives of unions.
3. Define the term, "monopsonist."
4. Understand how a profit-maximizing monopsonist determines the number of workers he should hire.
5. Understand the meaning of the term bilateral monopoly and how employment decisions differ under this type of labor market.

Chapter Overview

The supply of labor can be affected by the existence of labor unions. The first major labor organization, formed in 1869 for the purpose of collective bargaining in the United States, was the Knights of Labor. Later, the American Federation of Labor (AFL) was created by a dissatisfied group of craft unions. But full governmental approval of organized labor did not come until the Great Depression of the 1930s, when the National Labor Relations Act was passed. This act guaranteed workers the right to start or join labor unions and to engage in collective bargaining.

In 1938 the Congress of Industrial Organization (CIO) was formed in order to move away from the narrow craft structure of the AFL. But the increased union activity of the next decade drove many people to consider restricting some labor practices, and in 1947 the Taft-Hartley Act was passed. It prohibited the closed shop, allowed states to pass right-to-work laws, and in general outlawed so-called unfair labor union practices.

The AFL and CIO merged in 1955 in an attempt to maintain the rapid rate of growth of organized labor. This has not occurred, however, and disagreements continue as to whether the AFL-CIO should be primarily trade- or industry- organized. The consolidation of the AFL and CIO was followed by the passage of the Landrum-Griffin Act of 1959. This act regulates the internal operations of labor unions and holds union officials personally accountable

for union property and funds. The area where unionization has grown the most in recent decades has been the public sector; private sector unionization rates have remained basically constant.

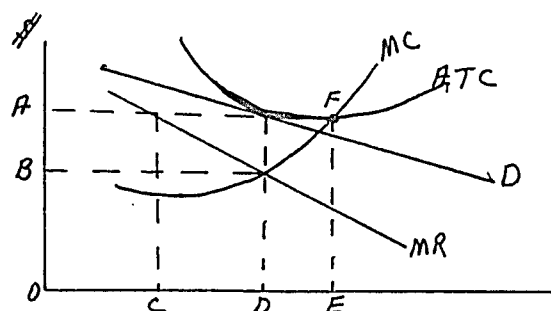
As a general strategy, labor unions try to raise and maintain the wages of their members above the market clearing price. This higher-than-equilibrium wage increases the quantity supplied of labor and decreases the quantity demanded of labor. As a result, unions must find some way to ration the existing number of jobs. There are several models of union activity, differentiated by the presumed goal of the unions. Possible alternative goals are (1) the employment of all union members, (2) the maximization of total wages for all employed workers, and (3) the maximization of wages of a subset of employed workers. Clearly, labor unions do not fit the monopoly model of profit maximizers and thus cannot be analyzed as such.

Objective analysis cannot determine whether real wages of all workers have increased because of the existence of labor unions. Although labor's share of national income has stayed constant since World War II, it is possible that this share could have fallen without the existence of labor unions pushing to maintain it.

Turning to the demand side of the market for labor, we can examine the impact of a labor monopoly on the wage and quantity of labor employed. As the sole buyer, the monopsonist faces a positively sloped labor supply curve. The marginal factor cost (MFC) curve lies above the supply curve, because the marginal factor cost is greater than the wage rate. This is true because in order to attract additional workers, the firm must offer a higher market wage, which increases the cost of employing all workers, not just the marginal worker. Since higher wages for all workers are necessary to attract additional workers, the MFC is greater than the wage at all levels of employment. The monopsonist buys labor up to the point at which $MFC = VMP$. Graphically, you locate the intersection of MFC and VMP and then move down vertically to the supply-of-labor curve to find the appropriate wage rate. Using the monopsony model, an increase in the minimum wage may increase the number of workers employed. This is true because the imposition of a minimum wage will cause the firm to view the MFC as being constant (horizontal) at the minimum wage for all quantities of labor up to the point on the old labor supply curve corresponding to the minimum wage. Thus, as the firm employs the profit-maximizing decision rule, there is likely to be an increase in the employment of labor, depending on the exact shapes and positions of the relevant demand and supply curves. When a firm is both a monopolist and a monopsonist, two kinds of exploitation can occur. Monopolistic exploitation is the positive difference between the VMP and the MRP. Monopsonistic exploitation is the positive difference between the MRP and the wage rate. Total exploitation is the sum of the above two measures of exploitation.

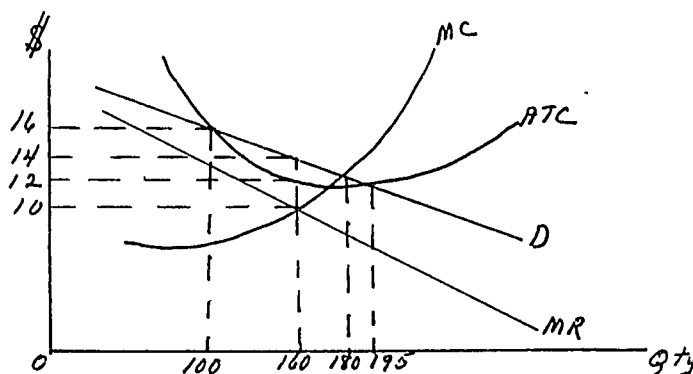
6. The monopolistically competitive seller's demand curve will tend to become more elastic:
 - (a) the smaller the number of competitors.
 - (b) the larger the number of competitors.
 - (c) the greater the degree of product differentiation.
 - (d) the more significant the barriers to entering the industry.
7. Which of the following is not a basic characteristic of monopolistic competition?
 - (a) a relatively large number of sellers
 - (b) product differentiation
 - (c) unlikelihood of collusion
 - (d) recognized mutual interdependence
 - (e) the use of trademarks and brand names
8. The "wastes of monopolistic competition" refers to the tendency for:
 - (a) monopolistically competitive sellers to engage in misleading advertising.
 - (b) monopolistically competitive industries to be overpopulated
 - (c) advertising costs to retard technological advance and product development.
 - (d) monopolistic sellers to realize diseconomies of scale.
9. Advertising expenditures in the United States are currently about:
 - (a) \$10 to \$11 billion per year.
 - (b) about \$44 billion per year.
 - (c) \$1 to \$2 billion per year.
 - (d) 10 to 12 percent of GNP per year.
10. The monopolistically competitive seller maximizes profits by producing at the point where:
 - (a) marginal revenue equals average cost.
 - (b) price equals marginal revenue.
 - (c) marginal revenue equals marginal cost.
 - (d) average costs are at a minimum.
 - (e) total revenue is at a maximum.
11. Which of the following is not characteristic of long-run equilibrium under monopolistic competition?
 - (a) price exceeds marginal cost
 - (b) price is equal to average cost
 - (c) marginal cost equals marginal revenue
 - (d) price equals minimum average total cost

Answer the next three questions on the basis of the following diagram for a monopolistically competitive firm:



12. Long-run equilibrium price will be:
 - (a) OB.
 - (b) OA.
 - (c) EF.
 - (d) Above OA.
13. Long-run equilibrium output will be:
 - (a) OC.
 - (b) OD.
 - (c) OE.
 - (d) greater than OE.
14. If more firms would enter the industry and product differentiation would weaken:
 - (a) the demand curve would become less elastic.
 - (b) equilibrium output would decline and equilibrium price would fall.
 - (c) equilibrium output would decline and equilibrium price would rise.
 - (d) the demand curve would become more elastic.
 - (e) resource misallocation would become more severe.
15. In long-run equilibrium a monopolistically competitive firm's price will:
 - (a) exceed both MC and ATC.
 - (b) exceed MC, but equal ATC.
 - (c) exceed AC, but equal MC.
 - (d) be less than both MC and AC.

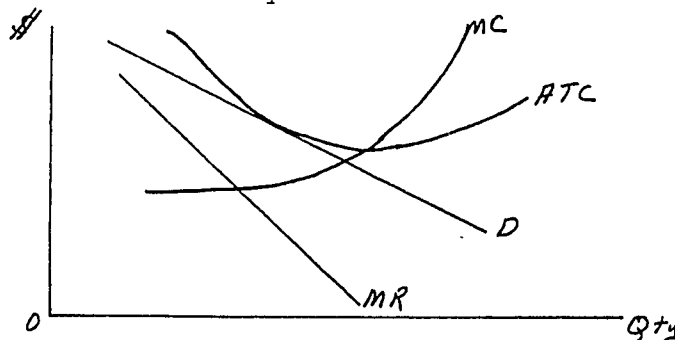
Answer the next four questions on the basis of the following diagram for a monopolistically competitive firm in short-run equilibrium. Assume the firm is part of an increasing-cost industry.



16. This firm's profit-maximizing price will be:
 - (a) \$16.
 - (b) \$14.
 - (c) \$12.
 - (d) \$10.
17. The equilibrium output for this firm will be:
 - (a) 100.
 - (b) 160.
 - (c) 180.
 - (d) 195.
18. This firm will realize an economic:
 - (a) profit of \$360.
 - (b) profit of \$600.
 - (c) profit of \$320.
 - (d) loss of \$280.
 - (e) loss of \$320.
19. In the long run firms will:
 - (a) enter this industry, causing both demand and ATC to rise.
 - (b) enter this industry, causing demand to fall and ATC to rise.
 - (c) enter this industry, causing demand to rise and ATC to fall.
 - (d) leave this industry, causing both demand and ATC to rise.

20. The possibility of a long-run equilibrium for a monopolistically competitive firm wherein economic profits are zero is based upon the assumption of:
- (a) product differentiation and development.
 - (b) the weakness of barriers to entry.
 - (c) a perfectly elastic product demand curve.
 - (d) rising marginal costs.
21. In the short run a monopolistically competitive firm's economic profits:
- (a) will always be zero.
 - (b) are always positive.
 - (c) may be positive, zero, or negative.
 - (d) will be maximized where price equals average cost.

Answer the next two questions on the basis of the following diagram:



22. In long-run equilibrium this firm will:
- (a) realize an economic profit.
 - (b) realize a loss.
 - (c) go bankrupt.
 - (d) break even.
23. In long-run equilibrium production for this firm is:
- (a) optimally efficient.
 - (b) more efficient than in a purely competitive market.
 - (c) less efficient than in a purely competitive market.
 - (d) greater than would occur under pure competition.
24. When a monopolistically competitive firm is in long-run equilibrium:
- (a) economic profits are zero and price equals marginal cost.
 - (b) normal profits are zero and price equals marginal cost.
 - (c) marginal revenue equals marginal cost and price equals average total cost.
 - (d) production takes place where ATC is minimized.

25. The larger the number of firms and the smaller the degree of product differentiation:
- (a) the more elastic is the monopolistically competitive firm's demand curve.
 - (b) the less elastic is the monopolistically competitive firm's
 - (c) the larger will be the monopolistically competitive firm's fixed costs.
 - (d) the greater the divergence between the demand and the marginal revenue curves of the monopolistically competitive firm.
26. Which of the following is not characteristic of monopolistic competition?
- (a) easy entry to the industry
 - (b) production at minimum ATC in the long run
 - (c) product differentiation
 - (d) relatively large numbers of sellers
27. In the long run new firms will enter a monopolistically competitive industry:
- (a) until all firms are incurring losses.
 - (b) until economic profits are zero.
 - (c) until minimum average total cost is achieved.
 - (d) even though losses are incurred in the short run.
 - (e) provided economies of scale are being realized.
28. If some firms leave a monopolistically competitive industry, the demand curves of the remaining firms will:
- (a) shift to the right.
 - (b) become more elastic.
 - (c) shift to the left.
 - (d) be unaffected.

Multiple Choice Questions (Oligopoly)

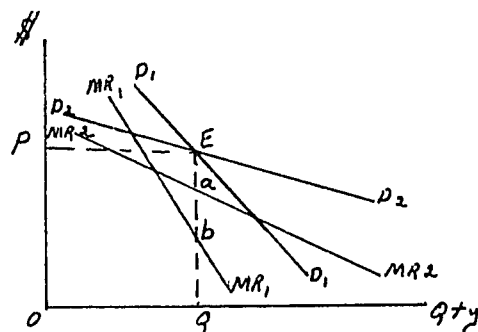
1. The kinked demand curve of an oligopolist is based on the assumption that:
- (a) other firms will determine their pricing and output policies in collusion with the given firm.
 - (b) there is no product differentiation.
 - (c) competitors will ignore a price cut but follow a price increase.
 - (d) competitors will match both price cuts and price increases.
 - (e) competitors will follow a price cut but ignore a price increase

2. Under which of the following market structures will equilibrium price be equal to marginal cost?
 - (a) pure competition
 - (b) pure monopoly
 - (c) monopolistic competition
 - (d) oligopoly
3. Which of the following is a unique feature of oligopoly?
 - (a) nonprice competition
 - (b) product differentiation
 - (c) advertising expenditures
 - (d) mutual interdependence
4. Under which of the following market structures are prices likely to be least flexible?
 - (a) pure competition
 - (b) pure monopoly
 - (c) monopolistic competition
 - (d) oligopoly
5. Suppose the only three existing manufacturers of widgets signed a written contract by which each agreed to charge the same price for products and to distribute their products only in the geographic area assigned them in the contract. This best describes:
 - (a) price leadership.
 - (b) a gentlemen's agreement.
 - (c) a cartel.
 - (d) multiproduct pricing.
 - (e) cost-plus pricing.
6. The "kinked demand curve" describes a situation in which an oligopolist will be:
 - (a) anxious to lower price but not to increase price.
 - (b) anxious to increase price but not to lower price.
 - (c) anxious to either increase or lower price.
 - (d) interested in maintaining the going price unless there is a drastic change in costs.
7. "Mutual interdependence" means that each firm:
 - (a) produces a product similar but not identical to the products of its rivals.
 - (b) produces a product identical to the products produced by its rivals.
 - (c) must consider the reactions of its rivals when it determines its price policy.
 - (d) faces a perfectly elastic demand for its product.

8. Which of the following statements is correct?
- (a) Active and frequent price competition between firms is a basic characteristic of oligopoly.
 - (b) Most of the important technological advances of the last half century are attributable to the research efforts of large oligopolistic corporations.
 - (c) The practice of price leadership is almost always based upon a formal written agreement.
 - (d) A cartel is usually a written agreement among oligopolists which sets product price and determines each firm's market share.
9. The social implication of countervailing power is that:
- (a) monopolies on both sides of a given market may engage in collusive activity to exploit consumers.
 - (b) price, output, and resource allocation might be more socially desirable with monopoly on both sides of a market rather than only on one.
 - (c) the Federal government should focus its attention upon positions of countervailing power.
 - (d) it causes monopolistically competitive industries to evolve in the direction of oligopoly or pure monopoly.
10. If the several oligopolistic firms which comprise an industry behave collusively, the resulting price and output will most likely resemble that of:
- (a) pure competition.
 - (b) monopolistic competition.
 - (c) pure monopoly.
 - (d) bilateral monopoly.
11. Which of the following is an illustration of differentiated oligopoly?
- (a) retail stores in large cities
 - (b) the typewriter industry
 - (c) the steel industry
 - (d) bilateral monopoly.
12. Which of the following industries is an illustration of homogeneous oligopoly?
- (a) soaps and detergents
 - (b) typewriters
 - (c) aluminum
 - (d) cigarettes
 - (e) household laundry equipment

13. In an oligopolistic market:
- (a) only a few dominant firms are present.
 - (b) products may be standardized or differentiated.
 - (c) each firm considers how rivals might react to its price policies.
 - (d) all of the above are true.
14. If an oligopolist is faced with a marginal revenue curve
- (a) demand is relatively inelastic.
 - (b) it is selling a differentiated product.
 - (c) it is selling a standardized product.
 - (d) its demand curve is kinked.
 - (e) it is colluding with its rivals to maximize joint profits.
15. Monopolistic competition and oligopoly are alike in that:
- (a) nonprice competition is common to both.
 - (b) strong mutual interdependence exists among firms in both market models.
 - (c) the kinked-demand analysis is applicable in both instances.
 - (d) the number of firms is approximately the same in both cases.
16. The kinked demand curve model of oligopoly:
- (a) assumes a firm's rivals will ignore any price change it may initiate.
 - (b) assumes a firm's rivals will match any price change it may initiate.
 - (c) embodies the possibility that changes in unit costs will have no effect upon equilibrium price and output.
 - (d) assumes a firm's rivals will ignore a price cut but match a price increase.

Answer the next four questions on the basis of the following diagram for a noncollusive oligopolist. We assume that the firm is initially in equilibrium at point E where the equilibrium price and quantity are P and Q.



17. Which of the following statements is correct?
- (a) Demand curve D_2 is based upon the assumption that rivals will match any price change initiated by this oligopolist.
 - (b) Demand curves D_1 and D_2 both assume that rivals will match any price change initiated by this oligopolist.
 - (c) Demand curves D_1 and D_2 both assume that rivals will ignore any price change initiated by this oligopolist.
 - (d) Demand curve D_1 is based upon the assumption that rivals will match any price change initiated by this oligopolist.
18. If it is assumed that the firm's rivals will ignore any price increase but match any price reduction, then the firm's demand curve will be:
- (a) D_2ED_2
 - (b) D_1ED_1
 - (c) D_2ED_1
 - (d) D_1ED_2
 - (e) indeterminate
19. Given the assumption of the previous question, the firm's marginal revenue curve will be:
- (a) MR_1bMR_1
 - (b) MR_2aMR_2
 - (c) MR_2abMR_1
 - (d) D_1ED_2
20. Given this same assumption, over what range might marginal cost rise without disturbing equilibrium price and output?
- (a) Qb
 - (b) Qa
 - (c) ab
 - (d) bE

Answer the next five questions on the basis of the following diagram:

21. This diagram portrays:
- (a) collusive oligopoly.
 - (b) pure monopoly.
 - (c) noncollusive oligopoly.
 - (d) monopolistic competition.
 - (e) pure competition.
22. Equilibrium output is:
- (a) Of.
 - (b) Og.
 - (c) Oh.
 - (d) Oj.
23. Equilibrium price is:
- (a) 0a.
 - (b) 0b.
 - (c) 0c.
 - (d) 0d.
 - (e) 0e.
24. This firm's demand and marginal revenue curves are based on the assumption that:
- (a) rivals will ignore a price increase, but match a price decrease.
 - (b) rivals will match a price increase, but ignore a price decrease.
 - (c) rivals will match both a price increase and a price decrease.
 - (d) rivals will ignore both a price increase and a price decrease.
 - (e) the firm has no immediate rivals.
25. In equilibrium the firm:
- (a) is realizing an economic profit of bd per unit.
 - (b) is realizing a loss.
 - (c) should close down in the short run.
 - (d) is realizing an economic profit of ad per unit.

10. Labor: Perfect Competition Model

Learning Objectives

After studying chapter 28 of your text book and completing this section of your study guide, you should be able to:

1. Understand the general rule employers should follow to obtain maximum profits in hiring additional labor.
2. Find the profit-maximizing rate of employment for a perfectly competitive firm.
3. Find the profit-maximizing rate of employment for non-perfect competitive firms.
4. Explain the major determinants of the labor supply curve and its general slope.

Chapter Overview

The first assumption that is made in this chapter is that the firm buys its factors of production in a perfectly competitive market and sells its output in a perfectly competitive market. Therefore, the producer will continue to hire labor to the point that marginal benefit just equals the marginal cost.

The marginal cost associated with the additional unit of input is referred to as the marginal factor cost. The benefit received, or value of marginal produce (VMP) is calculated by multiplying the marginal physical product (MPP) by the selling price of each unit of output. The VMP curve is actually the demand curve for the variable input factor of production.

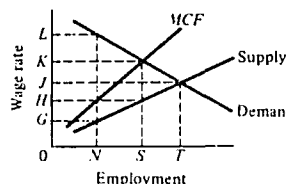
Since the marginal factor cost (MFC) is constant in this model, we can find the equilibrium quantity of the variable factor of production by locating the intersection of the VMP curve and the MFC curve. Therefore, the level of employment of the variable factor, in this case, labor, that equals the level at which VMP equals MFC is a profit-maximizing level of employment for the variable input factor.

If we modify the analysis such that the firm sells its output in a monopoly market, then the marginal revenue product (MRP) curve is the firm's input demand curve. MRP is defined as the change in a firm's total revenue that occurs as a result of hiring an additional unit of a variable factor of production. MRP differs from VMP because the price at which the additional output of the variable factor can be sold is not constant for a monopolist. Since a mono-

polist faces a downward sloping demand curve, in order to sell additional output the monopolist must lower the selling price of all units to be sold. Hence, the marginal revenue associated with selling output is not equal to the price per unit of the output but to some amount less than the price per unit. This implies that MRP will be less than VMP. Short-run profits are maximized in this situation, when the firm chooses the employment level of the variable factor such that MRP equals MFC. Notice that in this case, the variable factor receives compensation that is less than that factor's VMP.

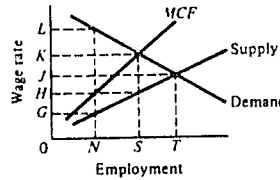
Multiple-Choice Questions

1. In a perfectly competitive labor market, the aggregate supply curve of labor is:
 - (a) Vertical
 - (b) Horizontal
 - (c) Upward-sloping
 - (d) Downward-sloping
 - (e) Nonexistent
2. In a perfectly competitive labor market, the equilibrium-wage level is determined by:
 - (a) Supply and demand
 - (b) Large firms
 - (c) Large unions
 - (d) Both large firms and large unions
 - (e) The interaction of all firms and all unions
3. In a perfectly competitive labor market, the equilibrium quantity of labor is determined by:
 - (a) Collective bargaining between unions and management
 - (b) Large unions
 - (c) All unions acting together
 - (d) The interaction of large unions and large firms
 - (e) Supply and demand
4. In a perfectly competitive labor market and output market, the supply curve of labor to each firm is:
 - (a) Perfectly inelastic
 - (b) Relatively inelastic
 - (c) Unit elastic
 - (d) Relatively elastic
 - (e) Perfectly elastic
5. In a perfectly competitive labor market and output market, each firm can hire:
 - (a) Only a fixed amount of labor at the going wage
 - (b) All the labor it wants, but only by outbidding its competitors
 - (c) Larger quantities of labor at rising wages per worker
 - (d) Larger quantities of labor at decreasing wages per worker
 - (e) Larger quantities of labor at going market wages per worker
6. If this were a perfectly competitive market, the equilibrium-wage rate would be:
 - (a) OH
 - (b) OJ
 - (c) OK
 - (d) OL
 - (e) impossible to determine



7. If this were a perfectly competitive market, the equilibrium-employment level would be:

- (a) Between ON and OT
- (b) ON
- (c) OS
- (d) OT
- (e) impossible to determine



8. The supply curve of a factor for a firm that is in perfect competition in the input and output markets is:
- (a) Perfectly elastic.
 - (b) Perfectly inelastic.
 - (c) Relatively elastic.
 - (d) Relatively inelastic.
 - (e) Unit elastic.
9. The demand curve for a factor of a firm that is a perfect competitor in both the input and output markets will normally be:
- (a) Horizontal.
 - (b) Vertical.
 - (c) Upward-sloping.
 - (d) Downward-sloping.
 - (e) U-shaped.
10. If a firm is hiring a variable input at a point where MFC is less than MRP:
- (a) It should hire more of the input in order to maximize profit.
 - (b) It should hire less of the input in order to maximize profit.
 - (c) It is hiring the right amount of the input in order to maximize profit.
 - (d) The input is being paid what it is worth to the firm.
 - (e) There is not enough information to tell.
11. The elasticity of demand for a factor will be greater:
- (a) The higher the price of final product.
 - (b) The lower the elasticity of demand for final product.
 - (c) The larger the proportion of total production cost which is absorbed by the factor.
 - (d) The fewer the number of substitutes there are for the factor.
 - (e) The greater the productivity of the factor.

Circle the correct response:

11. Suppose you manage a firm that sells its output in a competitive market. If you wish to maximize profits, you will hire workers:
 - a. as long as the value of each new worker's marginal product is positive
 - b. until diminishing returns set in
 - c. as long as the value of each new worker's marginal product is greater than or equal to the going wage rate
 - d. as long as total revenues exceed total costs
13. Now suppose you manage a firm that is a monopoly producer. If you wish to maximize profits, you will hire workers:
 - a. as long as total revenues exceed total costs
 - b. until diminishing returns set in
 - c. as long as the value of each new worker's marginal product is greater than or equal to the going wage rate
 - d. as long as the marginal revenue product of each new worker hired is greater than or equal to the wage that must be paid that worker
14. Consider a particular industry that hires a relatively small number of seismologists and a relatively large number of unskilled field hands. Which of these two inputs is most likely to have the more elastic demand and why?
 - a. Other things equal, the demand for seismologists will be more elastic, since only a few are hired.
 - b. Other things equal, the demand for seismologists will be more elastic, since there are few substitutes for this type of input
 - c. Other things equal, the demand for unskilled field hands will be more elastic, since they are easier to hire in the long run
 - d. Other things equal, the demand for unskilled field hands will be more elastic, since there are an abundance of potential substitutes.
15. You would expect the demand for labor curve to shift in all but one of the following situations. Pick the exception.
 - a. The demand for the final product changes.
 - b. The price of a closely related product in the output market changes.
 - c. The price of labor changes.
 - d. Some new machinery is bought that raises the marginal physical product of labor.

16. For a firm in an imperfectly competitive output market, the MRP curve is the firm's demand for labor curve because,
- under the assumption of profit maximization, the MRP curve shows the profit-maximizing quantity of labor for each alternative wage
 - the MRP curve shows the cost of labor services for all levels of output
 - the MRP curve measures the productivity of labor
 - the MRP curve is not necessarily the demand-for-labor curve under the profit-maximization assumption
17. If you were asked to explain how to determine the optimal mix of inputs for a firm that uses several, you could best answer by saying that,
- a firm should choose the mix of inputs such that equal values of all inputs are used
 - a firm should choose the mix of inputs such that the most money is spent on the most productive input
 - a firm should choose the mix of inputs such that the MPP per dollar spent on each input is equal
 - a firm should choose the mix of inputs that generates the greatest total revenues
18. Suppose a firm is currently employing a quantity of a variable input such that the MFC is less than the MRP for this quantity of the input. If this firm desires to maximize profits, it should
- reduce its employment of this particular factor
 - continue to use its present quantity of the factor, since it is currently doing as well as could be expected
 - increase in its employment of this particular factor
 - We do not have enough information to make a reliable recommendation.
19. A study has shown that a particular firm using only labor and capital is currently minimizing its costs of producing 5000 units of output per week. The output of the firm sells for \$1.50 per unit. Labor costs \$4 per unit per week and has a marginal physical product of 8 units of output per week. Capital has a marginal physical product of 32 units of output per week. From this information, we can determine that capital must cost:
- \$4 per unit per week
 - \$8 per unit per week
 - \$16 per unit per week
 - \$32 per unit per week

20. Suppose the wage rate for skilled workers in a particular industry is three times the wage rate for unskilled workers in the same industry. Then a profit-maximizing, cost-minimizing firm would adjust the quantity of each type of labor until,
- the marginal physical product of the unskilled labor was $1/3$ that of the skilled labor
 - three times as much unskilled labor was used
 - $1/3$ as much unskilled labor was used
 - the marginal physical product of both types of labor reached equality
21. Consider the market for each of the following inputs. Which is likely to have the most elastic demand?
- economics professors
 - lawyers
 - x-ray technicians
 - street-corner flower salespersons
22. According to the application on sex-related discrimination in the labor market, V. Fuchs found that
- the data support the hypothesis of male employer discrimination
 - considering the possibility of customer discrimination added nothing to the overall explanation of male-female wage differentials
 - one important determinant in male-female wage differentials was age and marital status
 - role differentials between males and females do not account for any of the male-female wage differential

Problems

1. In the table below you are given information about a firm operating in a competitive market. Consider all factors of production fixed at the moment, with the exception of labor services. The other factors of production cost the firm \$50 per day, which may be thought of as a fixed cost. Assume the firm is a profit maximizer.

Labor input (workers per day)	Total physical product (units per day)	Marginal physical product (units per worker)	Value of marginal product (\$ per worker)
0	0	_____	_____
1	22	_____	_____
2	40	_____	_____
3	56	_____	_____
4	70	_____	_____
5	82	_____	_____
6	92	_____	_____
7	100	_____	_____
8	106	_____	_____

- a. Assume that the firm sells its output at \$3 per unit. Complete the last two columns in the table above.
- b. If the going market wage is \$36 per day, the firm will hire _____ workers per day and produce _____ units of output.
- c. Given your answer to part (b), the firm will have total revenues of _____ per day and total costs of _____ per day.
- d. The above will result in a (profit/loss) _____ of _____ per day.

11. Labor: Monopoly Model

Learning Objectives

After studying chapter 29 of your text book and completing this section of your study guide, you should be able to:

1. Identify the major types of unions.
2. Understand some of the goals and objectives of unions.
3. Define the term, "monopsonist."
4. Understand how a profit-maximizing monopsonist determines the number of workers he should hire.
5. Understand the meaning of the term bilateral monopoly and how employment decisions differ under this type of labor market.

Chapter Overview

The supply of labor can be affected by the existence of labor unions. The first major labor organization, formed in 1869 for the purpose of collective bargaining in the United States, was the Knights of Labor. Later, the American Federation of Labor (AFL) was created by a dissatisfied group of craft unions. But full governmental approval of organized labor did not come until the Great Depression of the 1930s, when the National Labor Relations Act was passed. This act guaranteed workers the right to start or join labor unions and to engage in collective bargaining.

In 1938 the Congress of Industrial Organization (CIO) was formed in order to move away from the narrow craft structure of the AFL. But the increased union activity of the next decade drove many people to consider restricting some labor practices, and in 1947 the Taft-Hartley Act was passed. It prohibited the closed shop, allowed states to pass right-to-work laws, and in general outlawed so-called unfair labor union practices.

The AFL and CIO merged in 1955 in an attempt to maintain the rapid rate of growth of organized labor. This has not occurred, however, and disagreements continue as to whether the AFL-CIO should be primarily trade- or industry- organized. The consolidation of the AFL and CIO was followed by the passage of the Landrum-Griffin Act of 1959. This act regulates the internal operations of labor unions and holds union officials personally accountable

for union property and funds. The area where unionization has grown the most in recent decades has been the public sector; private sector unionization rates have remained basically constant.

As a general strategy, labor unions try to raise and maintain the wages of their members above the market clearing price. This higher-than-equilibrium wage increases the quantity supplied of labor and decreases the quantity demanded of labor. As a result, unions must find some way to ration the existing number of jobs. There are several models of union activity, differentiated by the presumed goal of the unions. Possible alternative goals are (1) the employment of all union members, (2) the maximization of total wages for all employed workers, and (3) the maximization of wages of a subset of employed workers. Clearly, labor unions do not fit the monopoly model of profit maximizers and thus cannot be analyzed as such.

Objective analysis cannot determine whether real wages of all workers have increased because of the existence of labor unions. Although labor's share of national income has stayed constant since World War II, it is possible that this share could have fallen without the existence of labor unions pushing to maintain it.

Turning to the demand side of the market for labor, we can examine the impact of a labor monopoly on the wage and quantity of labor employed. As the sole buyer, the monopsonist faces a positively sloped labor supply curve. The marginal factor cost (MFC) curve lies above the supply curve, because the marginal factor cost is greater than the wage rate. This is true because in order to attract additional workers, the firm must offer a higher market wage, which increases the cost of employing all workers, not just the marginal worker. Since higher wages for all workers are necessary to attract additional workers, the MFC is greater than the wage at all levels of employment. The monopsonist buys labor up to the point at which $MFC = VMP$. Graphically, you locate the intersection of MFC and VMP and then move down vertically to the supply-of-labor curve to find the appropriate wage rate. Using the monopsony model, an increase in the minimum wage may increase the number of workers employed. This is true because the imposition of a minimum wage will cause the firm to view the MFC as being constant (horizontal) at the minimum wage for all quantities of labor up to the point on the old labor supply curve corresponding to the minimum wage. Thus, as the firm employs the profit-maximizing decision rule, there is likely to be an increase in the employment of labor, depending on the exact shapes and positions of the relevant demand and supply curves. When a firm is both a monopolist and a monopsonist, two kinds of exploitation can occur. Monopolistic exploitation is the positive difference between the VMP and the MRP. Monopsonistic exploitation is the positive difference between the MRP and the wage rate. Total exploitation is the sum of the above two measures of exploitation.

Multiple-Choice Questions

Use the resource demand data shown below on the left and the resource supply data on the right in answering the following six questions.

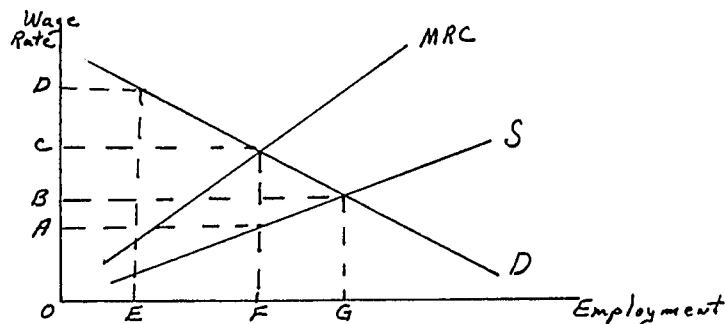
<u>Employment</u>	<u>Total product</u>	<u>Product price</u>	<u>Employment</u>	<u>Resource price</u>
0	0	\$2.20	0	-
1	15	2.00	1	\$1.00
2	28	1.80	2	2.00
3	39	1.60	3	3.00
4	48	1.40	4	4.00
5	55	1.20	5	5.00
6	60	1.00	6	6.00

- How many workers will this firm choose to employ?
 - 2
 - 3
 - 4
 - 5
 - 6
- How many units of output will the firm produce?
 - 28
 - 39
 - 48
 - 55
 - 60
- What will be the equilibrium wage rate?
 - \$2
 - \$3
 - \$4
 - \$5
 - \$6
- What will be the selling price of the product?
 - \$2.20
 - \$2.00
 - \$1.80
 - \$1.60
 - \$1.40
- It can be concluded that:
 - the resource market is purely competitive but the product market is imperfectly competitive.
 - both the resource and product markets are purely competitive
 - the resource market is imperfectly competitive but the product market is purely competitive.
 - both the product and resource markets are imperfectly competitive

6. Now suppose severe inflationary pressures prompt the government to impose a wage ceiling of \$2 on this particular type of labor. Other things being unchanged, how many workers will the firm now choose to employ?
 - (a) 2
 - (b) 3
 - (c) 4
 - (d) 5
 - (e) 6
7. Real wages in the United States in the long run:
 - (a) have increased faster than increases in output per worker.
 - (b) have increased slower than increases in output per worker.
 - (c) have increased at about the same rate as increases in output per worker
 - (d) show no discernible relationship to output per worker.
8. The United Mine Workers are a good illustration of:
 - (a) exclusive unionism.
 - (b) inclusive unionism.
 - (c) how unions have raised wages and increased job opportunities by increasing the demand for labor.
 - (d) how unions have increased wages but reduced job opportunities by shifting the supply-of-labor curve to the left.
9. Which of the following unions best represents the exclusive unionism model?
 - (a) the steelworkers
 - (b) the carpenters
 - (c) the teamsters
 - (d) the mineworkers
10. Inclusive unionism is practiced mostly by:
 - (a) craft unions.
 - (b) industrial unions.
 - (c) small unions comprised of skilled workers, such as the bricklayers.
 - (d) professional and semiprofessional employees.
11. Marginal resource cost refers to:
 - (a) the amount by which a firm's total resource cost increases as the result of hiring one more unit of the resource.
 - (b) the increase in total cost resulting from the production of one more unit of output.

- (c) the price at which additional units of a resource can be hired in an imperfectly competitive resource market.
- (d) the increase in total revenue resulting from the sale of the extra output of one more worker.
12. In a monopsonistic labor market the employer will maximize profits by employing workers up to that point at which:
- (a) the wage rate equals marginal labor cost.
- (b) the wage rate equals marginal revenue product.
- (c) marginal revenue product equals marginal labor cost.
- (d) the difference between the wage rate and marginal labor cost is at a maximum.
13. The economic term which refers to a firm which is the sole employer in a non-union community is:
- (a) bilateral monopolist.
- (b) bilateral competitor.
- (c) monopolist.
- (d) monopsonist.
- (e) countervailing power.

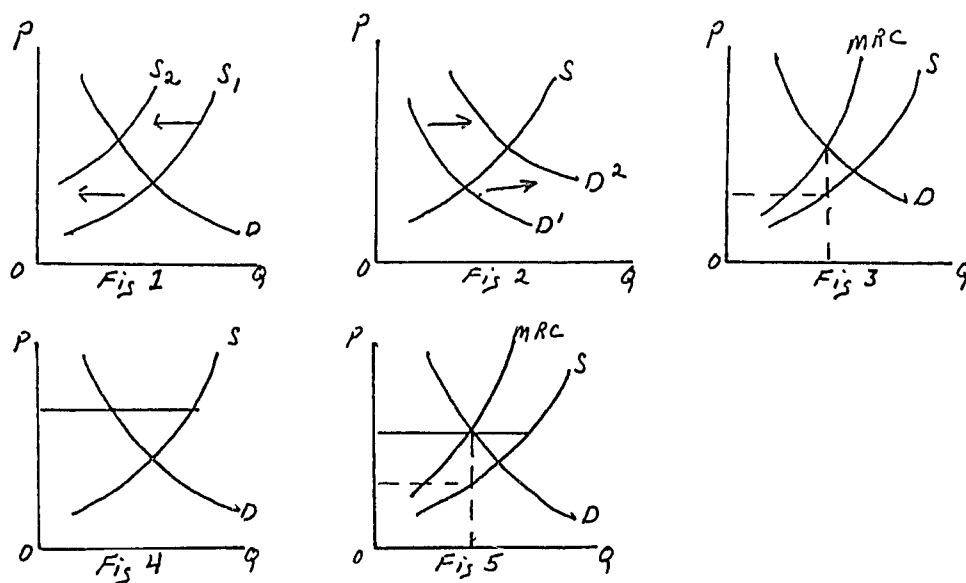
Answer the next four questions on the basis of the following diagram:



14. If this labor market is purely competitive, the wage rate and level of employment respectively will be:
- (a) 0A and 0F.
- (b) 0B and 0F.
- (c) 0B and 0G.
- (d) 0C and 0E.
- (e) 0D and 0E.

15. If this labor market is monopsonistic, the wage rate and level of employment respectively will be:
- (a) 0A and 0F.
 - (b) 0B and 0F.
 - (c) 0C and 0F.
 - (d) 0D and 0E.
 - (e) 0B and 0G.
16. Now assume that an inclusive union is formed to bargain with the monopsonistic employer of the previous question. To what level can this union increase the wage rate without causing the number of jobs to decline below that which the monopsonist would otherwise have provided?
- (a) 0A
 - (b) 0B
 - (c) 0C
 - (d) 0D
 - (e) 0D minus 0A
17. If the inclusive union of the previous question seeks to maximize the number of jobs available for its members, what wage rate will it seek to impose on the monopsonist?
- (a) 0A
 - (b) 0B
 - (c) 0C
 - (d) 0F
 - (e) 0D minus 0A
18. Other things being equal, the monopsonistic employer will:
- (a) pay a higher wage rate and hire a larger number of workers than will a purely competitive employer.
 - (b) pay a lower wage rate but hire a larger number of workers than will a purely competitive employer.
 - (c) pay a higher wage rate but hire fewer workers than will a purely competitive employer.
 - (d) pay a lower wage rate and hire fewer workers than will a purely competitive employer.

Answer the next five questions by selecting from the following labor market diagrams:



19. A monopsonistic labor market is represented by Figure:

- (a) 1.
- (b) 2.
- (c) 3.
- (d) 4.
- (e) 5.

20. The tactics of exclusive unionism are portrayed in Figure:

- (a) 1.
- (b) 2.
- (c) 3.
- (d) 4.
- (e) 5.

21. The tactics of inclusive unionism are shown in Figure:

- (a) 1.
- (b) 2.
- (c) 3.
- (d) 4.
- (e) 5.

22. The case of bilateral monopoly is represented by Figure:
- (a) 1.
 - (b) 2.
 - (c) 3.
 - (d) 4.
 - (e) 5.
23. The economic impact of occupational licensure can best be demonstrated through Figure:
- (a) 1.
 - (b) 2.
 - (c) 3.
 - (d) 4.
 - (e) 5.
24. As compared to a purely competitive labor market, in a non-unionized monopsonistic labor market:
- (a) wages and employment will both be higher.
 - (b) wages will be lower, but employment will be higher.
 - (c) wages will be higher, but employment will be lower.
 - (d) wages and employment will both be lower.
25. A monopsonist pays a wage rate which is:
- (a) greater than the MRP of labor.
 - (b) equal to the MRP of labor.
 - (c) equal to the firm's marginal labor cost.
 - (d) less than the MRP of labor.

12. Rents, Interest and Profits

Learning Objectives

After studying chapter 30 of your text and completing this section of your study guide, you should be able to:

1. Understand the concepts of economic rent.
2. Discuss the concept of interest and be familiar with the economic functions of interest rates.
3. Discuss the economic function of profits.

Chapter Overview

Rent is the payment to any factor of production, such as land, that has perfectly inelastic supply. Pure economic rent is the payment to a resource that exceeds the payment necessary to keep the resource in its present use at its current level. It has been argued that since the supply of land is fixed, then all payments for land are pure economic rent. Thus, as argued by Henry George, the "surplus" accruing to landowners could be almost completely taxed away without altering land allocation, with this tax replacing other forms of taxation. Critics of this idea point out that most land has been improved, and that the tax would eliminate interest and profits in addition to rent. Also, the land tax is not likely to take in sufficient revenues to eliminate other taxes.

Interest normally emerges in the economy as a payment for the use of money. It serves the function of allocating money capital, which in turn leads to an allocation of physical capital. Interest paid on a loan varies according to the length of the loan, any handling charges, and the perceived level of risk involved.

Aside from the government sector, the total demand for loans is comprised by the demand for consumption loans (by households) and the demand for investment loans (by businesses). The supply of loanable funds is an upward-sloping function of the interest rate. The equilibrium rate of interest and the equilibrium quantity of loanable funds is determined at the intersection of supply and demand. The interest rate can be thought of as representing the opportunity cost of current consumption. Thus it serves to allocate funds in the market.

Economic profit is the reward accruing to the fourth factor of production: entrepreneurship. Recall that to determine economic profit you subtract the full opportunity cost of the factors of production from total revenues.

Economic profits exist, according to various theories, as (1) a reward for risk taking, (2) a result of market disequilibrium, or (3) a result of less-than-perfect competition. Profits function to allocate resources within an economy; resources flow to those activities with the highest profits.

Multiple Choice Questions

1. If a seller is willing and able to supply only 8 units of a commodity at any price, and if the market price of the commodity is \$3 per unit, total economic rent is:
 - (a) \$0
 - (b) Greater than \$0 but less than \$3
 - (c) \$3
 - (d) \$24
 - (e) Impossible to determine
2. Economic rent is zero when supply is:
 - (a) Perfectly elastic
 - (b) Relatively elastic
 - (c) Unit elastic
 - (d) Relatively inelastic
 - (e) Perfectly inelastic
3. If your accountant tells you that your firm has positive profits for the quarter,
 - (a) you may assume that your firm has positive economic profits
 - (b) you may assume that your firm's economic profits are non-negative
 - (c) you cannot conclude anything about economic profits without further considerations
 - (d) you know the opportunity cost for remaining in business has at least been covered.
4. Economic analysis of usury laws that put ceilings on interest rates below the equilibrium level predicts that
 - (a) saving by households will increase
 - (b) the demand for consumption loans will decrease
 - (c) the demand for investment loans will increase
 - (d) those lending funds will ration the funds by some means other than price (interest rates)
5. According to the application on usury laws, restrictive laws most often
 - (a) are opposed by consumer groups
 - (b) benefit the poor and needy
 - (c) benefit the wealthy, more credit-worthy individuals
 - (d) have been found to be unconstitutional
6. If demand does not change, economic rent is greatest when supply is:

- (a) Perfectly elastic
 - (b) Relatively elastic
 - (c) Unit elastic
 - (d) Relatively inelastic
 - (e) Perfectly inelastic
7. If the supply of a resource is perfectly inelastic at 5 units and its market price is \$10 per unit, total economic rent is:
- (a) \$0
 - (b) Greater than \$0 but less than \$10
 - (c) \$10
 - (d) \$50
 - (e) Impossible to determine
8. The single tax refers to a tax on:
- (a) Income
 - (b) Wealth
 - (c) Buildings
 - (d) Capital equipment
 - (e) Land
9. The single tax is commonly associated with the name of:
- (a) William S. Jevons
 - (b) Alfred Marshall
 - (c) John Bates Clark
 - (d) Henry George
 - (e) John Maynard Keynes
10. The most general definition of interest is:
- (a) The money earned on a savings account
 - (b) The price paid for the use of money over a period of time
 - (c) The money earned on a bond
 - (d) The percentage return on an investment
 - (e) The finance charge on a loan
11. The pure interest rate is the rate of return on:
- (a) A long-term, riskless loan
 - (b) A share of stock
 - (c) A corporation bond
 - (d) A savings deposit
 - (e) A risky investment
12. The sources of demand for loanable funds are:
- (a) Businesses, households, and government
 - (b) Banks and insurance companies
 - (c) Federal, state, and local governments
 - (d) Mortgage companies and commercial banks
 - (e) All financial institutions

13. The demand for loanable funds, with respect to the interest rate, is usually:
- (a) Perfectly inelastic
 - (b) Relatively inelastic
 - (c) Unit elastic
 - (d) Relatively elastic
 - (e) Perfectly elastic
14. Economic or pure rent is:
- (a) the price paid for the use of land and other nonreproducible resources.
 - (b) a payment for the use of those resources whose supply is perfectly elastic.
 - (c) a payment for resources used in the production of "free goods"
 - (d) a payment made for the use of housing, factory buildings, or capital goods.
15. In the long-run equilibrium there will be no economic profits in a purely competitive static economy because:
- (a) the marginal revenue product of capital will be zero.
 - (b) there will be no need for professional managers and therefore no profit rewards will be needed.
 - (c) there will be no uncertainty, no innovations, and no monopoly.
 - (d) barriers to entry will prevent profits from arising.

13. General Equilibrium

Learning Objectives

After studying chapter 32 of your text book and completing this section of your study guide you should be able to:

1. Identify stable and unstable market equilibrium situations.
2. Understand the basic concepts of equilibrium analysis.
3. Explain the distinction between partial and general equilibrium analysis.
4. Understand why a perfectly competitive price system is economically efficient.

Chapter Overview

In our study up to this time, we have looked at each market separately and assumed there was little if any interaction among them. For example, when analyzing the output of firms we assumed that prices from the factor markets were given without analyzing what was happening in these factor markets. And when we looked at consumers, we didn't show how labor markets could affect their income. Instead we just asked what would happen if income changed. This chapter attempts to look at all these markets together and, just as each market was analyzed in terms of its equilibrium, the entire microeconomic system is analyzed around the concept of equilibrium. To be more specific, the system is in equilibrium when all of its markets are in equilibrium.

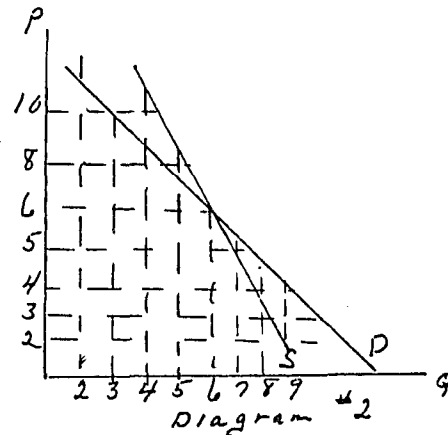
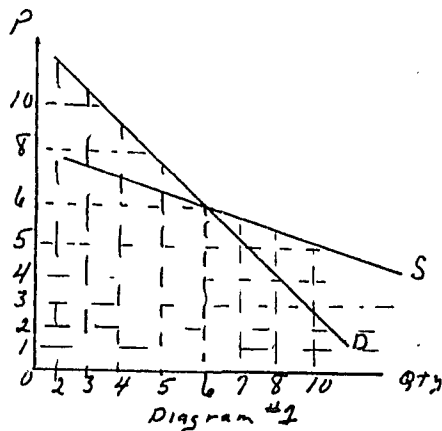
The difference between a stable equilibrium and an unstable equilibrium is whether there are any forces which push a market toward an equilibrium if economic conditions change. If there are, then the equilibrium is stable; if there are not, then the equilibrium is unstable. Markets that revolve around supply and demand must create shortages when prices are below the equilibrium and surpluses when prices are above the equilibrium for stability to exist.

We have in the past assumed the markets were stable. When changes in supply and demand occurred, we just moved from one equilibrium to another. This is what happens with stable equilibrium, but we have not discussed what was happening to prices and quantities between these two equilibria. The purpose of dynamics is to describe what is happening to these economic variables as the economy moves from one equilibrium to another. The cobweb theory is one of these descriptions and it is particularly useful in explaining the variance in agricultural prices. Its main premise

is that the quantity of agricultural goods offered for sale in one period is based on the price of last period. If the firm cannot sell all its output at that price, it will lower the price to get rid of the output. Then in the next period it will produce an amount based on this lower price. If this amount is too little, then firms will raise their price so that this quantity will be just what is demanded. The following period, firms will then produce an output based on this higher price and so on.

If we allow our modeling to take account of some of the interrelationships between markets, we are doing general equilibrium analysis. By allowing everything to vary, we are not able to reach many useful conclusions except at a very general level. This is the case because neither human beings nor computers are able to deal with every aspect of every conceivable market, adjusting simultaneously. Short-run adjustments in a limited number of markets can be handled, though. Long-run adjustments go on forever, and there is no reason to think that truly stable equilibrium points in all markets will ever be established.

It can be shown that under the constrained condition of perfect competition, however, economic efficiency would ultimately be established. At this point, three things occur. First, $P = MC$ for all products of all firms. Second, the marginal products of the factors of production respectively divided by their factor prices are all equal. And finally, the marginal utility per dollar is equal for all products purchased by a consumer. Did you note that these conditions constitute the sum total of the long-run equilibrium conditions that we have developed from the various phases of our partial equilibrium analysis.

Problem

1. (a) In Diagram 1, the equilibrium price is \$ 6 , and the equilibrium quantity is 6 . If the price is above this, the quantity demanded is (less than/equal to/greater than) less than quantity supplied, and the price will (rise/remain the same/fall) fall . If the price is below equilibrium, the quantity demanded is (less than/equal to/greater than) greater than the quantity supplied, and the price will (rise/remain the same/fall) rise . Thus, equilibrium is (stable/unstable) stable .
- (b) In Diagram 2, the equilibrium price is \$ 5 , and the equilibrium quantity is 5 . If the price is above this, the quantity demanded is (less than/equal to/greater than) less than the quantity supplied, and the price will (rise/remain the same/fall) fall . If the price is below equilibrium, the quantity demanded is (less than/equal to/greater than) greater than the quantity supplied, and the price will (rise/remain the same/fall) rise . Thus, equilibrium is (stable/unstable) stable .

Multiple-Choice Questions

1. General equilibrium;
 - (a) Is the end result of perfect competition
 - (b) Cannot occur under perfect competition
 - (c) Tends to occur under monopoly
 - (d) Occurs automatically under monopolistic competition
 - (e) Is a unique characteristic of unregulated oligopolies

2. Perhaps the best description of the major distinction between partial equilibrium analysis and general equilibrium analysis is:
 - (a) partial equilibrium analysis is concerned only with static equilibrium situations, whereas general equilibrium analysis is concerned with dynamic equilibrium
 - (b) partial equilibrium analysis assumes that the incomes of consumers are fixed, whereas general equilibrium analysis allows consumers' incomes to vary
 - (c) partial equilibrium analysis is not concerned with all the interdependencies that exist in an economy, whereas general equilibrium analysis is
 - (d) partial equilibrium analysis holds demand constant and looks at supply movements, whereas general equilibrium analysis allows both demand and supply to vary.
3. Pick the correct statement from those listed below.
 - (a) Markets in which a surplus exists are unstable.
 - (b) Once an economic system has reached an equilibrium, prices and quantities will remain constant.
 - (c) If you are interested in forecasting future economic conditions, dynamic models are likely to be more useful than static models.
 - (d) Prices in a stable economy will never fall.
4. Suppose you consider a small economy that produces only two goods -- shoes and pens. If all markets in this economy are initially in equilibrium and the demand for shoes decreases, you would expect that initially
 - (a) the price of shoes will rise and the quantity of shoes sold will decrease
 - (b) the demand for pens will also decline
 - (c) the price of pens will decline
 - (d) the wage rate and the number of workers in the shoe industry will decline
5. Perfect competition in all markets in the long run results in
 - (a) a firm producing at a rate of output at which price is equal to marginal cost
 - (b) all goods and services are being produced at the minimum per unit cost
 - (c) all factors of production being paid the value of their marginal products
 - (d) all of the above

6. Our analysis has shown that perfect competition results in economic efficiency,
 - (a) thus perfect competition is the most desirable system
 - (b) thus perfect competition should be an economic goal
 - (c) thus economic efficiency should be an economic goal
 - (d) but we cannot say that perfect competition is necessarily desirable, because this is a normative judgment
7. According to the "Issues and Applications" section at the end of this chapter
 - (a) Leon Walras developed input-output analysis
 - (b) input-output analysis is an empirical study of the interdependence among various sectors of the economy
 - (c) general equilibrium analysis was first developed by Wassily Leontief
 - (d) economists no longer use input-output analysis in planning economic development
8. According to the application, which of the following is not an assumption of the input-output model?
 - (a) The quantities demanded by consumers are taken as given.
 - (b) Inputs are used in fixed proportions.
 - (c) There are constant returns to scale.
 - (d) There is no unemployment.

APPENDIX B

LIST OF STUDY GUIDES REVIEWED

In preparing the Study Guide used in this research project, the following study guides were reviewed:

- Bingham, Robert C. Economic Concepts. New York: McGraw-Hill, 1975.
- Converse, Muriel W. Study Guide for Spencer: Contemporary Economics. New York: Worth Publishers, 1980.
- Eggert, Jim. Investigating Microeconomics. Los Altos: William Kaufmann, 1979.
- Gilley, Otis W. Student Learning Guide to Accompany Miller Economics Today. New York: Harper and Row, 1982.
- Lunn, John. Study Guide and Workbook to Accompany Microeconomic Theory and Applications. Boston: Little, Brown and Co., 1983.
- Mansfield, Edwin. Study Guide for Economics. New York: Norton, 1983.
- Peterson, Willis L. Study Guide to Accompany MICRO Principles of Economics. Homewood: Richard D. Irwin, 1983.
- Pfefferbaum, Rose. Economics Study Guide. Boston: Houghton Mifflin Co., 1984.
- Porter, Richard C., and Starleaf, Dennis R. Review Guide and Workbook: Microeconomics. Homewood: Richard D. Irwin, 1979.
- Rose, Edmund G. Study Guide and Workbook: Albrecht Economics. Englewood: Prentice-Hall, 1979.
- Studenmund, A. H., and Stroup, Richard. Coursebook for Economics: Private and Public Choice. New York: Academic Press, 1972.

APPENDIX C

SYLLABUS

Economics 2505 - Principles of Economics

Instructor: L. G. Fulks

Office: C-6

Course Objective and Content: To provide the students with a solid understanding of basic facts, issues, and theories of microeconomics. Chapters 1-5 and 21-33 of the textbook will be covered, if time permits.

Textbook: Roser L. Miller, Economics Today, 4th Edition.

Teaching Method: This course will follow textbook sequence. The students are expected to read relevant chapters of the textbook (including the Issues and Application) before coming to class and prepare a list of questions if necessary. You should read these chapters carefully again after each class meeting. I will provide necessary background information, and explain key topics in each chapter, introduce facts and theories not covered by the textbook, and answer questions.

Grading Method: There will be five examinations given in this course, including the final. Equal weight is assigned to each examination. Notice will be given before each examination. The student will be permitted to drop his lowest test score. The instructor's judgment on such factors as the student's consistency in performance, class attendance, and participation in discussions may influence the final grade. As a general rule, grades are assigned as follows: 90 and above, A; 80 and above, B; 70 and above, C; 60 and above, D.

Policy Concerning Examinations: Students are expected to take examinations at the scheduled times. If a test is not taken at the scheduled time, the missed test will be used as the student's dropped test score.

APPENDIX D

MIDDLE TENNESSEE STATE UNIVERSITY
Murfreesboro, Tennessee 37132

Department of Economics
and Finance

November 14, 1983

Dr. Barry Druesne
CLEP Program
Educational Testing Service
Rosedale Road
Princeton, NJ 08541

Dear Dr. Druesne:

This is to confirm the request of Dr. Samples for 120 copies of the "Introduction to MICRO Economics" CLEP examination.

The examinations will be used by doctoral candidate L. G. Fulks as part of his dissertation in attempting to measure the effects of utilizing student workbooks in principles of economics courses.

The examination will be used to measure the level of knowledge of students at the start of the basic course and again at the end of the course. Two separate classes of 30-35 students will be selected in this experiment, with one class acting as the control group.

The examinations should be sent to:

Dr. Ralph Samples
Director of Testing
David Lipscomb College
Nashville, TN 37203

Dr. Samples has agreed to accept responsibility for the examinations and provide the required level of security.

Thank you for your assistance in this program.

Sincerely,

/s/ B. W. Balch

B. W. Balch, Chairman
Department of Economics & Finance

CC: Dr. Samples
L. G. Fulks

APPENDIX E

EDUCATIONAL TESTING SERVICE

PRINCETON, N.J. 08541

College Board Programs

November 21, 1983

Dr. B. W. Balch
Department of Economics and Finance
Middle Tennessee State University
Murfreesboro, TN 37132

Dear Dr. Balch:

I'm writing to let you know that I have received your letter concerning Dr. Samples request for 120 copies of the Introductory Microeconomics CLEP Subject Examination (for use by a doctoral candidate in connection with his dissertation).

We have made arrangements to send, at no charge, the 120 copies to Dr. Samples, together with answer sheets, an Administrator's Manual, and materials that will enable him to score the examinations.

As soon as the testing at the beginning of the course has been completed, all used test booklets from that testing should be returned immediately to ETS. Dr. Samples may keep the unused booklets and remaining answer sheets, Administrator's Manual, scoring materials for use with testing at the completion of the semester. At the end of the semester, all remaining used and unused booklets and scoring materials should be returned to ETS in the envelopes provided.

If you or Dr. Samples have any questions about the materials, instructions for administering the test, please let me know.

Finally, we would very much appreciate a copy of the dissertation proposal describing the study that will be conducted by the doctoral candidate.

Sincerely,

/s/ B. Druesne

Barry Druesne
Program Director

BD:sf

cc: B. McComas (COD)

APPENDIX F

STUDENT QUESTIONNAIRE

1. Name _____
2. Age _____
3. What quarter are you in school? _____
4. How many hours have you completed? _____
5. What is your major? _____
6. What is your minor? _____
7. Overall GPA _____
8. Did you take any economics courses in high school?
 Yes _____ No _____
 If yes, please complete the following:

Course title	Length of course	Grade received
_____	_____	_____
_____	_____	_____
_____	_____	_____
9. Have you taken any economics courses in college?
 Yes _____ No _____
10. Do you live on campus? Yes _____ No _____
11. Do you work during the school year? Yes _____ No _____
 If yes, how many hours per week do you work? _____
12. What was the size of your high school graduation class?

13. Was your high school a public or private school?

14. Do you think the study of Microeconomics will be a hard, average, or easy course? _____
15. On what did you base the answer you gave in question 14?
 - a. Parents' comments _____
 - b. Other students' comments _____
 - c. Own experience _____
 - d. Other (please explain) _____

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