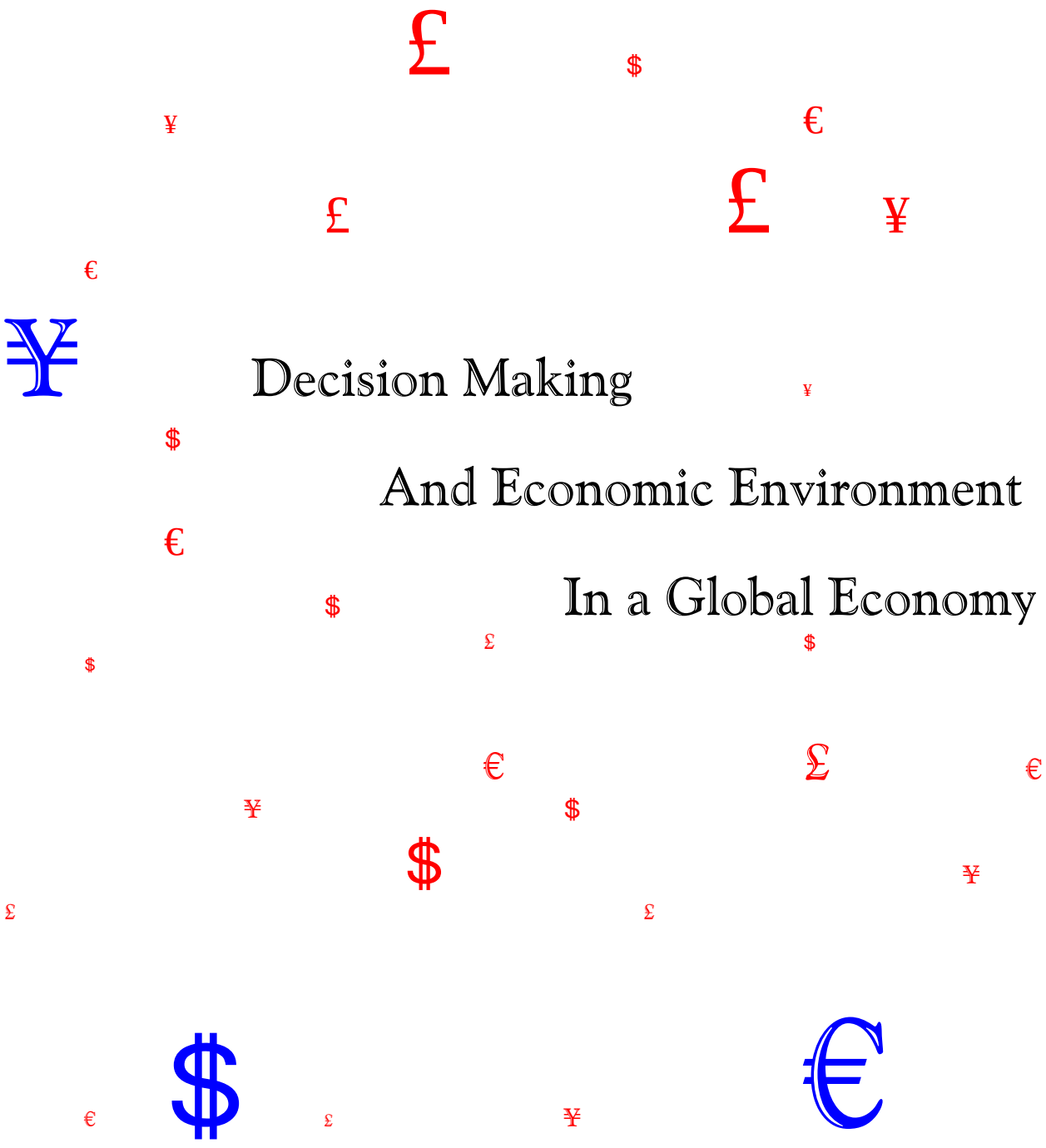

Decision Making And Economic Environment In a Global Economy

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PREFACE

This Course Guide was developed in part because of the high cost of college textbooks, and in part, to help organize students' studying by providing lecture notes. This Guide was made possible because the administration of IPFW had the foresight to make the campus' printing services available to duplicate these sorts of materials, and provide them at cost through the auspices of the University Bookstore in Kettler Hall. Without the active participation of both the campus duplicating services, and its most cooperative staff, and the bookstore this would not be available.

The department, school, nor the professor make anything whatsoever from this Guide. In fact, the department's budget and the professor's own resources are used in the writing of the Guide, and the numerous draft copies that are produced in the revisions of this document. Like the sign in the Mom and Pop bait shop on Big Barbee Lake says, "This is a non-profit organization, wasn't planned to be – it just sorta worked out that way." Well, actually it was planned to be a non-profit enterprise in this particular case.

The professor also wishes to acknowledge the fact that several students have proposed changes, improvements, caught errors, and helped to make this document more useful as a learning tool. Naturally, any errors of omission or commission are those of the professor alone.

Introduction & Use of Guide

This Course Guide is provided to assist students in mastering the subject matter presented A524, Decision Making and Economic Environment in a Global Economy. The commercially available student guides and workbooks are notoriously inadequate and are simply of little value. At several institutions, prepared course materials are made available to students to assist their learning. What research has been done concerning these course specific materials, suggests that students' performances are enhanced by having access to these types of materials.

Organization

The Guide is divided into nine units, following the organization of the Tentative Course Outline found in the syllabus. Also in the Guide is the course syllabus included before the nine sections covering the substantive portions of the course. Following the lecture notes are the reading assignments for each chapter.

Note to Students

There is no substitute for doing the reading assignments, attending class, and working through the material. A teacher cannot cause a student to learn, all a teacher can do is to organize and present the material, grades can provide a small extrinsic reward for accomplishment, but it is the student's ability, effort, and desire that determine how much and how well they will learn. It is hoped this Guide will help in the learning effort.

SYLLABUS
A524, Decision Making and Economic Environment in a Global Economy

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Phone 481-6486

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COURSE POLICIES

1. In all respects, the policies of the School, Department, IPFW and the University shall be applied in this course.

2. Office hours will be posted on the professor's door, appointments may also be arranged. The Professor's office is Neff 340D.

3. The following grade scale will be applied in this course for determination of final grades:

A	100 - 90 percent
B	89 - 80 percent
C	79 - 70 percent
D	69 - 60 percent
F	below 60 percent

   All final grade calculations shall be rounded up. In other words, 69.01 and 69.99 percent are both considered 70 percent and will earn the student a grade of C.

4. The majority of graduate economics courses this professor has taught have had average final grades that fall within the range centered on 3.25 on a 4.0 scale.

5. Course requirements:

   The mid-term examination is worth 40% of the final grade, the final examination is worth 50% of the final grade, and there will be at least three quizzes, the best two scores on these quizzes will be worth 10% of the final grade.

   A. Examinations will consist of objective items. Examinations will be worth 100 points, and will consist of twenty multiple-choice questions (worth four points each), and twenty true-false questions (worth one point each).

B. Quizzes are worth twenty points each, and will consist of three multiple choice questions (four points each) and four true false questions (worth two points each)

C. If there is a 10-point improvement on the final exam over what was earned on the midterm, then the weights will be change to the midterm being worth only 30 percent and the final exam being worth 60 percent of the final grade.

6. The final examination will be given at the time and place scheduled by the university. No exception is possible.

7. No make-up exams will be permitted. If you cannot attend class at exam time, you must make prior arrangements to take an equivalent examination before your classmates. Exceptions may be granted for cases where there was no possibility for an earlier examination, i.e., injuries or illnesses, etc – things clearly beyond the student's control.

8. Academic dishonesty in any form will result in a course grade of F and other sanctions as may be authorized by the university. The over whelming preponderance of students do not engage in dishonesty, and the professor owes it to these students to strictly police this policy.

9. The provisions of these policies and the course objectives are subject to testing. These policies are also subject to change at the discretion of the professor and do not constitute a binding contract.

COURSE OBJECTIVES

This is an introductory principle of economics course that covers topics in macroeconomics and microeconomics. The breath of topical coverage limits the course objectives to subject matter mastery. The course will present factual material concerning the operation of the firm and household as well as the development of rudimentary understanding of economic decision-making. The course will also examine the operation of the macroeconomy, within the context of a global economic system.

REQUIRED TEXT

David A. Dilts, *Decision Making and Economic Environment in a Global Economy.* Fort Wayne: 2004, memo.

TENTATIVE COURSE OUTLINE

1. Introduction to Course and Economics

    Dilts, Chapter 1

2. Basics of Supply and Demand

    Dilts, Chapter 2

3. More on Supply & Demand: Price Elasticities

    Dilts, Chapter 3

4. Cost of Production

    Dilts, Chapter 4

5. Product Market Structures

    Dilts, Chapter 5

MIDTERM EXAMINATION

6. Measuring Aggregate Performance

    Dilts, Chapter 6

7. Classical and Keynesian Models

    Dilts, Chapter 7

8. Money and Banking

    Dilts, Chapter 8

9. Interest Rates and Output: Hick's IS/LM Model
    Dilts Chapter 9

10. Economic Stability and Policy
    Dilts, Chapter 10

11. Controversies Concerning International Trade
    Dilts, Chapter 11

LECTURE NOTES

Decision Making and Economic Environment in a Global Economy

A524

1. Introduction to Economics

Lecture Notes

1. Economics Defined - Economics is the study of the ALLOCATION of SCARCE resources to meet UNLIMITED human wants.

    a. Microeconomics - is concerned with decision-making by individual economic agents such as firms and consumers.

    b. Macroeconomics - is concerned with the aggregate performance of the entire economic system.

    c. Empirical economics - relies upon facts to present a description of economic activity.

    d. Economic theory - relies upon principles to analyze behavior of economic agents.

    e. Inductive logic - creates principles from observation.

    f. Deductive logic - hypothesis is formulated and tested.

2. Usefulness of economics - economics provides an objective mode of analysis, with rigorous models that are predictive of human behavior.

    a. Scientific approach

    b. Rational choice

3. Assumptions in Economics - economic models of human behavior are built upon assumptions; or simplifications that permit rigorous analysis of real world events, without irrelevant complications.

a. Model building - models are abstractions from reality - the best model is the one that best describes reality and is the simplest – Occam's Razor.

b. simplifications:

1. ceteris paribus - means all other things equal.

2. There are problems with abstractions, based on assumptions. Too often, the models built are inconsistent with observed reality - therefore they are faulty and require modification. When a model is so complex that it cannot be easily communicated or its implications easily understood - it is less useful.

4. Economics and Values

a. POSITIVE economics is concerned with what is;

b. NORMATIVE economics is concerned with what should be.

c. Economics is not value free, there are judgments made concerning what is important:

1. Individual utility maximization versus social betterment

2. Efficiency versus fairness

3. More is preferred to less

5. Objective Thinking:

a. bias - most people bring many misconceptions and biases to economics.

4. Because of political beliefs and other value system components rational, objective thinking concerning various issues requires the shedding of these preconceptions and biases.

b. fallacy of composition - is simply the mistaken belief that what is true for the individual, must be true for the group.

c. cause and effect - post hoc, ergo propter hoc - “after this, because of this” – fallacy.

1. correlation - statistical association of two or more variables.

2. causation - where one variable actually causes another.

a. Granger causality states that the thing that causes another must occur first, that the explainer must add to the correlation, and must be sensible.

d. cost-benefit or economic perspective - marginal decision-making - if benefits of an action will reap more benefits than costs it is rational to do that thing.

1. Focus on the addition to benefit, and the addition to cost as the basis for decision-making.

a. Sunk costs have nothing to do with rational decision-making.

6. The economizing problem involves the allocation of resources among competing wants. There is an economizing problem because there are:

a. unlimited wants

b. limited resources

7. Resources and factor payments:

a. land - includes space (i.e., location), natural resources, and what is commonly thought of as land.

    1. land is paid rent

b. capital - are the physical assets used in production - i.e., plant and equipment.

    2. capital is paid interest

c. labor - is the skills, abilities, knowledge (called human capital) and the effort exerted by people in production.

    3. labor is paid wages

d. entrepreneurial talent - (risk taker) the economic agent who creates the enterprise.

    4. entrepreneurial talent is paid profits

8. Technology

    a. Technology is the mix of resources, how the factors of production come to together to produce.

    b. The best technology is that which produce a given level of output at the minimum cost.

9. Full employment includes the natural rate of unemployment and down time for normal maintenance (both capital & labor). However, full production or 100% capacity utilization cannot be maintained for a prolonged period without labor and capital breaking-down:

    a. underemployment - utilization of a resource in a manner, which is less than what is consistent with full employment - using an M.D. as a practical nurse.

10. Economic Efficiency consists of the following three components:

    a. **allocative efficiency** - is measured using a concept known as Pareto Superiority (or Optimality)

1. Pareto Optimal - is that allocation where no person could be made better off without inflicting harm on another.

2. Pareto Superior - is that allocation where the benefit received by one person is more than the harm inflicted on another. [cost - benefit approach]

b. **technical efficiency** - for a given level of output, you minimize cost or (alternatively) for a given level of cost you maximize output.

c. **full employment** - for a system to be economically efficient then full employment is also required.

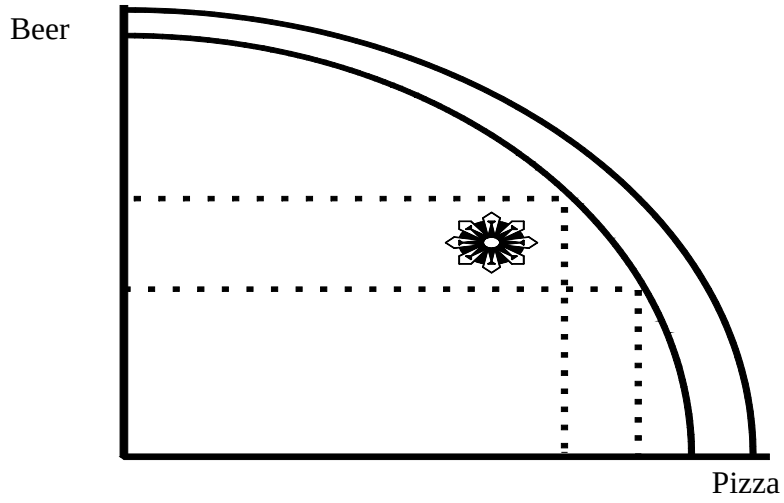
11. Allocations of resources imply that decisions must be made, which in turn involves choice. Every choice is costly; there is always the lost alternative -- the opportunity cost:

a. opportunity cost - the next best alternative that must be foregone as a result of a particular decision.

12. The production possibilities curve is a simple model that can be used to show choices:

a. assumptions necessary to represent production possibilities in a simple production possibilities curve model:

1. efficiency
2. fixed resources
3. fixed technology
4. two products



13. Law of Increasing Opportunity Costs is illustrated in the above production possibilities curve. Notice - As we obtain more pizza (shift to the right along the pizza axis), we have to give up large amounts of beer (downward shift along beer axis).

14. Inefficiency, unemployment and underemployment are illustrated by a point inside the production possibilities curve, as shown above. (identified by this symbol):

    a. Inefficiency is a violation of the assumptions behind the model, but do not change the potential output of the system.

15. Economic Growth can also be illustrated with a production possibilities curve. The dashed line in the above model shows a shift to the right of the curve, which is called economic growth.

    a. The only way this can happen is for there to be more resources or better technology.

    b. Growth will change the potential output of the economy, hence the shift of the entire curve.

16. The modern economic system is no longer the closed (i.e., U.S. only) system upon which the debates surrounding isolationalism occurred prior to World War II.

    a. Imports and Exports are increasingly important

b. Foreign investment versus U.S. investment abroad

    1. Outsourcing

    2. Technological transfers

c. Balance of trade issues.

    1. Current accounts (import v. exports)

    2. Capital accounts (foreign investment)

17. Capitalist Ideology - The characteristics of a capitalist economy and the ideology that has developed concerning this paradigm are not necessarily the same thing. The elements of a capitalist ideology are:

    a. freedom of enterprise

    b. self-interest

    c. competition

    d. markets and prices

    e. a very limited role for government

    f. different countries with different views of these matters – i.e., equity v. efficiency again.

18. Market System Characteristics - the following characteristics are typical of a system that relies substantially on markets for allocation of resources. These characteristics are:

    a. division of labor & specialization

b. capital goods

c. comparative advantage - is concerned with cost advantages.

1. Comparative advantage is the motivation for trade among nations and persons.

2. Terms of trade are those upon which the parties may agree and depends on the respective cost advantages and bargaining power.

19. Trade among nations

a. the reliance upon comparative advantage to motivate trade – assuming barter:

	Belgium	Holland
Tulips	400	4000
Wine	4000	400

The data above show what each country could produce if all of their resources were put into each commodity. For example, if Holland put all their resources in tulip production they could produce 4000 tons of tulips but no wine. Assuming the data give the rate at which the commodities can be substituted, if both countries equally divided their resources between the two commodities, Belgium can produce 200 tons of tulips and 2000 barrels of wine and Holland can produce 200 barrels of wine and 2000 tons of tulips (for a total of 2200 units of each commodity produced by the two countries by splitting their resources among the two commodities). If Belgium produced nothing but wine it would produce 4000, and if Holland produced nothing but tulips it would produce 4000 tons). If the countries traded on terms where one barrel of wine was worth one ton of tulips then both countries would have 2000 units of each commodity and obviously benefit from specialization and trade.

b. absolute advantage for one trading partner results in no advantage to trade.

3. LDCs often have no comparative advantage and hence the developed countries, possessing absolute advantage have no incentive to trade (.

3. LDC– Less Developed Country - Low-income countries – 60 – (per capita GDP of $800), middle-income countries – 75 – (per capital GDP of $8000).

4. High income countries and developed countries (19 countries)

5. High income countries without economic development (Hong Kong, Israel, Kuwait, Singapore, and UAE)

20. Money facilitates market activities and is necessary in complex market systems:

a. barter economy - is where commodities are directly traded without the use of money.

1. Direct trade requires a coincidence of wants.

2. Prices become complicated by not having a method to easily measure worth.

b. functions of money:

1. medium of exchange

2. store of value

3. measure of worth

c. Fiat money

1. European Gold & Silver smith receipts 15th century

2. Genghis Kahn in the 12th century in Asia – paper money

21. Foreign exchange – value of one currency versus another

    a. Hard currency – U.S. dollar, British Pound, Canadian dollar, Japanese Yen, and the Euro – general acceptability of the currency and it being demanded as reserves by central banks

        1. G-7 nations, hard currency nations; Euro predecessors France, Germany, Italy

    b. Exchange rates affect both imports and exports; and foreign investment here, U.S. investment abroad.

        1. Dollar gains strength, Imports cheaper here, exports more expensive abroad

        2. Dollar gains strength, foreign investment in U.S. more attractive because dollar buys more foreigners' home currency when investment repatriated

    c. Strong dollar policy in exchange – based on interest rates, growth, and relative strength of economy and stability of political system etc.

        1. Debt and supply of currency an important factor in economic development

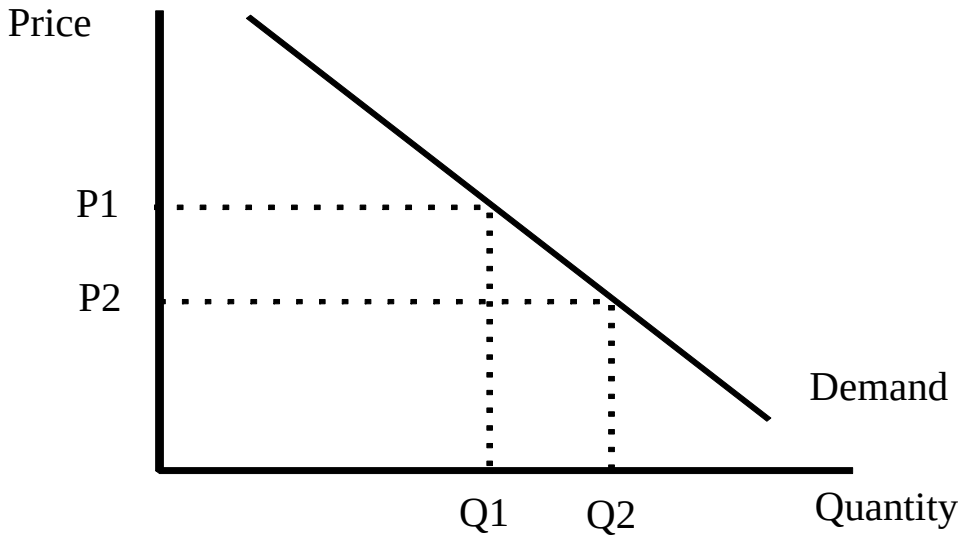
2. Basics of Supply and Demand

Lecture Notes

1. A market is nothing more or less than the locus of exchange, it is not necessarily a place, but simply buyers and sellers coming together for transactions.

2. The law of demand states that as price increases (decreases) consumers will purchase less (more) of the specific commodity.

    a. The demand schedule (demand curve) reflects the law of demand it is a downward sloping function and is a schedule of the quantity demanded at each and every price.



As price falls from P1 to P2 the quantity demanded increases from Q1 to Q2. This is a negative relation between price and quantity, hence the negative slope of the demand schedule; as predicted by the law of demand.

1. utility (use, pleasure, jollies) from the consumption of commodities.

2. The change in utility derived from the consumption of one more unit of a commodity is called marginal utility.

3. Diminishing marginal utility is the fact that at some point further consumption of a commodity adds smaller and smaller increments to the total utility received from the consumption of that commodity.

b. The income effect is the fact that as a person's income increases (or the price of item goes down [which effectively increases command over goods] more of everything will be demanded.

c. The substitution effect is the fact that as the price of a commodity increases, consumers will buy less of it and more of other commodities.

3. Demand Curve

a. Price and quantity - again the demand curve shows the negative relation between price and quantity.

b. Individual versus market demand - a market demand curve is simply an aggregation of all individual demand curves for a particular commodity.

c. Nonprice determinants of demand; and a shift to the left (right) of the demand curve is called a decrease (increase) in demand. The nonprice determinants of demand are:

    1. tastes and preferences of consumers,

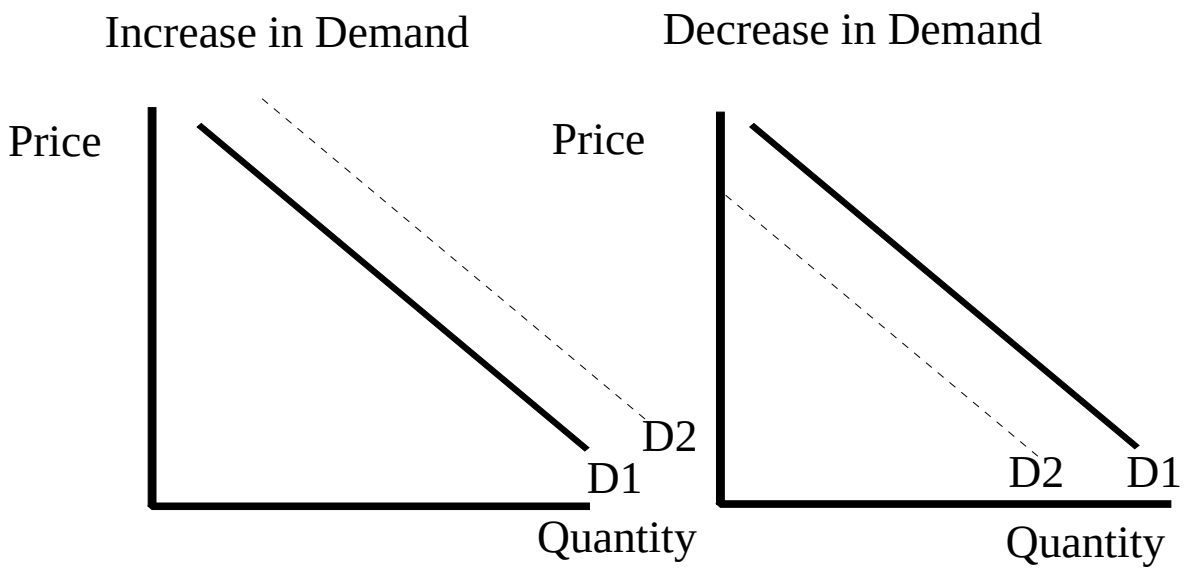
    2. the number of consumers,

    3. the money incomes of consumers,

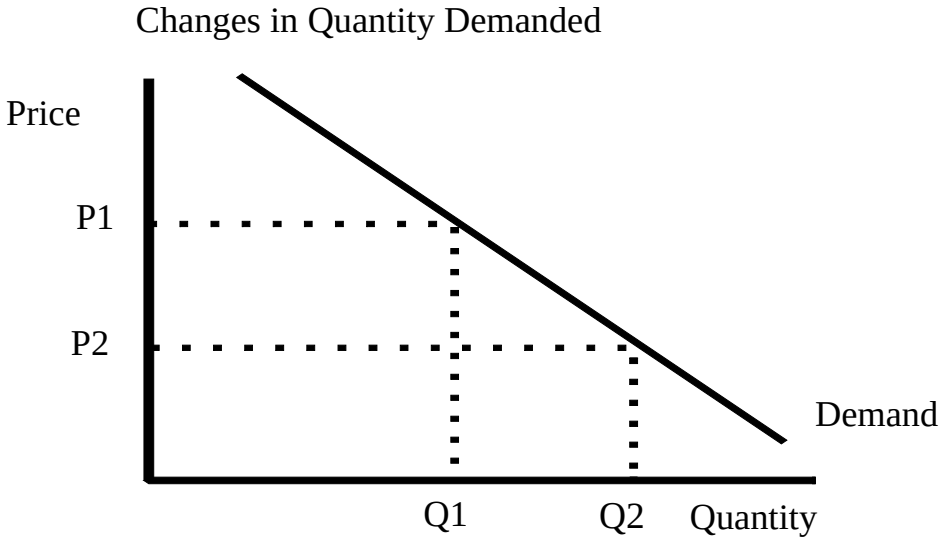
    4. the prices of related goods, and

    5. consumers' expectations concerning future availability or prices of the commodity.

d. Changes in demand versus in quantity demanded



An increase in demand is shown in the first panel, notice that at each price there is a greater quantity demanded along D2 (the dotted line) than was demanded with D1 (the solid line). The second panel shows a decrease in demand, notice that there is a lower quantity demanded at each price along D2 (the dotted line) than was demanded with D1 (the solid line).



Movement along a demand curve is called a change in the quantity demanded. Changes in quantities demanded are caused by changes in price. When price decreases from P1 to P2 the quantity demanded increases from Q1 to Q2; when price increases from P2 to P1 the quantity demanded decreases from Q2 to Q1.

4. The law of supply is that producers will supply more the higher the price of the commodity.

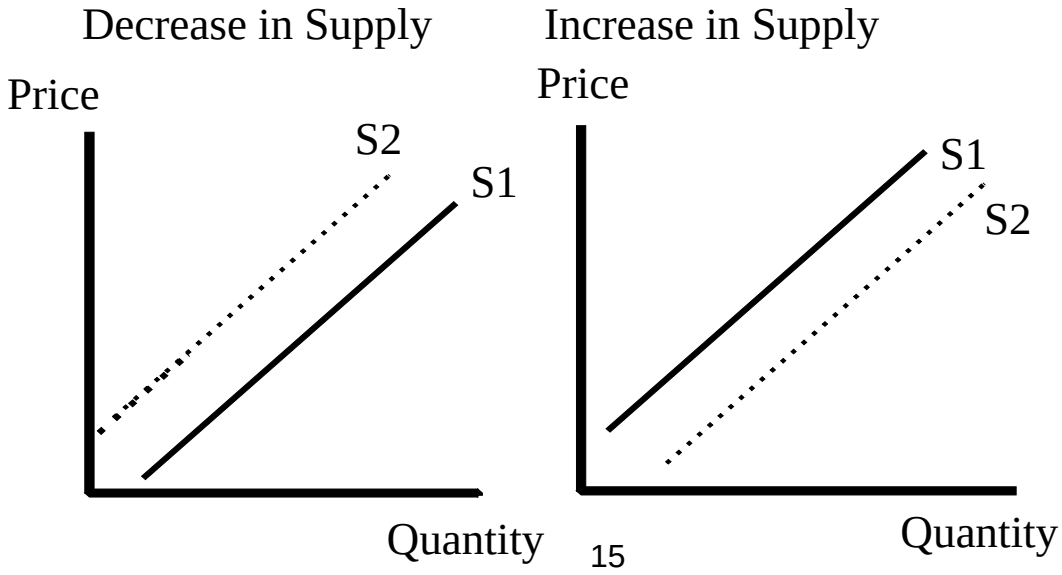
    a. Supply schedule - are the quantities supplied at each and every price.

5. Supply curve - is nothing more than a schedule of the quantities at each and every price.

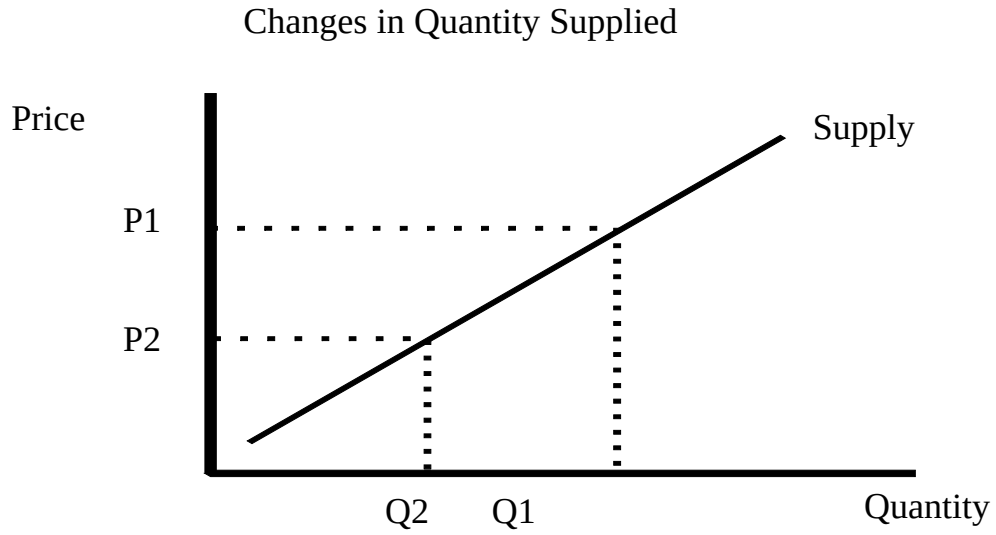
    a. There is a positive relation between price and quantity on a supply curve.

    b. Changes in one or more of the nonprice determinants of supply cause the supply curve to shift. A shift to the left of the supply curve is called a decrease in supply; a shift to the right is called an increase in supply. The nonprice determinants of supply are:

        3. resource prices,
        4. technology,
        5. taxes and subsidies,
        6. prices of other goods,
        7. expectations concerning future prices, and
        8. the number of sellers.



A decrease in supply is shown in the first panel, notice that there is a lower quantity supplied at each price with S2 (dotted line) than with S1 (solid line). The second panel shows an increase in supply, notice that there is a larger quantity supplied at each price with S2 (dotted line) than with S1 (solid line).



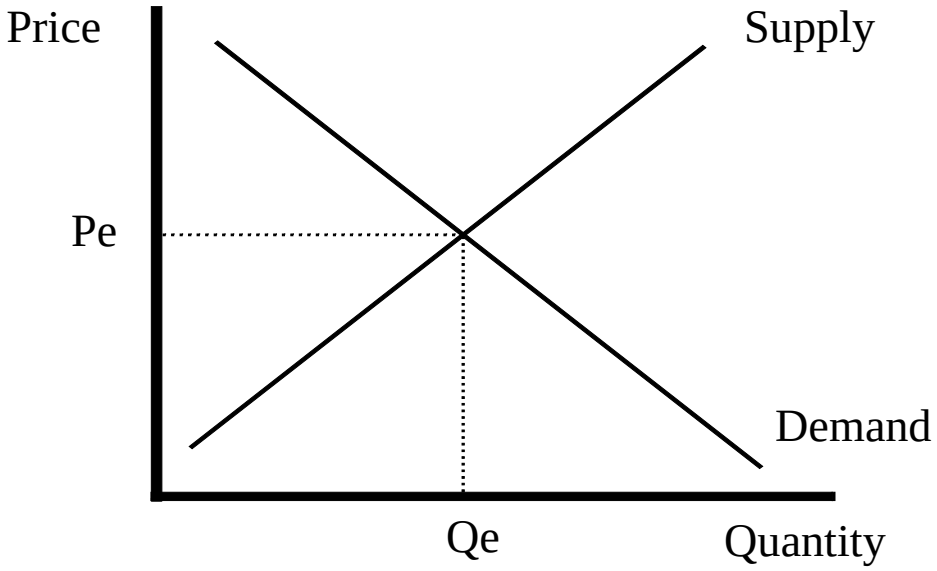
Changes in price cause changes in quantity supplied, an increase in price from P2 to P1 causes an increase in the quantity supplied from Q2 to Q1; a decrease in price from P1 to P2 causes a decrease in the quantity supplied from Q1 to Q2.

6. Market equilibrium occurs where supply equals demand (supply curve intersects demand curve).

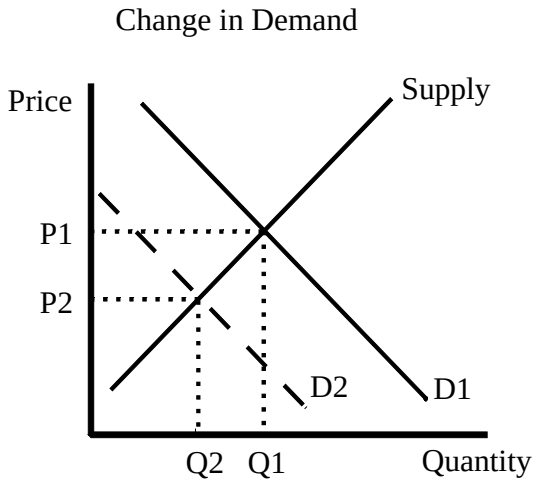
    a. An equilibrium implies that there is no force that will cause further changes in price, hence quantity exchanged in the market. This is analogous to a cherry rolling down the side of a glass; the cherry falls due to gravity and rolls past the bottom because of momentum, and continues

rolling back and forth past the bottom until all of its' energy is expended and it comes to rest at the bottom - this is equilibrium [a rotten cherry in the bottom of a glass].

The following graphical analysis portrays a market in equilibrium. Where the supply and demand curves intersect, equilibrium price is determined (Pe) and equilibrium quantity is determined (Qe)

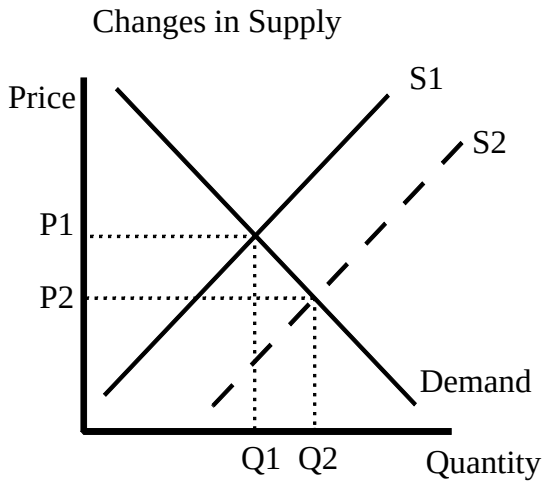


7. Changes in supply and demand in a market result in new equilibria. The following graphs demonstrate what happens in a market when there are changes in nonprice determinants of supply and demand.



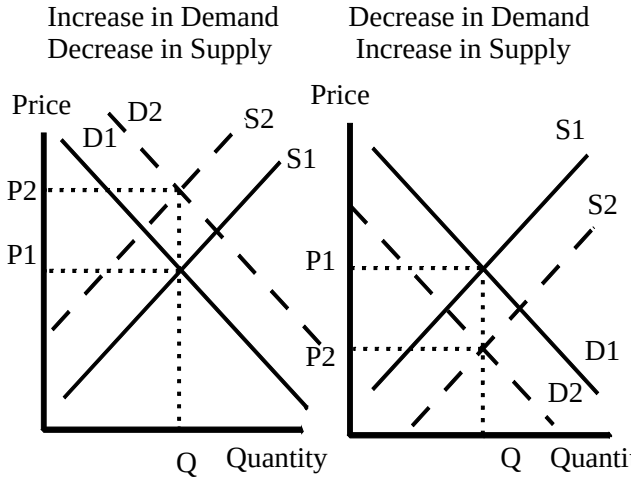
Movement of the demand curve from D1 (solid line) to D2 (dashed line) is a decrease in demand (as demonstrated in the above graph). Such decreases are caused by a change in a nonprice determinant of demand (for example, the number of consumers in the market declined or the price of a substitute declined). With a decrease in demand there is a shift of the demand curve to the left along the supply curve, therefore both equilibrium price and quantity decline. If we move from D2 to D1 that is called an increase in demand, possibly due to an increase in the price of a substitute good or an increase in the number of consumers in the market. When demand increases both equilibrium price and quantity increase as a result.

Considering the following graph, movement of the supply curve from S1 (solid line) to S2 (dashed line) is an increase in supply. Such increases are caused by a change in a nonprice determinant (for example, the number of suppliers in the market increased or the cost of capital decreased). With an increase in supply there is a shift of the supply curve to the right along the demand curve, therefore equilibrium price and quantity move in opposite directions (price decreases, quantity increases). If we move from S2 to S1 that is called an decrease in supply, possibly due to an increase in the price of a productive resource (capital) or the number of suppliers decreased. When supply decreases, equilibrium price increases and the quantity decreases as a result. That is the result of the supply curve moving up along the negatively sloped demand curve (which remains unchanged).



If both the demand curve and supply curve change at the same time the analysis becomes more complicated.

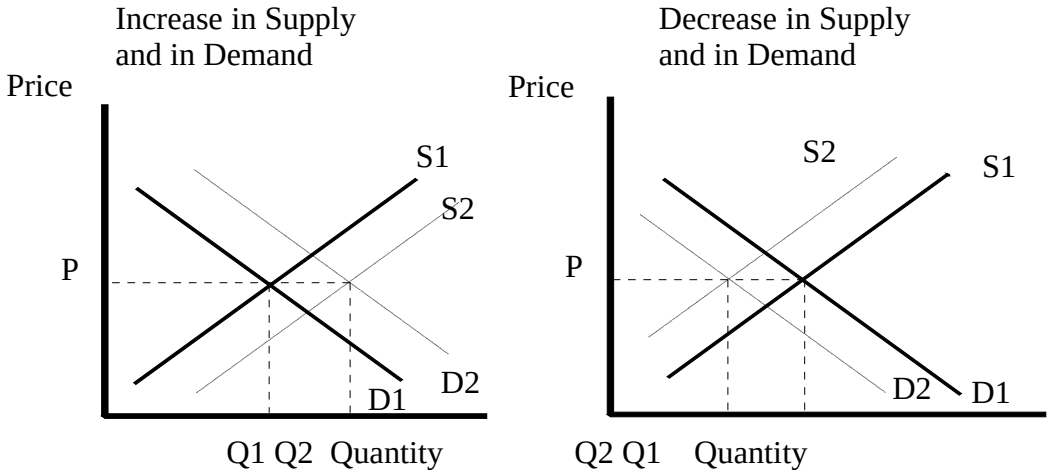
Consider the following graphs:



Notice that the quantity remains the same in both graphs. Therefore, the change in the equilibrium quantity is indeterminant and its direction and size depends on the relative strength of the changes between supply and demand. In both cases, the equilibrium price changes. In the first case where demand increases, but supply decreases the equilibrium price increases. In the second panel where demand decreases and supply increases, the equilibrium price decreases.

In the event that demand and supply both increase then price remains the same (is indeterminant) and quantity increases, and if both decrease then price is

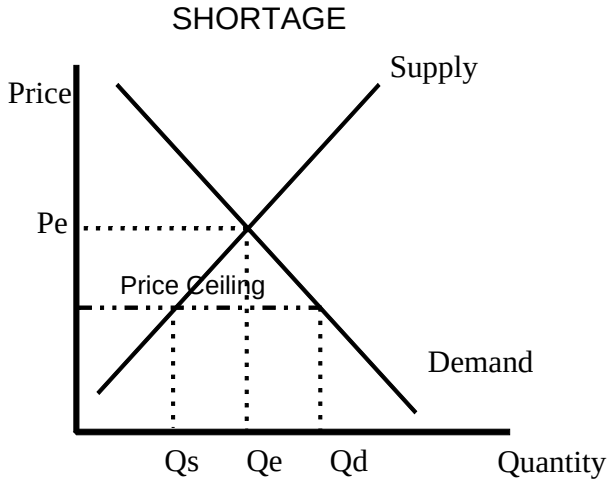
indeterminant and quantity decreases. These results are illustrated in the following diagrams.



The graphs show that price remains the same (is indeterminant) but when supply and demand both increase quantity increases to Q2. When both supply and demand decrease quantity decreases to Q2.

8. Shortages and surpluses occur because of effective government intervention in the market.

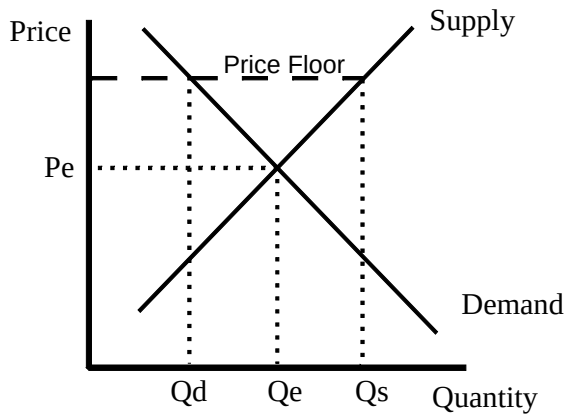
    a. Shortage is caused by an effective price ceiling (the maximum price you can charge for the product). Consider the following diagram that demonstrates the effect of a price ceiling in an otherwise purely competitive industry.



1. For a price ceiling to be effective it must be imposed below the competitive equilibrium price. Note that the Qs is below the Qd, which means that there is an excess demand for this commodity that is not being satisfied by suppliers at this artificially low price. The distance between Qs and Qd is called a shortage.

b. Surplus is caused by an effective price floor (i.e., the minimum you can charge):

SURPLUS



For a price floor to be effective it must be above the competitive equilibrium price. Notice that at the floor price Qd is less than Qs, the distance between Qd and Qs is the amount of the surplus. Minimum wages are the best-known examples of price floors and will be discussed in greater detail in Chapter 11.

9. Supply and Demand is rudimentary, and does not exist in the real world. In most respects the supply and demand model is the beginning point for understanding markets. Monopoly, monopolistic competition and oligopoly are, in some important respects, refinements from the purely competitive market. Therefore, the basic supply and demand model may accurately be thought of as the beginning point from which we will explore more realistic market structures.

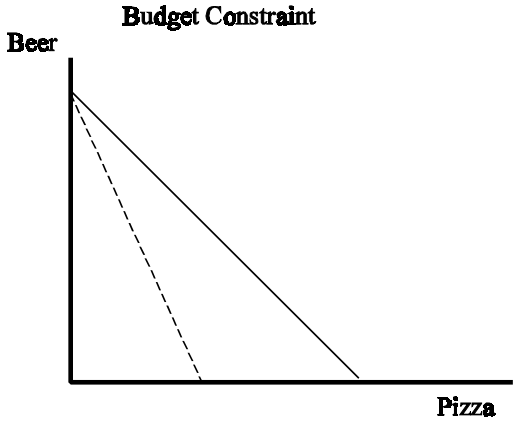
10. Individual demand curves can be constructed from observing consumer purchasing behaviors as we change price.

a. This is called REVEALED PREFERENCE

b. Market demand curves are constructed by aggregating individual demand curves for specific commodities.

11. Individual preferences can be modeled using a model called indifference curve - budget constraint and from this model we can derive an individual demand curve.

a. The budget constraint shows the consumer's ability to purchase goods.



The consumer is assumed to spend their resources on only beer and pizza. If all resources are spent on beer then the intercept on the beer axis is the amount of beer the consumer can purchase; on the other hand, if all resources are spent on pizza then the intercept on that axis is the amount of pizza that can be had.

If the price of pizza doubles then the new budget constraint becomes the dashed line. The slope of the budget constraint is the negative of the relative prices of beer and pizza.

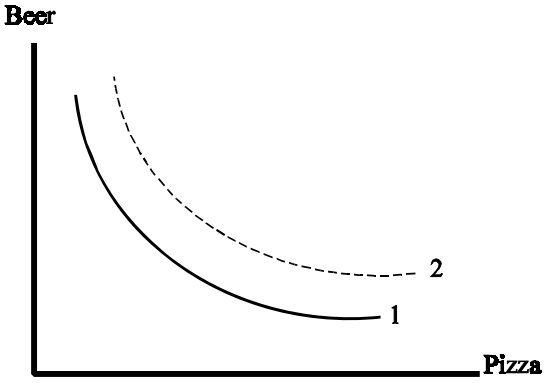
b. The indifference curve shows the consumer's preferences:

1. There are three assumptions that underpin the indifference curve, these are:

    1) Indifference curves are everyplace thick

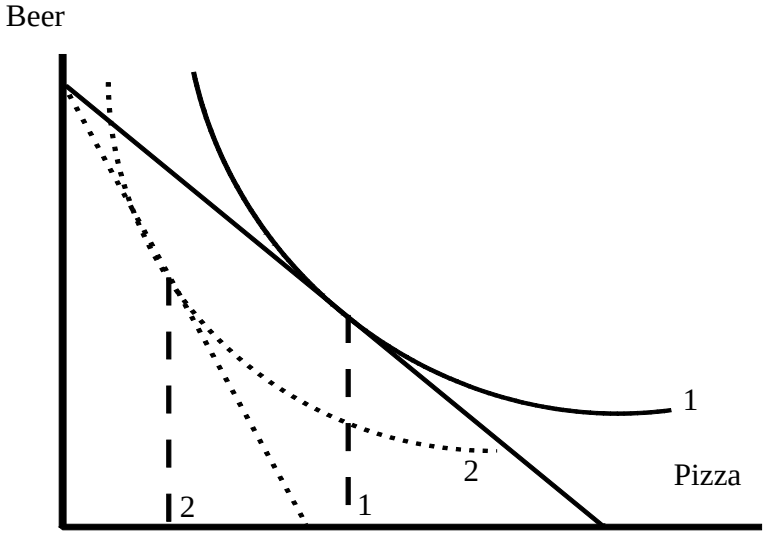
    2) Indifference curves do not intersect one another

3) Indifference curves are strictly convex to the origin



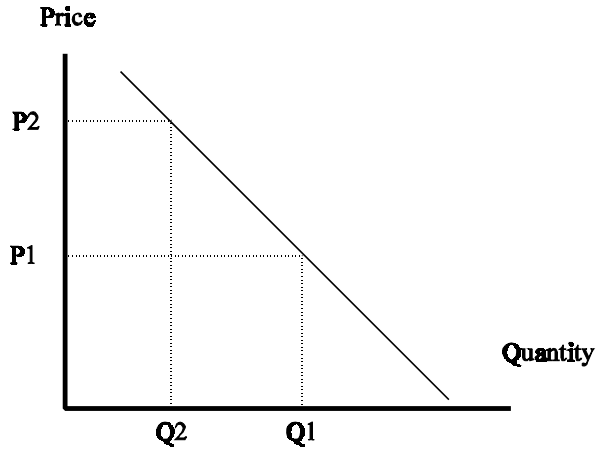
The dashed line (2) shows a higher level of total satisfaction than does the solid line (1). each indifference curve is the mix of beer and pizza that gives the consumer equal total utility.

Consumer equilibrium is where the highest indifference curve they can reach is exactly tangent to their budget constraint. Therefore if the price of pizza increases we can identify the price from the slope of the budget constraint and the quantities purchased from the values along the pizza axis and derive and individual demand curve for pizza:



When the price of pizza doubled the budget constraint rotated from the solid line to the dotted line and instead of the highest indifference curve being curve 1, the best the consumer can do is the indifference curve labeled 2.

Deriving the individual demand curve is relatively simple. The price of pizza (with respect to beer) is given by the (-1) times slope of the budget constraint. The lower price with the solid line budget constraint results in the level the higher level of pizza being purchased (labeled 1for the indifference curve - not the units of pizza). When the price increased the quantity demanded of pizza fell to the levels associated with budget constraint 2.

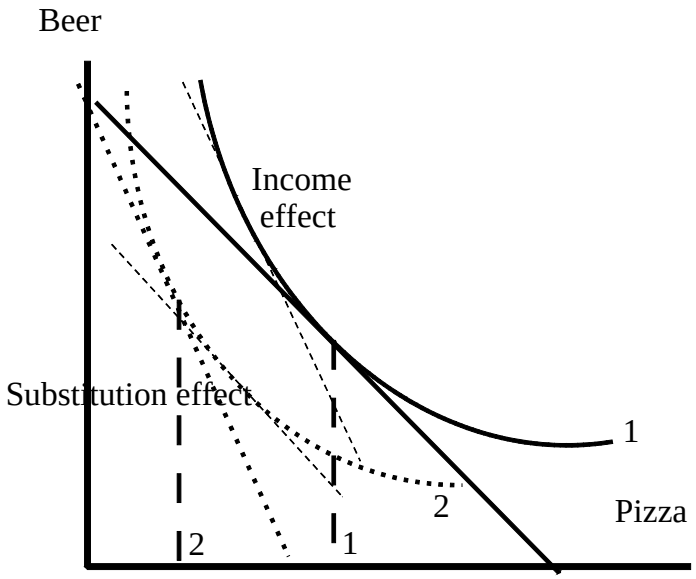


Notice that Q2 and P2 are associated with indifference curve 2 and budget constraint 2, and that Q1 and P1 result from indifference curve 1 and budget constraint 1. The above model shows this individual consumer's demand for pizza.

12. Income and substitution effects combine to cause the demand curve to slope downwards.

    a. the income effect results from the price of a commodity going down permitting consumers to spend less on that commodity, hence the same as having more resources.

       The dashed line is an imaginary budget constraint that the consumer will attempt to attain, and consume both commodities as though his income had not changed (labeled income effect)



b. As a price increases, the consumer will purchase less of that commodity and buy more of a substitute, this is the substitution effect.

The dashed line at the new indifference curve illustrates the substitution effect, the consumer will attempt to substitute more pizza for beer at the old price relative even though the income will not permit it.

c. The combination of the income and substitution effects is that an individual (hence a market) demand curve will generally slope downward. The respective effects of the income and substitution effects bring the consumer into a new equilibrium at the higher price for pizza where amount 2 of pizza is consumed.

d. Giffin's Paradox is the fact that some commodities may have an upward sloping demand curve. This happens because the income effect results in less of a quantity demanded for a product the lower the price.

1. There is also the snob appeal possibility where the higher the price the more desired the commodity is - Joy Perfume advertised itself as the world's most expensive.

a. Utility maximizing rule - consumers will balance the utility they receive against the cost of each commodity to arrive at the level of each commodity they should consume to maximize their total utility.

a. algebraic restatement - $MU_a/P_a = MU_b/P_b = . . . = Mu_z / P_z = 1$

3. More on Supply & Demand: Price Elasticities

Lecture Notes

1. Price Elasticity of Demand is how economists measure the responsiveness of quantities demanded to changes in prices.

    a. The elasticity coefficient is calculated using the midpoints formula presented below:

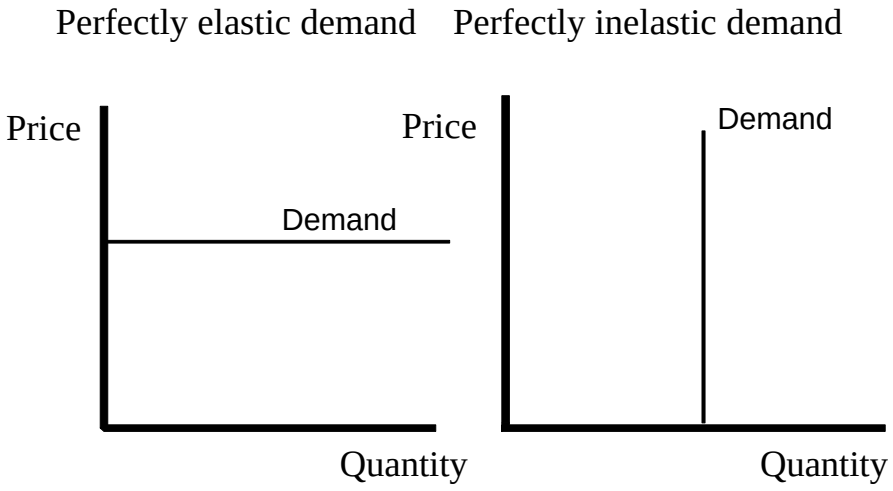
        i. $E_d = \frac{\text{Change in Qty}}{(Q1 + Q2)/2} \div \frac{\text{Change in price}}{(P1 + P2)/2}$

    b. Elastic demand means that the quantities demanded respond more than proportionately to changes in price; with elastic demand the coefficient is more than one.

    c. Inelastic demand means that the quantities demanded respond less than proportionately to changes in price; with inelastic demand the coefficient is less than one.

    d. Unit elastic demand means that the quantity demanded respond proportionately to change in prices; with unit elastic demand the coefficient is exactly one.

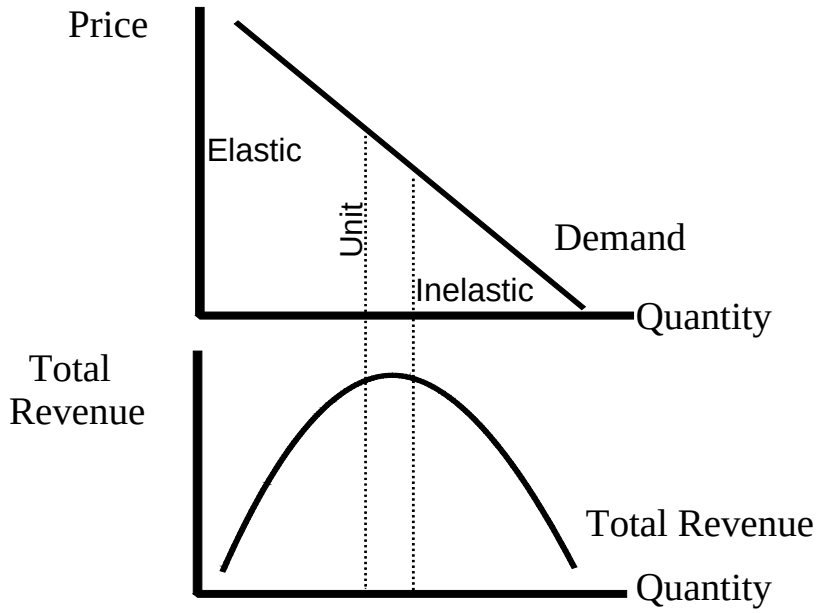
2. Perfectly Elastic and Perfectly Inelastic Demand Curves



Notice that the perfectly elastic demand curve is horizontal, (add one more horizontal line at the top of the price axis and it will look like an E) and the inelastic demand curve is vertical (looks like an I).

a. Elasticity changes along the demand curve, however slope does not. Elasticity is concerned with changes along the curve rather than the shape or position of the curve.

3. Demand Curve and Total Revenue (total revenue = P x Q) Curve



In examining the above graphs, notice that as total revenue is increasing, demand is elastic. When the total revenue curve flattens-out at the top then demand becomes unit elastic, and when total revenue falls demand is inelastic.

4. Total Revenue Test uses the relation between the total revenue curve and the demand curve to determine elasticity.

Consider the following numerical example:

Total Quantity	Price per unit	Total Revenue		Elasticity
1	9	9		
			>+7	Elastic
2	8	16		
			>+5	Elastic
3	7	21		
			>+3	Elastic
4	6	24		
			>+ 1	Elastic
5	5	25		
			> - 1	Inelastic
6	4	24		
			> - 3	Inelastic
7	3	21		
			> - 5	Inelastic
8	2	16		
			> - 7	Inelastic
9	1	9		

The total revenue test is simply the inspection of the data to see what happens to total revenue. If the change in total revenue (marginal revenue) is positive then demand is price elastic, if the change in total revenue is negative the demand is price inelastic. If the marginal revenue is exactly zero then demand is unit elastic.

5. The following determinants of the price elasticity of demand will determine how responsive the quantity demanded is to changes in price. These determinants are:

    a. substitutability

    b. proportion of income

    c. luxuries versus necessities

    d. time

6. Price Elasticity of Supply is determined by the following time frames. The more time a producer has to adjust output the more elastic is supply.

a. market period

b. short run

c. long run

7. Cross elasticity of demand measures the responsiveness of the quantity demanded of one product to changes in the price of another product. For example, the quantity demanded of Coca-Cola to changes in the price of Pepsi.

8. Income elasticity of demand measures the responsiveness of the quantity demanded of a commodity to changes in consumers' incomes.

9. Interest rate sensitivity.

4. Costs of Production

Lecture Notes

1. Explicit are accounting costs, however, Implicit Costs are the opportunity costs of business decisions.

    a. normal profit includes an opportunity cost - the profit that could have been made in the next best alternative allocation of productive resources.

        1. In other words, there is a difference between economic and accounting cost; accountants are unconcerned with opportunity costs.

2. Time Periods are defined by the types of costs observed. These time periods differ from industry to industry.

    a. market period - everything is fixed

    b. short run - there are both fixed and variable costs

    c. long run - everything is variable

3. Prelude to Production Costs in Short Run - include both fixed and variable costs:

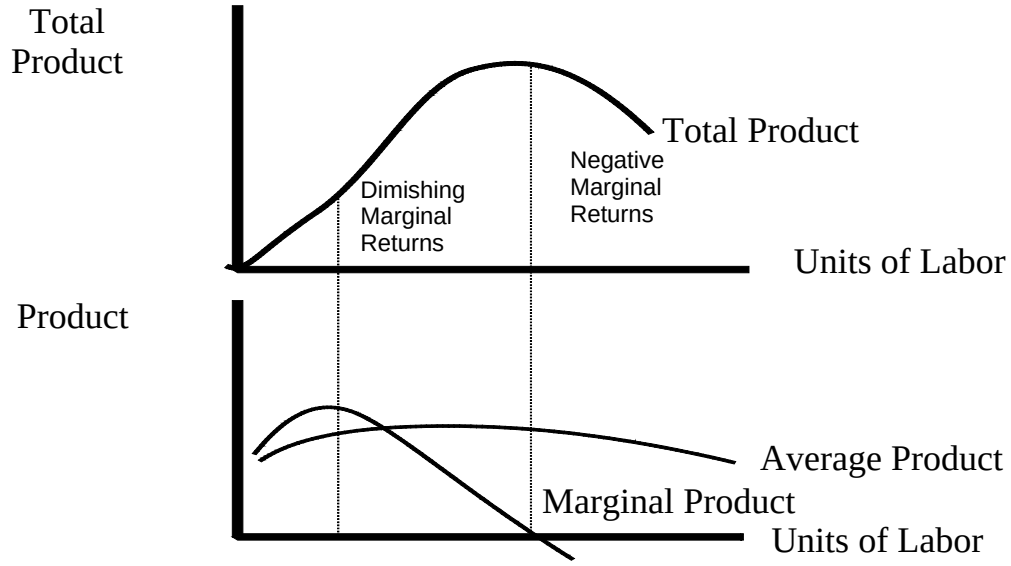
    a. the law of diminishing returns is the fact that as you add variable factors of production to a fixed factor at some point, the increases in total output become smaller.

    b. total product is the total units of production obtained from the productive resources employed.

    c. average product is total product divided by the number of units of the variable factor employed

d. marginal product is the change in total product associated with a change in units of a variable factor

1. graphical presentation:



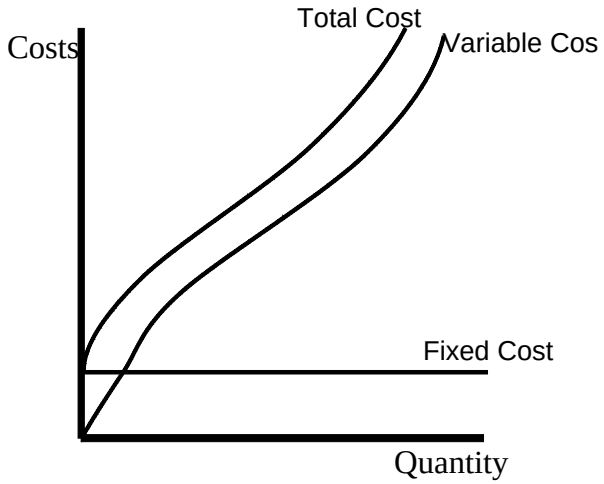
The top graph shows total product (total output). As total product reaches its maximum marginal product becomes zero and then negative as total product declines. When marginal product reaches its maximum, the total product curve becomes flatter. As marginal product is above average product in the bottom diagram, average product is increasing. When marginal product is below average product, then average product is decreasing. The ranges of marginal returns are identified on the above graphs.

4. Short-run costs:

a. total costs = VC + FC

b. variable costs are those items that can be varied in the short-run, i.e., labor

c. fixed costs are those items that cannot be varied in the short-run, i.e., plant and equipment



The fixed cost curve is a horizontal line because they do not vary with quantity of output. Variable cost has a positive slope because it vary with output. Notice that the total cost curve has the same shape as the variable cost curve, but is above the variable cost curve by a distance equal to the amount of the fixed cost.

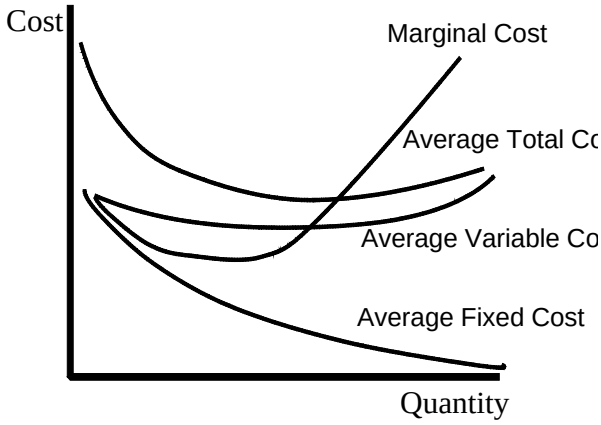
d. average total costs = TC/Q

e. average variable cost = VC/Q

f. average fixed cost = FC/Q

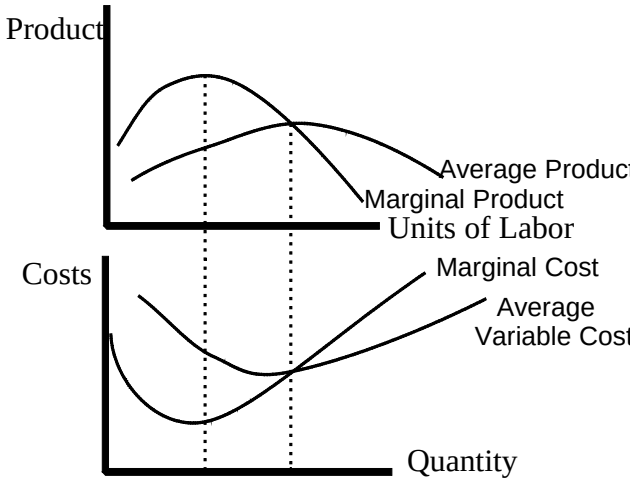
g. marginal cost = $\Delta TC/\Delta Q$; where Δ stands for change in.

1. The following diagram presents the average costs and marginal cost curve in graphical form.



Notice that the average fixed cost approaches zero as quantity increases. Average total cost is the summation of the average fixed and average variable cost curves. The marginal cost curve intersects both the average total cost and average variable cost curves at their respective minimums.

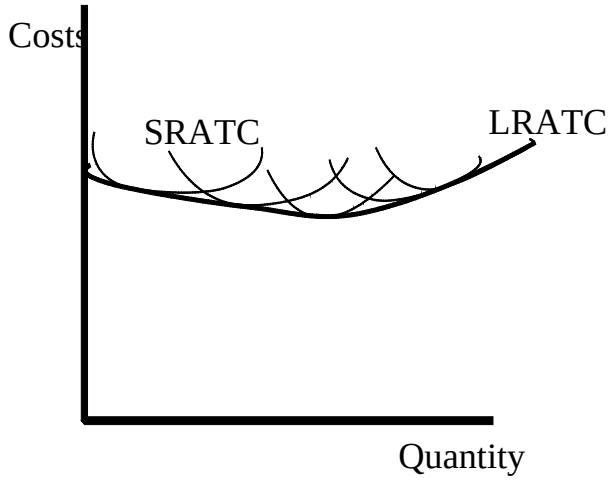
The following graph relates average and marginal product to average variable and marginal cost.



Notice that at the maximum point on the average product curve, marginal cost reaches a minimum. Where marginal cost equals average variable cost, the marginal product curve intersects the average product curve.

5. Long Run Average Total Cost Curve

    a. Is often called an envelope curve because it is the minimum points of all possible short-run average total cost curves (allowing technology and fixed cost to vary).



6. Economies of Scale are benefits obtained from a company becoming large and Diseconomies of Scale are additional costs inflicted because a firm has become too large.

    a. The causes of economies of scale are:

        1. labor specialization

        2. managerial specialization

        3. more efficient capital

        4. ability to profitably use by-products

    b. Diseconomies of scale are due to the fact that management loses control of the firm beyond some size.

    c. Constant returns to scale are large ranges of operations where the firm's size matters little.

    d. Minimum efficient scale is the smallest size of operations where the firm can minimize its long-run average costs.

    e. Natural monopoly is a market situation where per unit costs are minimized by having only one firm serve the market -- i.e., electric companies.

5. Product Market Structures

Lecture Notes

1. There are several models of market structure, these include:

    a. pure competition (atomized competition, price taker, freedom of entry & exit, no nonprice competition, standardized product)

    b. pure monopoly (one seller, price giver, entry & exit blocked, unique product, nonprice competition)

    c. monopolistic competition (large number of independent sellers, pricing policies, entry difficult, nonprice competition, product differentiation)

    d. oligopoly (very few number of sellers, often collude, often price leadership, entry difficult, nonprice competition, product differentiation)

        1. all assume perfect knowledge

2. Assumptions of Pure Competition:

    a. large number of agents

    b. standardized product

    c. no non-price competition

    d. freedom of entry & exit

    e. price taker

3. Revenue with a price taking firm:

    a. average revenue and marginal revenue are equal for the purely competitive firm because price does not change with quantity.

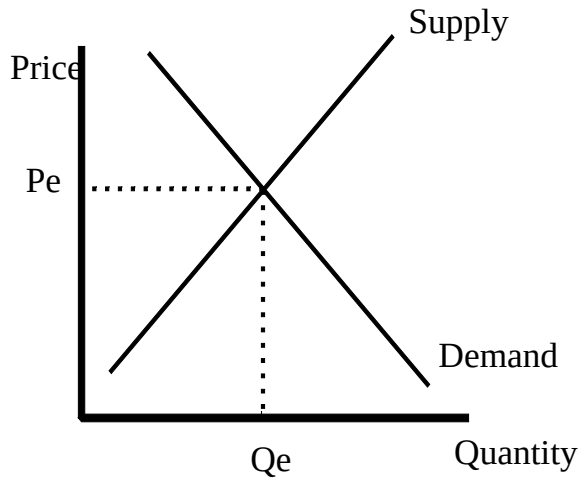
    b. total revenue is P x Q which is the total area under the demand curve (up to where MR = MC) for the purely competitive firm.

4. The profit maximizing rule is that a firm will maximize profits where Marginal Cost is equal to Marginal Revenue.

    a. MC = MR

    b. Where MC = MR; revenue is at its maximum and costs are at their minimum.

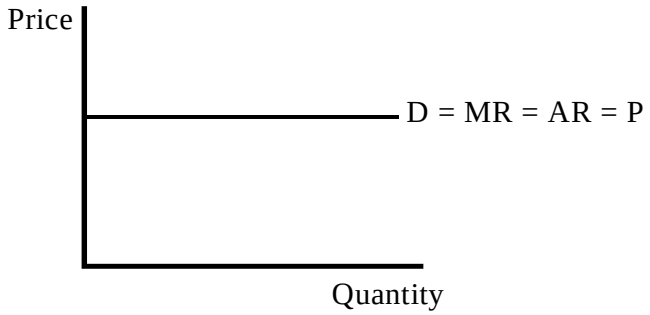
5. Model of the purely competitive industry:



The purely competitive industry is the supply and demand diagram presented in chapter 4.

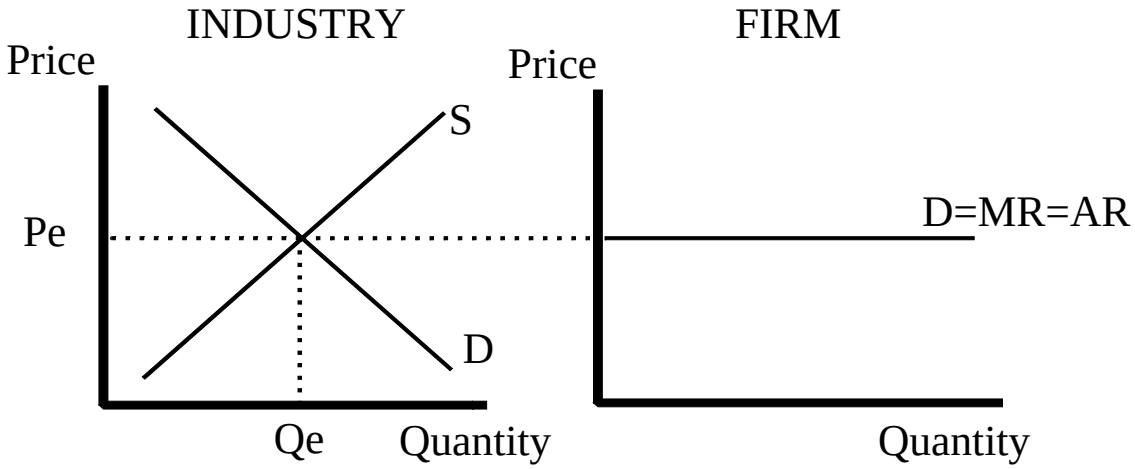
6. Firm in Perfect Competition

   a. perfectly elastic demand curve



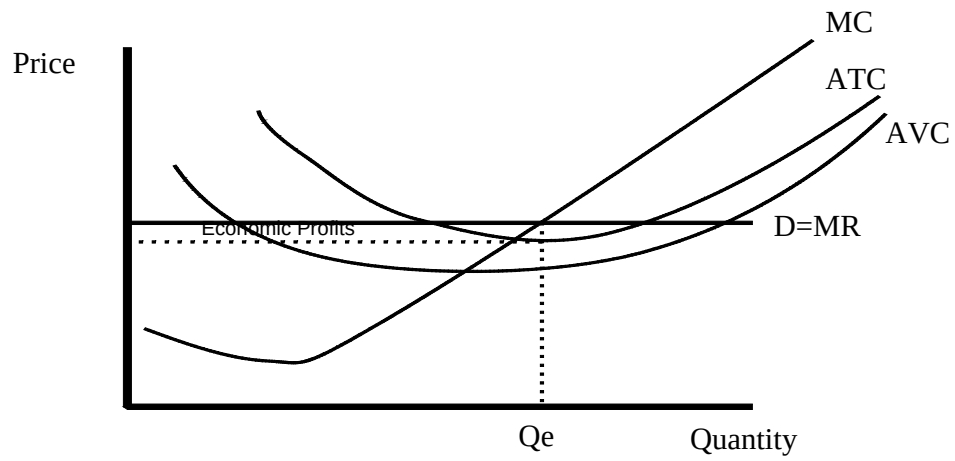
   b. Because the firm is a price taker, meaning that it charges the same price across all quantities of output, marginal revenue is always equal to price, and average revenue will always be equal to price. Therefore the demand curve intersects the price axis and is horizontal (perfectly elastic).

   c. Establishing price in the industry and the firm:



   d. The price is established by the interaction of supply and demand in the industry (Pe) and the quantity exchanged in the industry is the summation of all of the quantities sold by the firms in the industry.

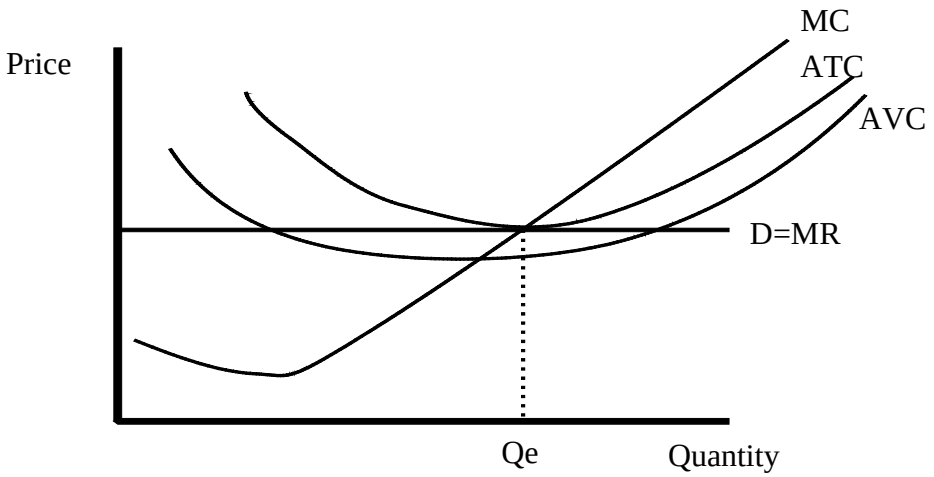
e. Economic profit for the competitive firm is shown by the rectangle labeled "Economic Profit" in the following diagram:



f. The firm produces at where MC = MR, this establishes Qe. At the point where MC = MR the average total cost (ATC) is below the demand curve (AR) and therefore costs are less than revenue, and an economic profit is made. The reason for this is that the opportunity cost of the next best allocation of the firm's productive resources is already added into the firm's ATC.

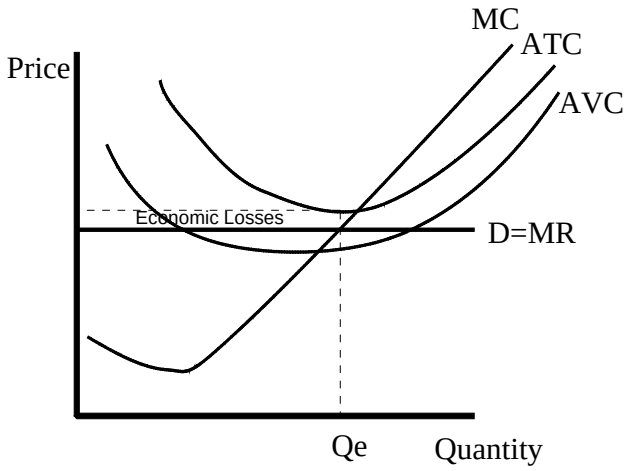
1. However, the firm cannot continue to operate at an economic profit because those profits are a signal to other firms to enter the market (free entry). As firms enter the market, the industry supply curve shifts to the right reducing price and thereby eliminating economic profits. Because of the atomized competition assumption, the number of firms that must enter the market to increase industry supply must be substantial.

g. A normal profit for the competitive firm is shown in the following diagram:



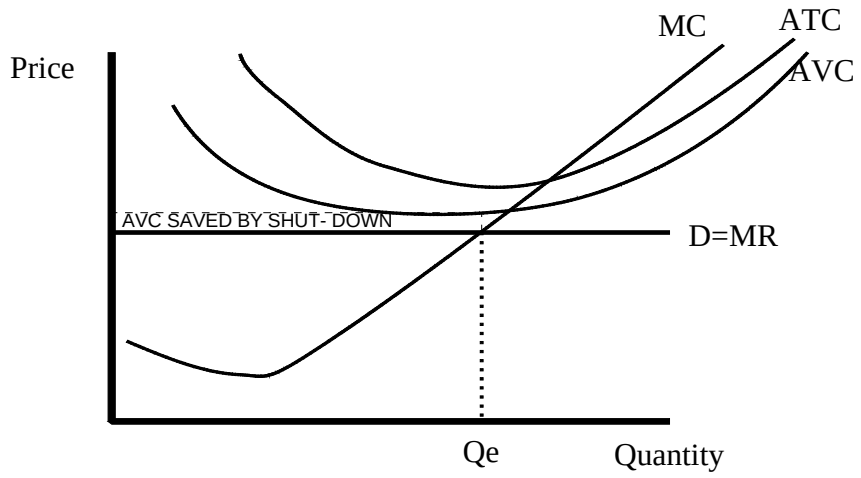
1. The case where a firm is making a normal profit is illustrated above. Where MC = MR is where the firm produces, and at that point ATC is exactly tangent to the demand curve. Because the ATC includes the profits from the next best alternative allocation of resources this firm is making a normal profit.

h. economic loss for a firm in pure competition:



i. The case of an economic loss is illustrated above. The firm produces where MC = MR, however, at that level of production the ATC is above the demand curve, in other words, costs exceed revenues and the firm is making a loss.

j. shut-down case



1. The firm will continue to operate in the case presented in (d.) above because the firm can cover all of its variable costs and have something left to pay on its fixed costs - this is loss minimization. However, in the case above you can see that the AVC is above the demand curve at where MC=MR, therefore the firm cannot even cover its variable costs and will shut down to minimize its losses.

7. Pure Competition and Efficiency

a. Allocative efficiency criteria are satisfied by the competitive model. Because P = MC, in every market in the economy there is no over- or under- allocation of resources in this economy.

b. Technical or Productive efficiency criteria are also satisfied by the competitive model because price is equal to the minimum Average Total Cost.

c. This, however, does not mean a purely competitive world is utopia. There are several problems including which are typically associated with a purely competitive market:

1. Market failures and externalities.

2. Income distribution may lack fairness.

3. There may be a limited range of consumer choice.

4. Many natural monopolies are in evidence in the real world.

Monopoly

8. Assumptions of Monopoly Model

    a. single seller

    b. no close substitutes

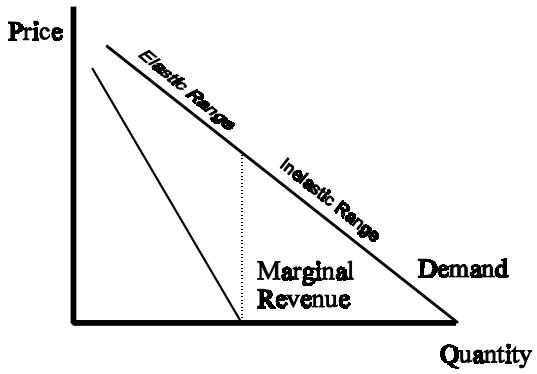
    c. price giver

    d. blocked entry

    e. non-price competition

9. The Firm is the Industry and therefore faces a downward sloping demand curve, which is also the average revenue curve..

    a. If the firm wants to sell more it must lower its price therefore marginal revenue is also downward sloping, but has twice the slope of the demand curve.



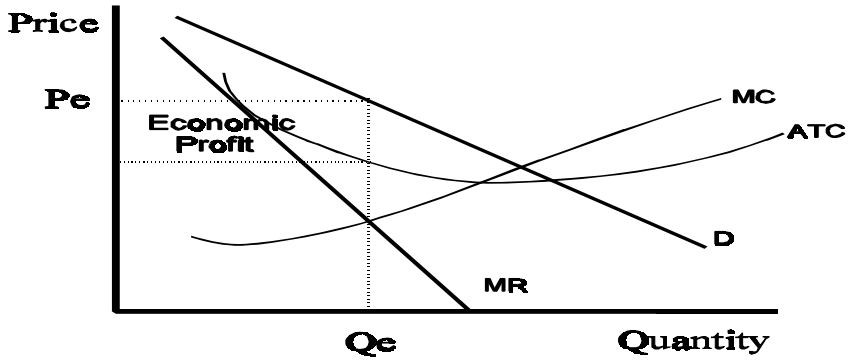
        1. The point where the marginal revenue curve intersects the quantity axis is of significance; this point is where total revenue is maximized. Further, the point on the demand curve associated with where MR = Q is unit price elastic demand; to the left along the demand curve is the elastic range, and to the right is the inelastic range.

10. There is no supply curve in an industry, which is a monopoly.

    a. The monopoly decides how much to produce using the profit maximizing rule; or where MC= MR

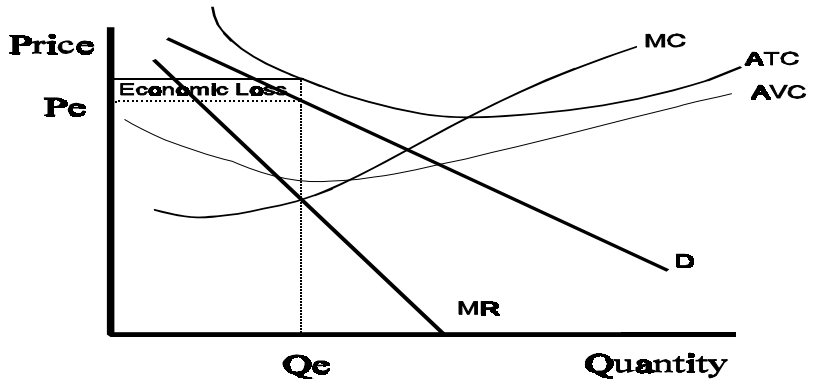
11. Monopolized Market

a. Economic Profit:



b. Because entry is blocked into this industry the economic profits shown above can be maintained in the long run. The monopolist produces where MC = MR, but the price charged is all the market will bear, that is, where the demand curve is above the intersection of MC = MR.

c. Economic losses

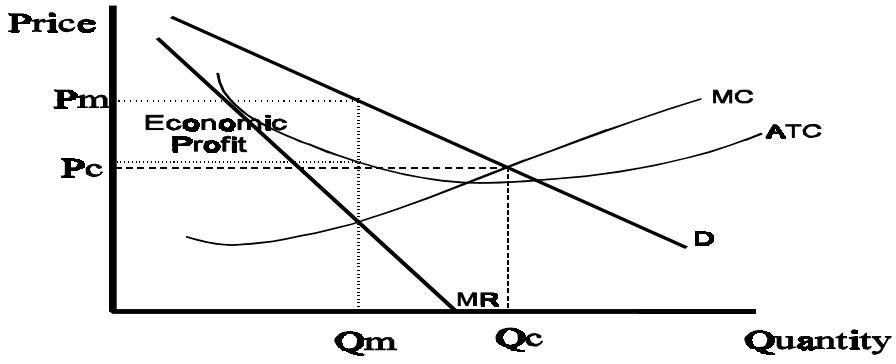


1. This monopolist is making an economic loss. The ATC is above the demand curve (AR) at where MC = MR (the loss is the labeled rectangle). However, because AVC is below the demand curve at

where MC = MR the firm will not shut down so as to minimize its losses.

5. Economic Effects of Monopoly:

   a. prices, output & resource allocations are not consistent with allocative and maybe not technical efficiency criteria. With allocative efficiency consider the following graph:



      1. The above graph shows the profit maximizing monopolist, Pm is the price in the monopoly and Qm is the quantity exchanged in this market. However, where MC = D is where a perfectly competitive industry produces and this is associated with Pc and Qc. The monopolist therefore produces less and charges more than a purely competitive industry.

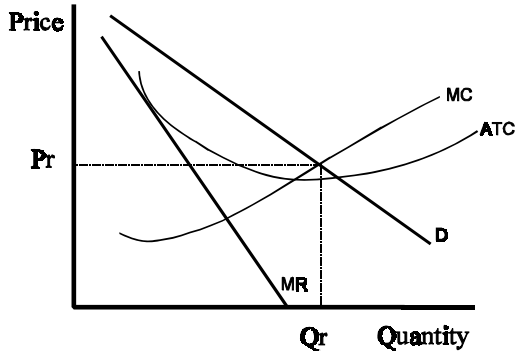
   b. A monopolist can also segment a market and engage in price discrimination. Price discrimination is where you charge a different price to different customers depending on their price elasticity of demand. Because the consumer has no alternative source of supply price discrimination can be effective.

   c. Sometimes a monopolist is in the best interests of society (besides the natural monopoly situation). Often a company must expend substantial resources on research and development. If these types of firms where forced to permit free use of their technological developments (hence no monopoly power) then the incentive to develop new technology and products would be eliminated.

6. Regulated Monopoly - Because there are natural monopoly market situations it is in the public interest to permit monopolies, but they are generally regulated.

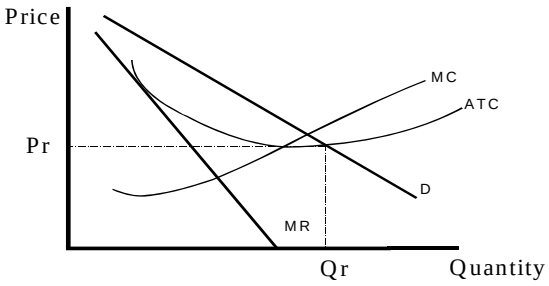
Examples of regulated monopolies are electric utilities, cable TV companies, and telephone companies (local).

a. A monopoly regulated at social optimum P = D = MC



1. This firm is being regulated at the social optimum, in other words, what the industry would produce if it were a purely competitive industry. The price it is required to charge is also the competitive solution. However, notice the ATC is below the demand curve at the social optimum which means this firm is making an economic profit. It is also possible with this solution that the firm could be making an economic loss (if ATC is above demand) or even shut down (if AVC is above demand).

b. A monopolist regulated at the fair return P = D = AC



1. The fair rate of return enforces a normal profit because the firm must price its output and produce where ATC is equal to demand. This eliminates economic profits and the risk of loss or of even putting the monopolist out of business.

c. The dilemma of regulation is knowing where to regulate, at the social optimal or at the fair return. In reality regulated monopolies are permitted to earn a rate of return only on invested capital and all other costs are simply passed on.

6. Measuring Aggregate Performance

Lecture Notes

1. Gross Domestic Product - (GDP) the total value of all goods and services produced within the borders of the United States (or country under analysis).

2. Gross National Product - (GNP) the total value of all goods and services produced by Americans regardless of whether in the United States or overseas.

3. National Income Accounts are the aggregate data used to measure the well-being of an economy.

    a. The mechanics of these various accounts are:

    Gross Domestic Product

    - Depreciation =

    Net Domestic Product

    + Net American Income Earned Abroad
    - Indirect Business Taxes =

    National Income

    - Social Security Contributions
    - Corporate Income Taxes
    - Undistributed Corporate Profits
    + Transfer Payments =

    Personal Income

    - Personal Taxes =

    Disposable Income

4. Expenditures Approach vs. Incomes Approach

    a. Factor payments + Nonincome charges - GNP/GDP adjustments = GDP is the incomes approach

    b. $Y = C + I_g + G + X_n$
    is the expenditures approach (where Y = GDP)

5. Social Welfare & GDP - GDP and GNP are nothing more than measures of total output (or income). More information is necessary before conclusions can be drawn concerning social welfare. There are problems with both measures, among these are:

    a. Nonmarket transactions such as household-provided services or barter are not included in GDP.
    b. Leisure is an economic good but time away from work is not counted, however, movie tickets, skis, and other commodities used in leisure time are.
    c. Product quality - no pretense is made in GDP to account for product or service quality.
    d. Composition & Distribution of Output - no attempt is made in GDP data to account for the composition or distribution of income or output. We must look at sectors to determine composition and other information for distribution.
    e. Per capita income - is GDP divided by population, very rough guide to individual income, but still mostly fails to account for distribution.
    f. Environmental problems - damage done to the environment in production or consumption is not counted in GDP data unless market transactions occur to clean-up the damage.
    g. Underground economy - estimates place the amount of underground economic activities may be as much a one-third of total U.S. output. Criminal activities, tax evasion, and other such activities are the underground economy.

6. Price Indices - are the way we attempt to measure inflation. Price indices are far from perfect measures and are based on surveys of prices of a specific market basket of goods.

    a. Market basket surveys - The market basket of goods and services are selected periodically in an attempt to approximate what the average family of four purchases at that time.

        1. Paasche and Lespeyres indices.

    b. CPI (U) is for urban consumers & CPI (W) is for urban wage earners. GDP Deflator is based on a broader market basket and may be more useful in measuring inflation.

        1. Standard of living - is eroded if there is inflation and no equal increase in wages.

        2. COLA - are escalator clauses that tie earnings or other payments to the rate of inflation, but only proportionally.

3. Other indices - American Chamber of Commerce Research Association in Indianapolis does a cross sectional survey, there are wholesale price indices and several others designed for specific purposes.

c. Inflation/Deflation - throughout most of U.S. economic history we have experienced deflation - which is a general decline in all prices. Inflation is primarily a post-World War II event and is defined to be a general increase in all prices.

d. Nominal versus Real measures - economists use the term nominal to describe money value or prices (not adjusted for inflation); real is used to describe data, which are adjusted for inflation.

7. Measuring the price level

a. CPI = (current year market basket/ base year market basket) X 100 the index number for the base year will be 100.00 (or 1 X 100)

b. Inflating is the adjustment of prices to a higher level, for years when the index is less than 100.

c. Deflating is the adjustment of prices to a lower level, for years when the index is more than 100.

1. to change nominal into real the following equation is used:

Nominal value/(price index/100)

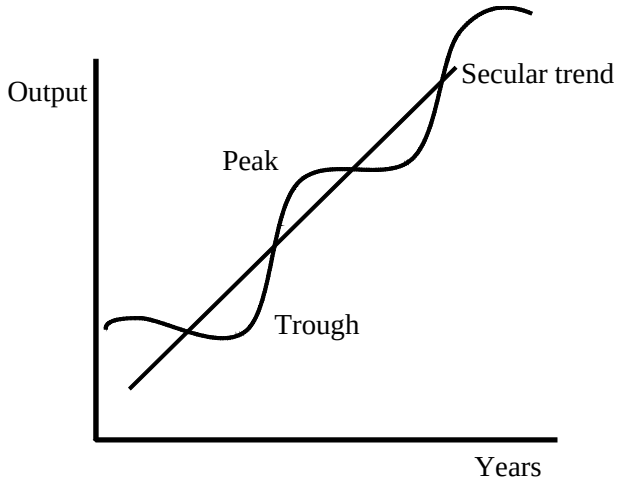
d. Changing base years - a price index base year can be changed to create a consistent series (remembering market baskets also change, hence the process has a fault). The process is a simple one. If you wish to convert a 1982 base year index to be consistent with a 1987 base year, then you use the index number for 1982 in the 1987 series and divide all other observations for the 1982 series using the 1982 value in 1987 index series.

8. Business Cycle - is the recurrent ups and downs in economic activity observed in market economies.

a. troughs are where employment and output bottom-out during a recession (downturn) also implies income, debt (household & business) government crowding out etc.
b. peaks are where employment and output top-out during a recovery (upturn)

c. seasonal trends are variations in data that are associated with a particular season in the year.

d. secular trends are long-run trend (generally 25 or more years in macroeconomic data.



9. Unemployment - there are various causes of unemployment, including:

    a. frictional - consists of *search* and *wait* unemployment which is caused by people searching for employment or waiting to take a job in the near future.

    b. structural - is caused by a change in composition of output, change in technology, or a change in the structure of demand.

    c. cyclical - due to recessions, (business cycle).

10. Full employment - is not zero unemployment, full employment unemployment rate is the same as the natural rate.

    a. natural rate - is thought to be about 4% and is structural + frictional unemployment.

        1. potential output - is the output of the economy at full employment.

11. Unemployment rate - is the percentage of the workforce that is unemployed.

    a. labor force - those employed or unemployed who are willing, able and searching for work; the labor force is about 50% of the total population.

b. part-time employment - those who do not have 40 hours of work (or equivalent) available to them, at 6 million U.S. workers were involuntarily part-time, and about 10 million were voluntarily part-time employees in 1992.

c. discouraged workers - those persons who dropped out of labor force because they could not find an acceptable job.

d. false search - those individuals who claim to be searching for employment, but really were not, some because of unemployment compensation benefits.

12. Okun's law

a. Okun's Law states that for each 1% unemployment exceeds the natural rate there will be a gap of 2.5% between actual GDP and potential GDP.

13. Burden of unemployment differs by several factors, these are:

a. Occupation - mostly due to structural changes.

b. Age young people tend to experience more frictional unemployment.

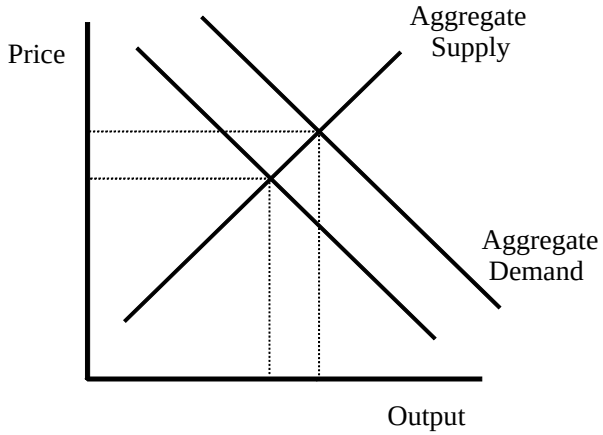
c. Race and gender reflect discrimination in the labor market and sometimes in educational opportunities.

14. Inflation - general increase in all prices.

a. CPI - is the measure used to monitor inflation.

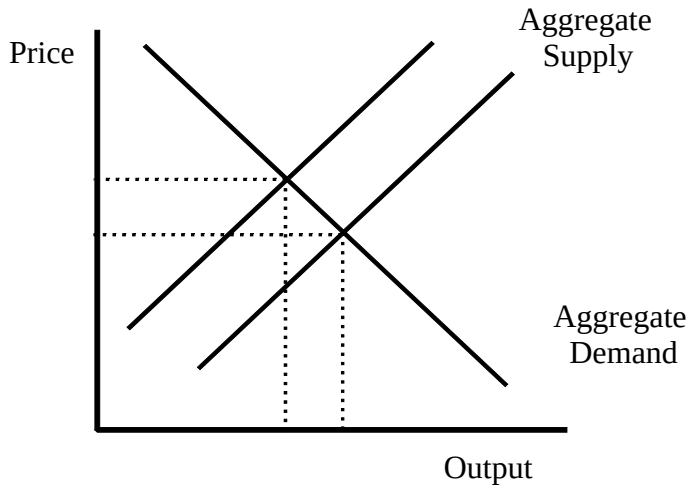
b. Rule of 70 -- the number of years for the price level to double = 70/%annual rate of increase.

c. Demand - pull inflation

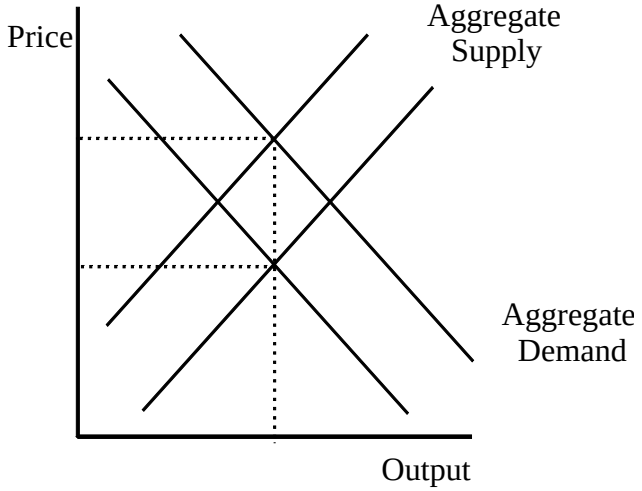


Using a naive aggregate demand - aggregate supply model (similar to the supply and demand diagrams for a market, except the supply is total output in all markets and demand is total demand in all markets, as the aggregate demand shifts outwards prices increase, but so does output.

15. Cost - push inflation - again using a naive aggregate supply - aggregate demand approach cost-push inflation results from a decrease in aggregate supply:



a. pure inflation results from an increase in aggregate demand that is equal to a decrease in aggregate supply:



16. Effects of inflation impact different people in different ways. If inflation is fully anticipated and people can adjust their nominal income to account for inflation then there will be no adverse effects, however, if people cannot adjust their

nominal income or the inflation is unanticipated those individual will see their standard of living eroded.

a. Debtors typically benefit from inflation because they can pay loans-off in the future with money that is worth less, thereby creditors are harmed by inflation.

b. Inflation typically creates expectations among people of increasing prices, which may contribute to future inflation.

c. Savers generally lose money because of inflation if the rate of return on their savings is not sufficient to cover the inflation rate.

d. Monetary aggregates, which also have implications for foreign trade accounts

7. Classical and Keynesian Models

Lecture Notes

1. Classical theory of employment (macroeconomics) rests upon two founding principles, these are:

    a. underspending unlikely - spending in amounts less than sufficient to purchase the full employment level of output is not likely.

    b. even if underspending should occur, then price/wage flexibility will prevent output declines because prices and wages would adjust to keep the economy at the full employment level of output.

2. Say's Law "Supply creates its own demand" (well not exactly)

    a. in other words, every level of output creates enough income to purchase exactly what was produced.

    b. among others, there is one glaring omission in Say's Law -- what about savings?

3. Savings

    a. output produces incomes, but savings is a leakage

    b. savings give rise to investment and the interest rates are what links savings and investment.

4. Wage-Price flexibility

    a. the classicists believed that a laissez faire economy would result in macroeconomic equilibria and that only the government could cause disequilibria.

5. Keynesian Model - beginning in the 1930s the classical models failed to explain what was going on, hence a new model was developed -- the Keynesian Model.

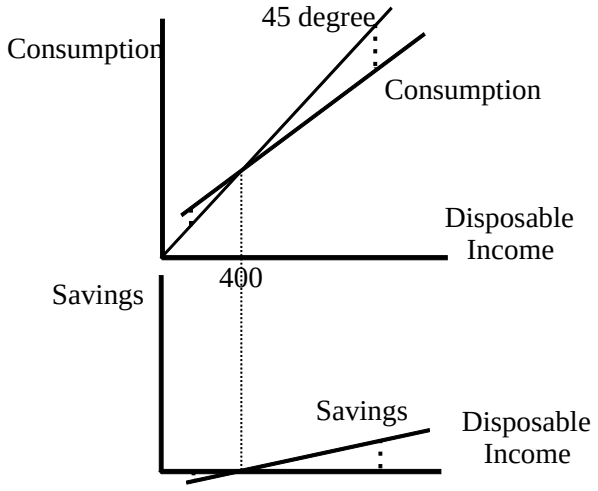
    a. full employment is not guaranteed, because interest motivates both consumers & businesses differently - just because households save does not guarantee businesses will invest.

    b. price-wage rigidity, rather than flexibility was assumed by Keynes

6. The Consumption schedule - income & consumption

    a. consumption schedule - the 45-degree line is every point where disposable income is totally consumed.

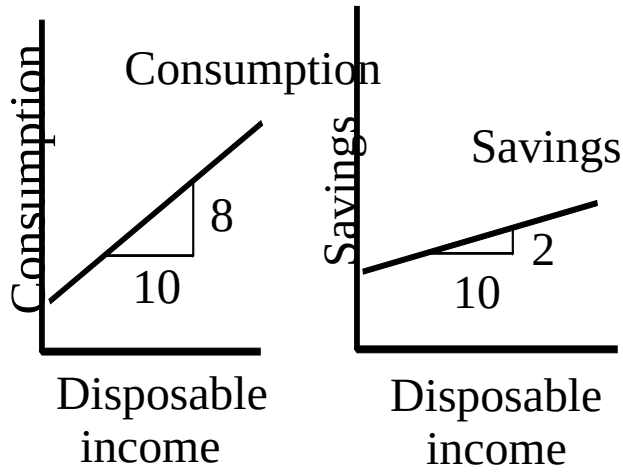
    b. saving schedule - shows the amount of savings associated with the consumption function.



The consumption schedule intersects the 45-degree line at 400 in disposable income, this is also where the savings function intersects zero (in the graph below the consumption function). To the left of the intersection of the consumption function and the 45-degree line, the consumption function lies above the 45-degree line. The distance between the 45-degree line and the consumption schedule is dissavings, shown in the savings schedule graph by the savings function falling below zero. To the right of the intersection of the consumption function with the 45 degree line the consumption schedule is below the 45-degree line. The distance that the consumption function is below the 45-degree line is called savings, shown in the bottom graph by the savings function rising above zero.

    c. Marginal Propensity to Consume (MPC) is the proportion of any increase in disposable income spent on consumption (if all is spent MPC is 1, if none is spent MPC is zero). The Marginal Propensity to Save (MPS) is the proportion of any increase in disposable income saved. The relation between MPC and MPS is:

        1. MPC + MPS = 1



d. The slope (rise divided by the run) of the consumption function is the MPC and the slope of the savings function is the MPS. Add the slope of the consumption function (8/10) to the slope of the savings function (2/10) and they equal one (10/10).

e. The Average Propensity to Consume (APC) is total consumption divided by total income, Average Propensity to Save (APS) is total savings divided by total income. Again, if income can be either saved or consumed (and nothing else) then the following relation holds:

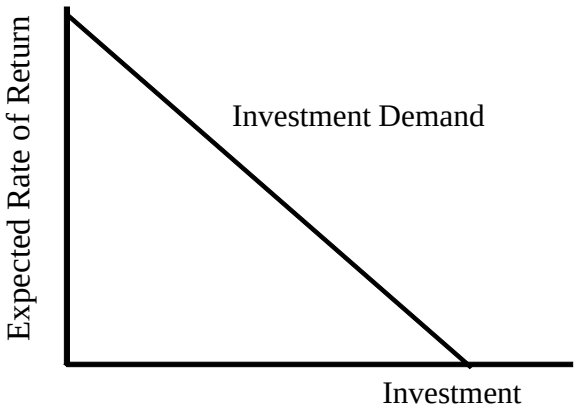
1. APC + APS = 1

7. The nonincome determinants of consumption and saving are (these cause shifts in the consumption and saving schedules):

a. Wealth,
b. Prices,
c. Expectations concerning future prices, incomes and availability of commodities,
d. Consumer debts, and
e. Taxes.

8. Investment

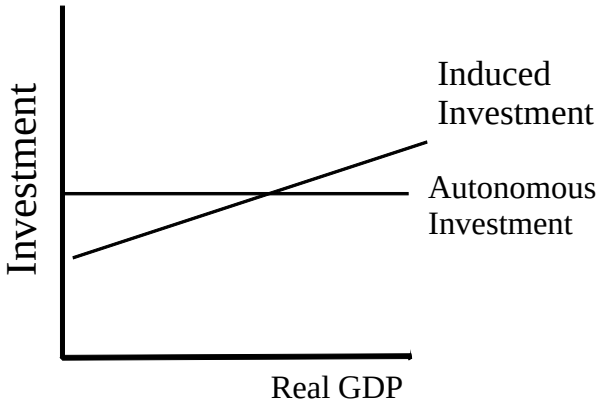
a. investment demand curve is downward sloping:



b. determinants of investment demand are:

1. acquisition, maintenance & operating costs,
2. business taxes,
3. technology,
4. stock of capital on hand, and
5. expectations concerning profits in future.

c. Autonomous (determined outside of system) v. induced investment (function of GDP):



1. Instability in investment has marked U.S. economic history.

2. Causes of this instability are:

a. Variations in the durability of capital,

b. Irregularity of innovation,

c. Variability of profits, and

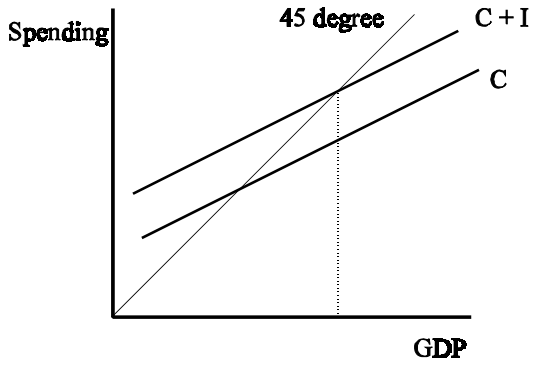
d. Expectations of investors.

9. Equilibrium GDP - is that output that will create total spending just sufficient to buy that output (where aggregate expenditure schedule intersects 45-degree line).

    a. Disequilibrium - where spending is insufficient (recessionary gap) or too high for level of output (inflationary gap).

10. Expenditures - Output Approach

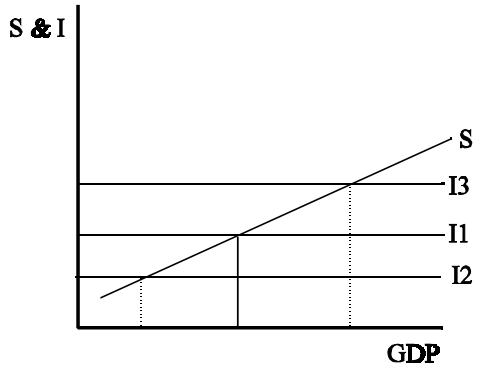
    a. Y = C + I + G + X is the identity for income where Y = GDP, C = Consumption, I = Investment, G= Government expenditures, and X = Net exports (exports minus imports)



The equilibrium level of GDP is indicated above where C + I is equal to the 45-degree line. Investment in this model is autonomous and the amount of investment is the vertical distance between the C and the C + I lines. This model assumes no government and that net exports are zero.

11. Leakages - Injections Approach relies on the equality of investment and savings at equilibrium.

a. I = S is equilibrium in the leakages - injections approach.
b. planned v. actual investment, the reason that the leakages - injection approach works is that planned investment must equal savings. Inventories can increase beyond that planned, hence output that is not purchased which is recessionary; or intended inventories can be depleted which is inflationary.



The original equilibrium is where I1 is equal to S and that level of GDP is shown with the solid indicator line. If we experience a decrease in investment we move down to I2 and if an increase in investment is observed it will be observed at I3.

12. If there is an increase in expenditures, there will be a respending effect. In other words, if $10 is injected into the system, then it is income to someone. That first person will spend a portion of the income and save a portion. If MPC is .90 then the first individual will save $1 and spend $9.00. The second person receives $9.00 in income and will spend $8.10 and save $0.90. This process continues until there is no money left to be spent. Instead of summing all of the income, expenditures, and/or savings there is a short-hand method of determining the total effect -- this is called the Multiplier, which is:

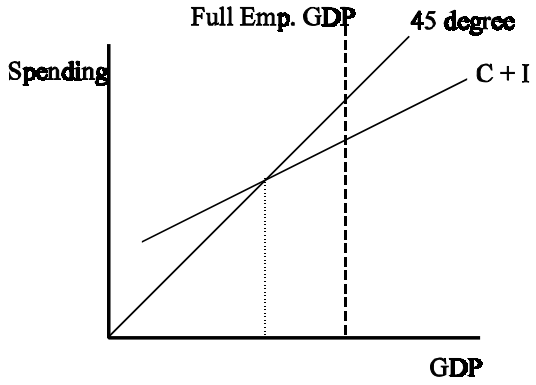
    a. **Multiplier M = 1/1-MPC or 1/MPS**

    b. significance - any increase in expenditures will have a multiple effect on the GDP.

13. Paradox of thrift - the curious observation that if society tries to save more it may actually save the same amount - unless investment moves up as a result of the savings, all that happens is that GDP declines and if investment is autonomous then savings remain the same.

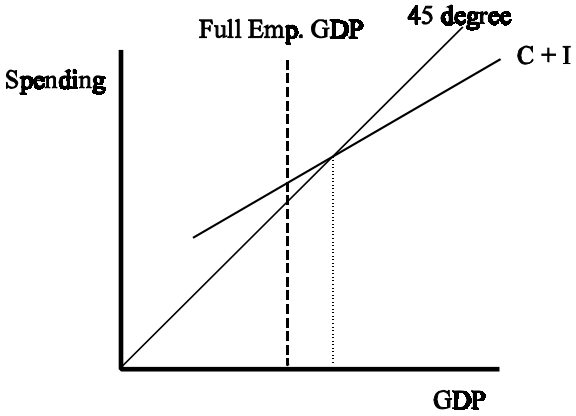
14. Full Employment level of GDP may not be where the aggregate expenditures line intersects the 45-degree line. There are two possibilities, (1) a recessionary gap or (2) an inflationary gap, both are illustrated below.

    a. Recessionary gap



    The distance between the C + I line and the 45-degree line along the dashed indicator line is the recessionary gap. The dotted line shows the current macroeconomic equilibrium.

    b. Inflationary gap



The distance between the C + I line and the 45-degree line along the dashed indicator line is the inflationary gap. The dotted indicator line shows the current macroeconomic equilibrium.

15. Reconciling AD/AS with Keynesian Cross the various C + I and 45-degree line intersections, if multiplied by the appropriate price level will yield one point on the aggregate demand curve. Shifts in aggregate demand can be shown with holding the price level constant and showing increases or decreases in C + I in the Keynesian Cross model. Both models can be used to analyze essentially the same events.

16. Discretionary Fiscal Policy - involves government expenditures and/or taxes to stabilize the economy.

    a. Employment Act of 1946 - formalized the government's responsibility in promoting economic stability.

    b. simplifying assumptions for the analyses presented here:

        1. exogenous I & X,
        2. G does initially impact private decisions,
        3. all taxes are personal taxes,
        4. some exogenous taxes collected,
        5. no monetary effects, fixed initial price level, and
        6. fiscal policy impacts only demand side.

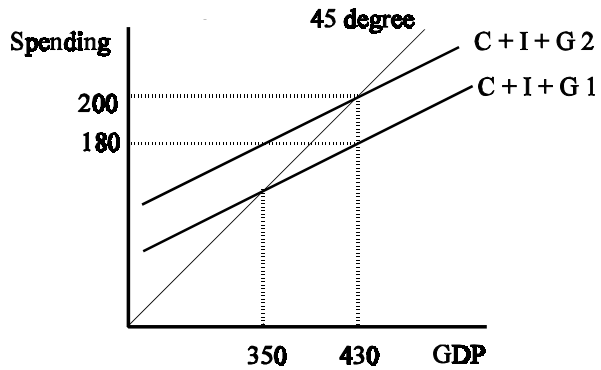
17. Changes in Government Expenditures - can be made for several reasons:

    a. Stabilization of the economy,

        1. To close a recessionary gap the government must spend an amount that time the multiplier will equal the total gap.
        2. To close an inflationary gap the government must cut expenditures by an amount that times the multiplier will equal the inflationary gap.

    b. Political goals, and

    c. Provision of necessary goods & services.



An increased government expenditure of $20 billion results in an increase in GDP of $80 billion with an MPC of .75, hence a multiplier of 4.

18. Taxation effects both consumption and savings.

    a. If the government uses a lump sum tax increase to reduce an inflationary gap the reduction in GDP occurs thusly:

        1. The lump sum tax must be multiplied by the MPC to obtain the reduction in consumption;
        2. The reduction in consumption is then multiplied by the multiplier.

    b. A decrease in taxes works the same way, the total impact is the lump sum reduction times the MPC to obtain the increase in consumption, which is, in turn, multiplied by the multiplier to obtain the full impact on GDP.

    c. A short-cut method with taxes is to calculate the multiplier, as you would with an increase in government expenditures and deduct one from it.

19. The balanced budget multiplier is always one.

    a. Occurs when the amount of government expenditures goes up by the same amount that a lump sum tax is increased.
    b. That is because only the initial expenditure increases GDP and the remaining multiplier effect is offset by taxation.

20. Tax structure refers to the burden of the tax:

    a. progressive is where the effective tax rate increases with ability to pay,
    b. regressive is where the effective tax rate increases as ability to pay decreases,
    c. proportional is where a fixed proportion of ability to pay is taken in taxes.

21. Automatic stabilizers help to smooth business cycles without further legislative action:

    a. Progressive income taxes,
    b. Unemployment compensation,
    c. Government entitlement programs

22. Fiscal Lag - there are numerous lags involved with the implementation of fiscal policy. It is not uncommon for fiscal policy to take 2 or 3 years to have a noticeable effect, after Congress begins to enact fiscal measures.

    a. Recognition lag - how long to start to react.

b. Administrative lag - how long to have legislation enacted & implemented.
c. Operational lag - how long it takes to have effects in economy.

23. Politics and Fiscal Policy.

    a. Public choice economists claim that politicians maximize their own utility by legislative action.
    b. Logrolling and negotiations results in many bills that impose costs.

24. Government deficits and crowding - out. It is alleged that private spending is displaced when the government borrows to finance spending:

    a. Ricardian Equivalence - deficit financing same effect on GDP as increased tax.

25. Open economy problems. Because there is a foreign sector that impacts GDP there are potential problems for fiscal policy arising from foreign sources.

    a. increased interest - net export effect

        1. An increase in the interest rate domestically will attract foreign capital, but this increases the demand for dollars which increases their value and thereby reduces exports, hence GDP.

    b. foreign shocks - in addition to currency exchange rates.

        1. Oil crises increased costs of production in the U.S.

8. Money and Banking
Lecture Notes

1. Functions of Money - there are three functions of money:

    a. Medium of exchange - accepted as "legal tender" or something of general and specified value.

        1. Use avoids reliance on barter.
        2. Barter requires a coincidence of wants and severely complicates a market economy.

    b. Measure of value - permits value to be stated in terms of a standard and universally understood standard.

    c. Store of value - can be saved with little risk, chance of spoilage and virtually no cost and later exchanged for commodities without these positive storage characteristics.

2. Supply of money

    a. There are numerous definitions of money M1 through M3 most commonly used.

        1. M1 is currency + checkable deposits
        2. M2 is M1 + noncheckable savings account, time deposits of less $100,000, Money Market Deposit Accounts, and Money Market Mutual Funds.
        3. M3 is M2 + large time deposit (larger than $100,000).

3. Near Money - are items that fulfill portions of the requirements of the functions of money.

    a. Credit cards - fulfill exchange function, but are not a measure of value and if there is a credit line, can be used to store value.
    b. Other forms of near money:

        1. Precious metals - store of value, but not easily exchanged
        2. Stocks and Bonds - earnings instruments, but can be used as store of value.

    c. Implications for near money - stability, spending habits & policy

4. What gives money value

    a. No more gold standard

        1. Nixon eliminated gold standard

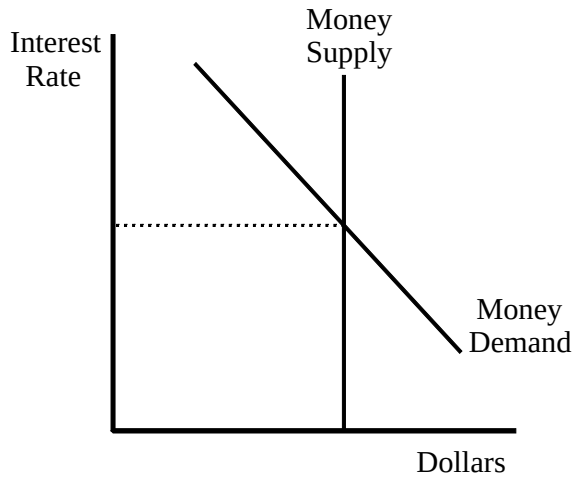
    b. The Value of money depends upon:

        1. acceptability for payment,
        2. because the government claims it is legal tender, and
        3. its relative scarcity.

5. Value of dollar = D = 1/P

6. Demand for Money - three components of money demand:

    a. Transactions demand
    b. Asset demand
    c. Total demand



The money supply curve is vertical because the supply of money is exogenously determined by the Federal Reserve. The money demand curve slopes downward and to the right. The intersection of the money demand and money supply curves represents equilibrium in the money market and determines the interest rate (price of money).

7. Money market

    a. With bonds that pay a specified interest payment per quarter then:

        3. interest rate and value of bond inversely related

8. U.S. Financial System

    a. FDIC - Federal Deposit Insurance Corporation - guarantees bank deposits.
    b. Federal Reserve System - is comprised of member banks. The Board of Governors and Chairman are nominated by the President of United States. The structure of the system is:

        3. Board of Governors
        4. Open Market Committee
        5. Federal Advisory Council
        6. 12 regions

    c. Functions

        3. Set reserves requirements,
        4. Check clearing services,
        5. Fiscal agents for U.S. government,
        6. Supervision of banks,
        7. Control money supply through FOMC,

9. Moral hazard - insuring reduces insured's incentive to assure risk does not happen

10. Balance sheet (T accounts -- assets = liabilities + net worth)

    a. is nothing more than a convenient reporting tool.

11. Fractional Reserve Requirements

    a. Goldsmiths used to issue paper money receipts, backed by stocks of gold. The stocks of gold acted as a reserve to assure payment if the paper claims were presented for payment.

        1. Genghis Khan first issued paper money in the thirteenth century - it was backed by nothing except the Khan's authority.

    b. The U.S. did not have a central banking system from the 1820 through 1914. In the early part of this century several financial panics pointed to the need for a central banking and financial regulation.

        1. States and private companies used to issue paper money.
        2. In the early days of U.S. history Spanish silver coins were widely circulated in the U.S.

3. The first U.S. paper money was issued during the Civil War (The Greenback Act), which included fractional currency (paper dimes & nickels!).

c. Today, the Federal Reserve requires banks to keep a portion of its deposits as reserves.

1. purposes to keep banks solvent & prevent financial panics

12. RRR (Required Reserve Ratio) and multiple expansion of money supply through T accounts

a. How reserves are kept

1. Loans from Fed - discount rate at which Fed loans reserves to members
2. Vault cash
3. Deposits with Fed
4. Fed funds rate - the rate at which members loan each other reserves

b. RRR = Required reserve/demand deposit liabilities

c. actual, required, and excess reserves

13. Money created through deposit/loan redepositing

a. Money is created by a bank receiving a deposit, and then loaning that non-reserve portion of the deposit, which is deposited and loans made against those deposits.

1. If the required reserve ratio is .10, then a bank must retain 10% of each deposit as a reserve and can loan 90% of the deposit; the multiple expansion of money, assuming a required reserve ratio of .10, is therefore:

Deposit	Loan
$10.00	9.00
9.00	8.10
8.10	7.29
.	.
.	.
$ 100.00	$90.00

Total new money is the initial deposit of $10 + $90 of multiple expansion for a total of $100.00 in new money.

14. Money multiplier Mm = 1/RRR

    a. Is the shorthand method of calculating the entries in banks' T accounts and shows how much an initial injection of money into the system generates in total money supply.
    b. With a required reserve ratio of .05 the money multiplier is 20 & with a required reserve ratio of .20 the money multiplier is 5.
    c. the Federal Reserve needs to inject only that fraction of money that time the multiplier will increase the money supply to the desired levels.

15. Monetary policy, defined and objectives

    a. Monetary policy is carried out by the Federal Reserve System and is focused on controlling the money supply.

    b. The fundamental objective of monetary policy is to assist the economy in attaining a full employment, non-inflationary equilibrium.

16. Tools of Monetary Policy

    a. Open Market Operations is the selling and buying of U.S. treasury obligations in the open market.

    b. Expansionary monetary policy involves the buying of bonds.

        1. The Fed buying bonds, it puts money into the hands of those who had held bonds.

    c. Contractionary monetary policy involves the selling of bonds.

        1. The Fed sells bonds it removes money from the system and replaces it with bonds.

17. Required Reserve Ratio - the Fed can raise or lower the required reserve ratio.

    a. Increasing the required reserve ratio, reduces the money multiplier, hence reduces the amount by which multiple expansions of the money supply can occur.

        1. decreasing the required reserve ratio increases the money multiplier, and permits more multiple expansion of the money supply.

18. The Discount Rate is the rate at which the Fed will loan reserves to member banks for short periods of time.

19. Velocity of Money - is how often the money supply turns-over.

    a. The quantity theory of money is: MV = PQ

        1. This equation has velocity (V) which is nearly constant and output (Q) which grows slowly, so what happens to the money supply (M) should be directly reflected in the price level (P).

20. Target Dilemma in Monetary Policy

    a. Interest rates and the business cycle may present a dilemma. Expansionary monetary policy may result in higher interest rates, which dampen expansionary policies.

    b. Fiscal and monetary policies may also be contradictory.

21. Easy Money - lowering interest rates, expanding money supply.

    a. mitigate recession and stimulate growth.

    b. cheap dollar policy in foreign trade

        1. encourage exports

22. Tight Money - increasing interest rates, contracting money supply.

    a. mitigate inflation and slow growth.

    b. strong dollar policy in foreign trade

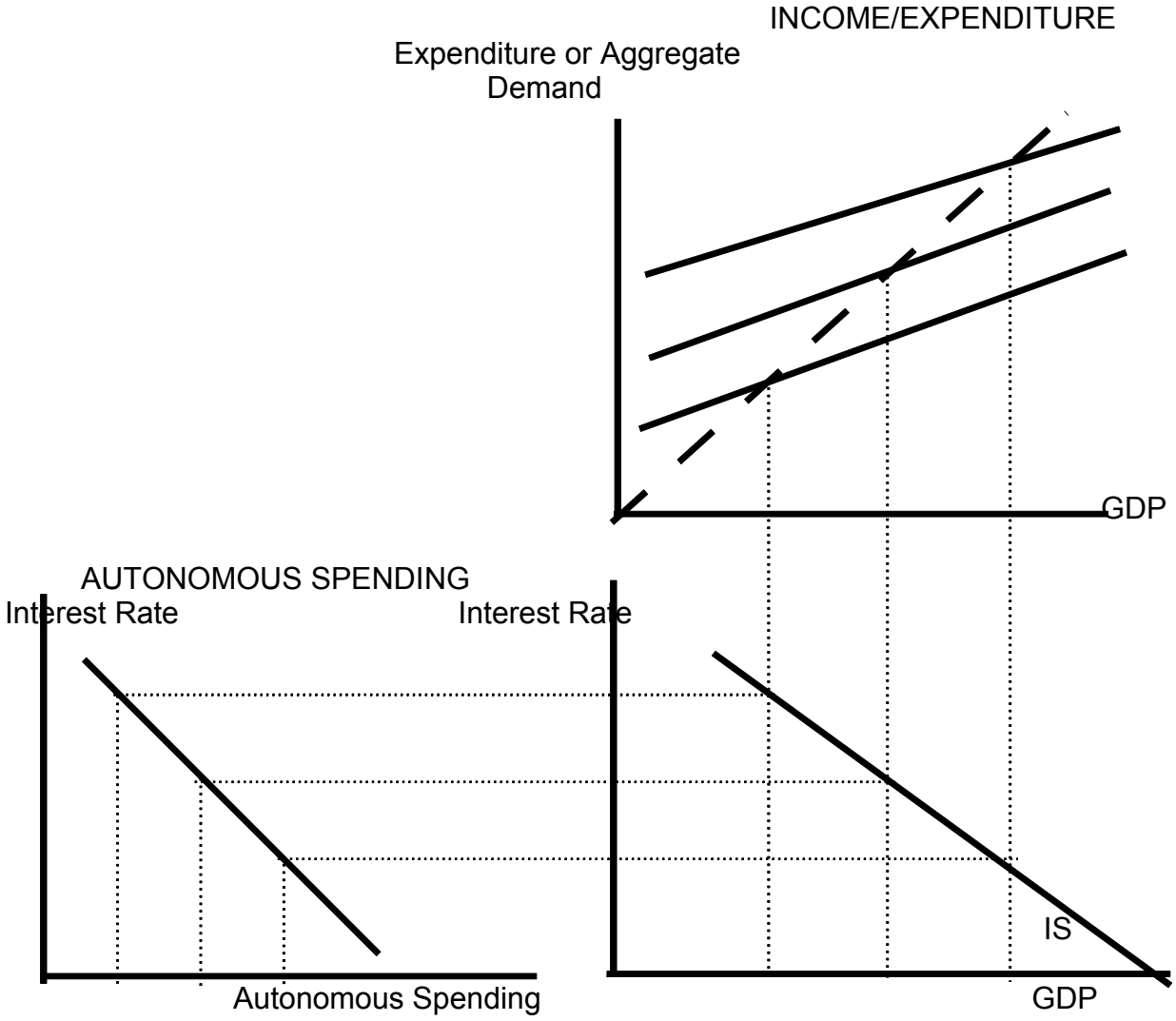
        1. encourage imports
        2. Repatriating profits for multi-nationals

9. Interest Rates and Output: Hick's IS/LM Model

Lecture Notes

1. IS Curve

The IS curve shows the level of real GDP for each level of real interest rate. The derivation of the IS curve is a rather straightforward matter, observe the following diagram.



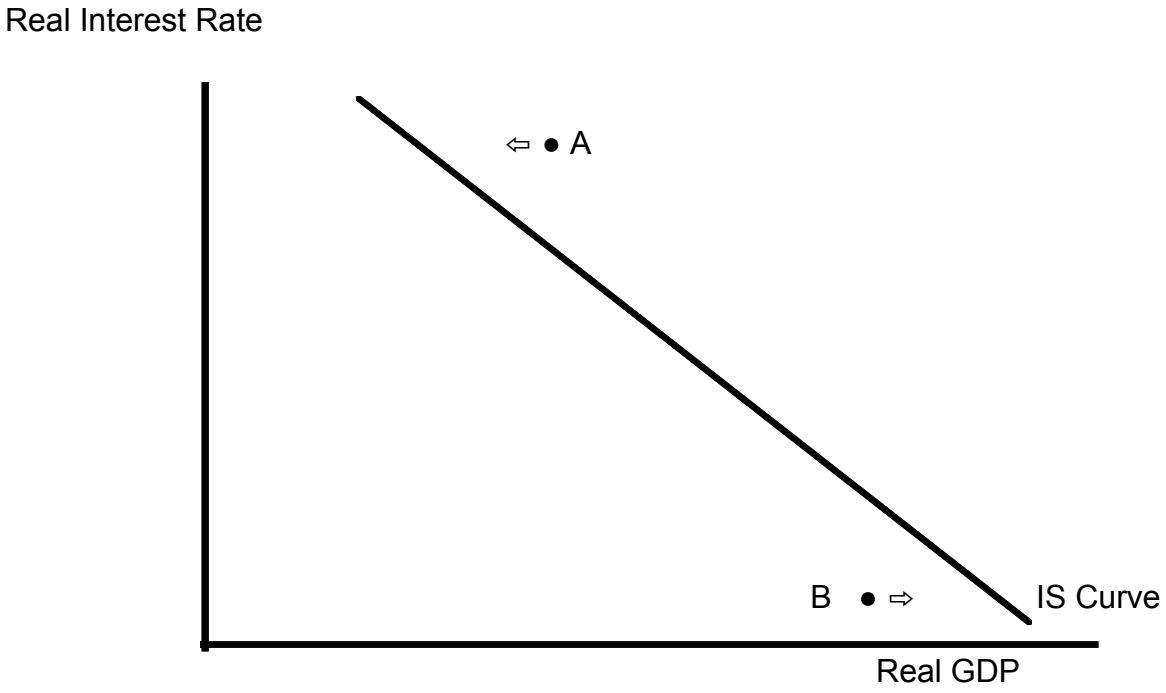
The Income-Expenditure diagram determines for each level of aggregate demand the associated level of GDP.

The intercept of the IS Curve is the level of GDP that would obtain at a zero real interest rate. The slope of IS Curve is the multiplier (1/1 - MPC) times marginal propensity to Invest (resulting from a change in real interest rates) and the marginal propensity to export (resulting from a change in real interest rates).

The IS curve can be shifted by fiscal policy

Changes in Co or Io will also move the IS curve.

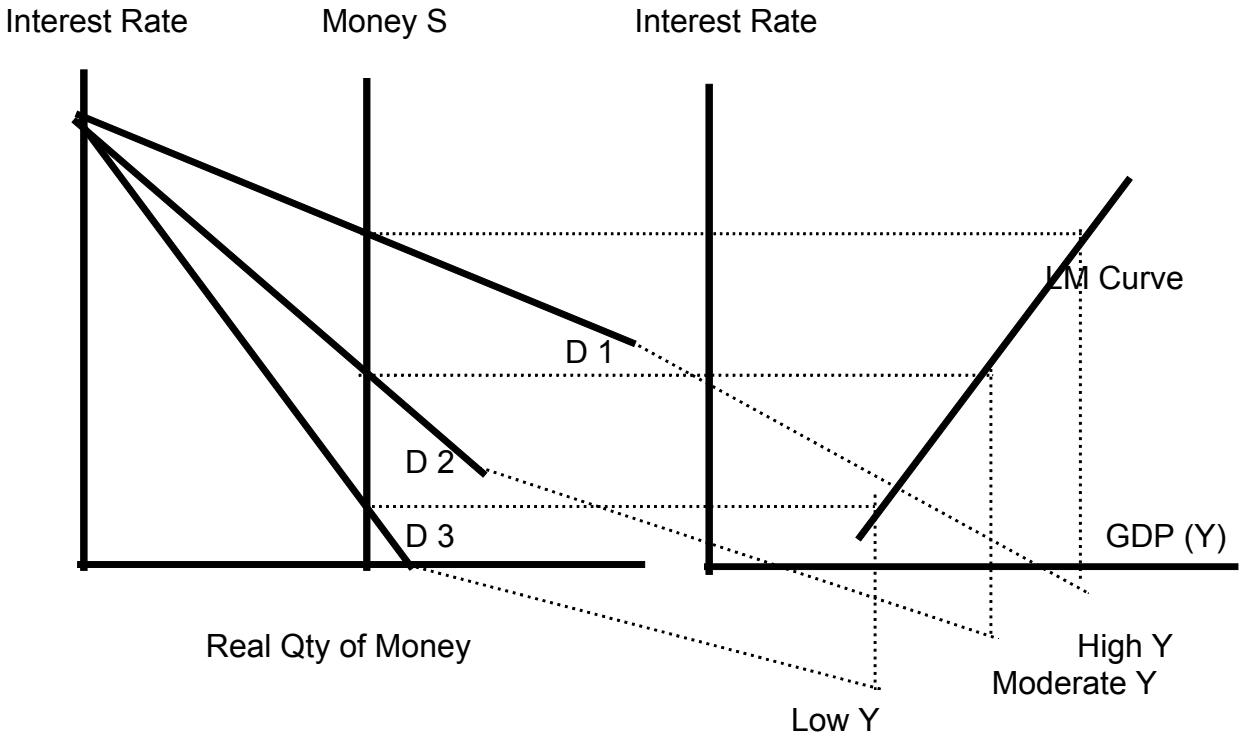
Anytime the economy moves away from the IS curve there are forces within the system which push the economy back onto the IS curve. Observe the following diagram:



If the economy is at point A there is a relatively high level of real interest rates which results in planned expenditure being less than production, hence inventories are accumulating, and production will fall, hence pushing the economy toward the IS curve. On the other hand, at point B the relatively low real interest rate results in planned expenditure being greater than production, hence inventories are being sold into the market place and product will rise to bring us back to the IS curve.

2. LM Curve

The LM Curve is derived in a fashion similar to that of the IS curve. Consider the following diagram:



As can be readily observed from this diagram the LM curve is the schedule of interest rates associated with levels of income (GDP). The interest rate, in this case, being determined in the money market.

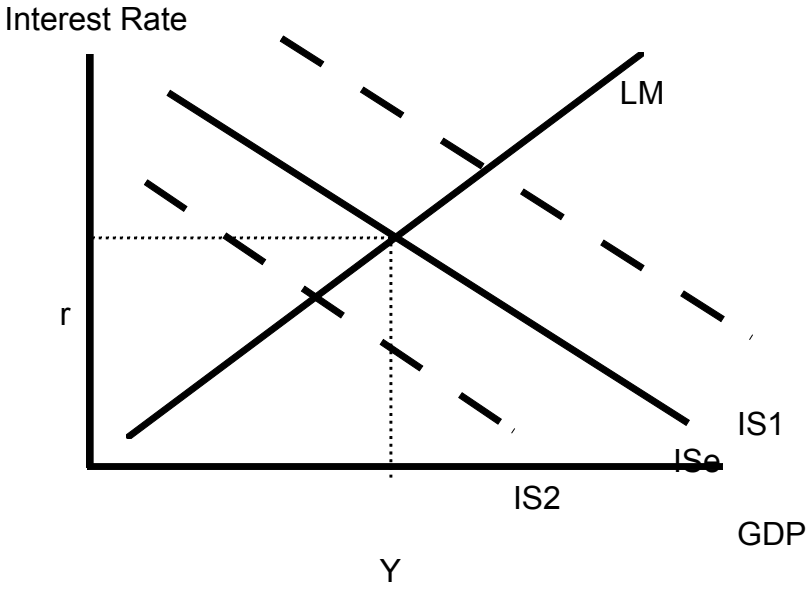
With a fixed money supply each level of demand for money creates a different interest rate.

If the money market is to remain in equilibrium, then as incomes rise so too, then must the interest rate, if the supply of money is fixed.

The shifting of the LM curve is obtained through inflation or monetary policy.

3. Equilibrium in IS-LM

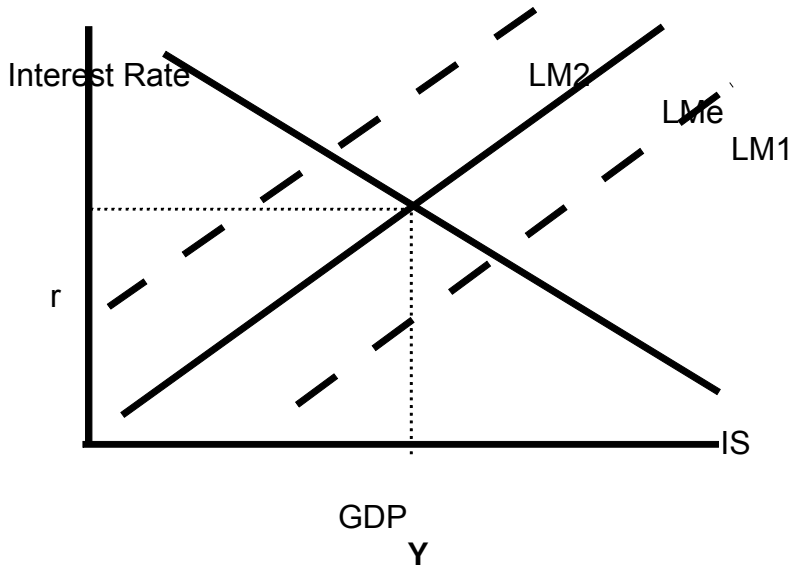
The Intersection of the IS and LM curve results in there being an equilibrium in the macroeconomy.



Where the IS and LM curves intersect is where there is an equilibrium in this economy. With this tool in hand the affects of the interest rate on GDP can be directly observed. As the IS curve shifts to the right along the LM curve notice that there is an increase in GDP, but with a higher interest rate (IS1) and just the opposite occurs as the IS curve shifts back towards the origin (IS2). From above it is clear the sorts of things that shift the IS curve, fiscal policy or changes in Co or Io.

4. Expansionary and Contractionary Monetary Policies

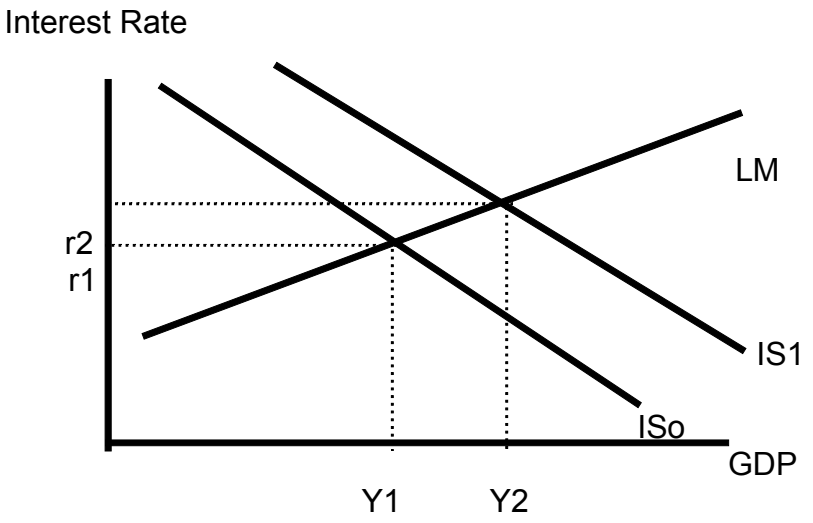
The LM curve, too, can be moved about by changes in policy. If the money supply is increased or decreased that will have obvious implications for the LM curve and hence the interest rate and equilibrium level of GDP. Consider the following diagram:



As the Fed engages in easy monetary policies the LM Curve shifts to the right, and the interest rate falls, as GDP increases.

5. Foreign Shocks

The U.S. economy is not a closed economy, and the IS-LM Model permits us to examine foreign shocks to the U.S. economy. There are three of these foreign shocks worthy of examination here; these are (1) increase in demand for our exports, (2) increases in foreign interest rates, and (3) currency speculators expectations of an increase in the exchange rate of our currency with respect to some foreign currency. Each of these foreign shocks results in an outward expansion of the IS Curve as portrayed in the following diagram:



An increase in demand for exports has essentially the same effect on GDP and interest rates as an increase in foreign interest rates, or currency speculators expecting an increase in our exchange rate.

10. Economic Stability and Trade Policies

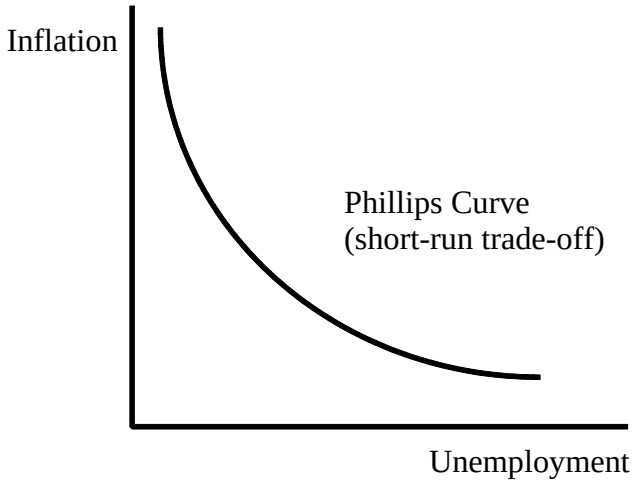
Lecture Notes

1. Inflation, Unemployment and Economic Policy

    a. The misery index is the inflation rate plus the unemployment rate.

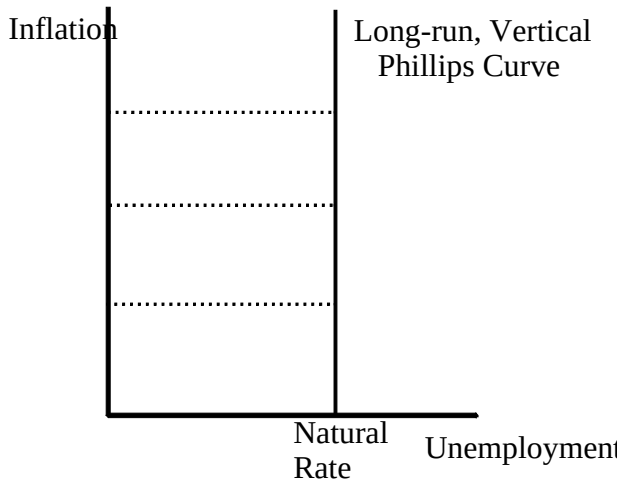
2. The Phillips Curve is a statistical relation between unemployment and inflation named for A. W. Phillips who examined the relation in the United Kingdom and published his results in 1958. (Actually Irving Fisher had done earlier work on the subject in 1926).

    a. Short run trade-off



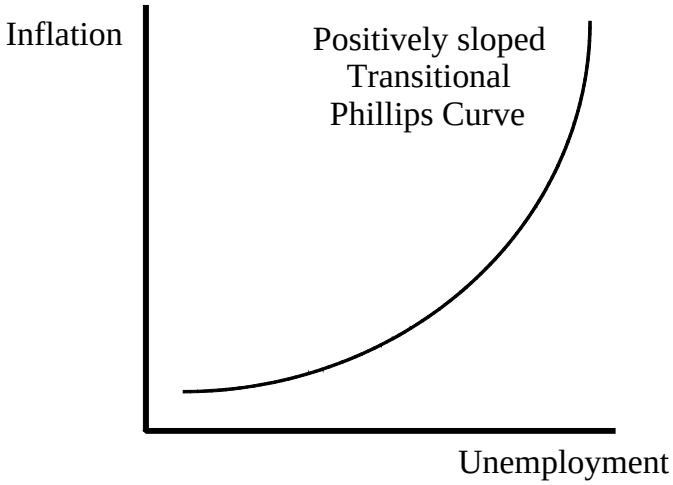
Often used to support activitist role for government, however, the short-run trade-off view of the Phillips curve demonstrates that there is a cruel choice between increased inflation or increased unemployment, but low inflation and unemployment together are not possible.

    b. Long run Phillips Curve is alleged to be vertical at the natural rate of unemployment.



This long-run view of the Phillips Curve is also called the Natural Rate Hypothesis. It is based on the idea that people constantly adapt to current economic conditions and that their expectations are subject to "adaptive" revisions almost constantly. If this is the case, then business and consumers cannot be fooled into thinking that there is a reason for unemployment to cure inflation or vice versa.

c. Possible positive sloping has hypothesized by Milton Friedman. Friedman was of the opinion that the may be a transitional Phillips curve while people adapt both their expectations and institutions to new economic realities. The positively sloped Phillips curve is show in the following picture:



The positively sloped transitional Phillips Curve is consistent with the observations of the early 1980s when both high rates of unemployment existed together with high rates of inflation -- a condition called stagflation.

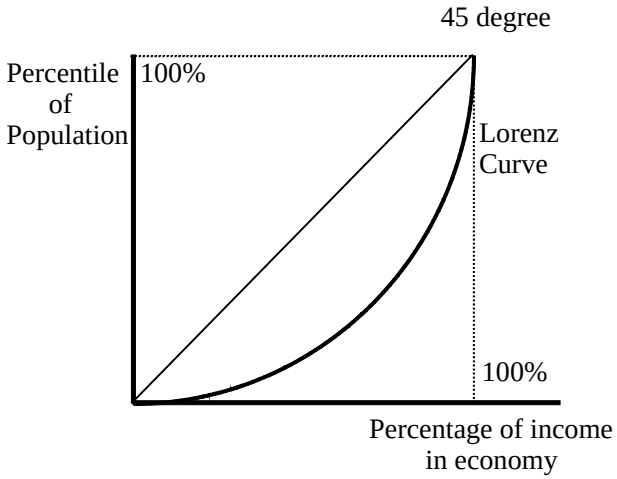
d. Cruel choices only exist in the case of the short-run trade-off view of the Phillips Curve. However, there maybe a "Lady and Tiger Dilemma" for policy makers relying on the Phillips Curve to make policy decisions.

3. Rational expectations is a theory that businesses and consumers will be able to accurately forecast prices (and other relevant economic variables). If the accuracy of consumers' and business expectations permit them to behave as though they know what will happen, then it is argued that only a vertical Phillips Curve is possible, as long as political and economic institutions remain stable.

4. Market policies are concerned with correcting specific observed economic woes.

   a. Equity policies are designed to assure "a social safety net" at the minimum and at the liberal extreme to redistribute income.

      1. The Lorenz Curve and Gini Coefficients are used to measure income distribution in economies.



The Lorenz curve maps the distribution of income among across the population. The 45 degree line shows what the distribution of income would be if income was uniformly distributed across the population. However, the Lorenz curve drops down below the 45-degree line showing that poorer people receive less than rich people.

The Gini coefficient is the percentage of the triangle mapped out by the 45-degree line, the indicator line from the top of the 45-degree line to the

percentage of income axis, and the percentage of income axis that is accounted for by the area between the Lorenz curve and the 45-degree line. If the Gini coefficient is near zero, income is close to uniformly distributed; if is near 1 then income is mal-distributed.

b. Productivity is also the subject of specific policies. The Investment Tax Credit, WIN program, and various state and federal training programs are focused increasing productivity.

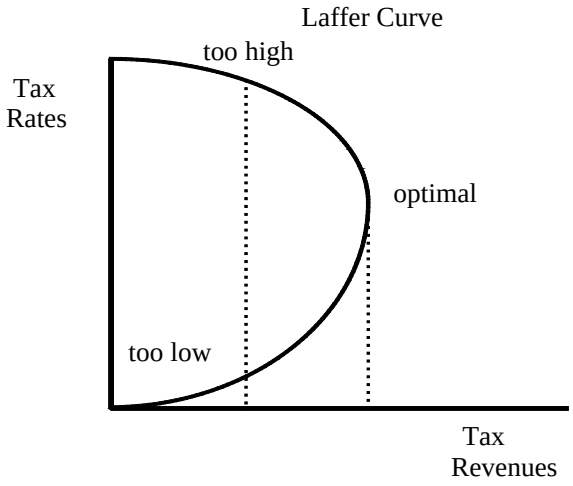
c. Trade barriers have been reduced through CAFTA, NAFTA and GATT in hopes of fostering more U.S. exports.

5. Wage-Price Policies

   a. Attempts have been made to directly control inflation through price controls, this seemed to work reasonably well during World War II. Carter tried voluntary guidelines that failed, and Nixon tried controls that simply were a disaster.

6. Supply Side Economics of the Reagan Administration were based on the theory that stimulating the economy would prevent deficits as government spending for the military was increased. This failed theory was based on something called the Laffer Curve.

   a. Laffer Curve (named for Arthur Laffer) is a relation between tax rates and tax receipts. Laffer's idea was rather simple, he posited that there was optimal tax rate, above which receipt went down and below which receipts went down. The Laffer curve is shown below:



The Laffer Curve shows that the same tax receipts will be collected at the rates labeled both "too high" and "too low." What the supply-siders thought was that tax rates were too high and that a reduction in tax rates would permit them to slide down and to the right on the Laffer Curve and collect more revenue. In other words, they thought the tax rate was above the optimal. We got a big tax rate reduction and found, unfortunately, that we were below the optimal and tax revenues fell, while we dramatically increased the budget. In other words, record-breaking deficits and debt.

b. There were other tenets of the supply-side view of the world. These economists thought there was too much government regulation. After Jimmy Carter de-regulated trucking and airlines, there was much rhetoric and little action to de-regulate other aspects of American economic life.

7. Unfortunately, the realities of American economic policy is that politics is often main motivation for policy.

    a. Tax cuts are popular, tax increases are not.

    b. Deficits are a natural propensity for politicians unwilling to cut pork from their own districts and unwilling to increase taxes.

8. World Trade Organization

    a. Treaties on trade and tariffs

    b. Most favored nation status

        1. Drop barriers to free trade, including protectionist quotas, no subsidies, and labor, environmental, and financial standards

    c. Plight of LDCs particularly with debt

9. Free-Trade Areas

    a. NAFTA
    b. CAFTA
    c. EEU
    d. African Free Trade Area

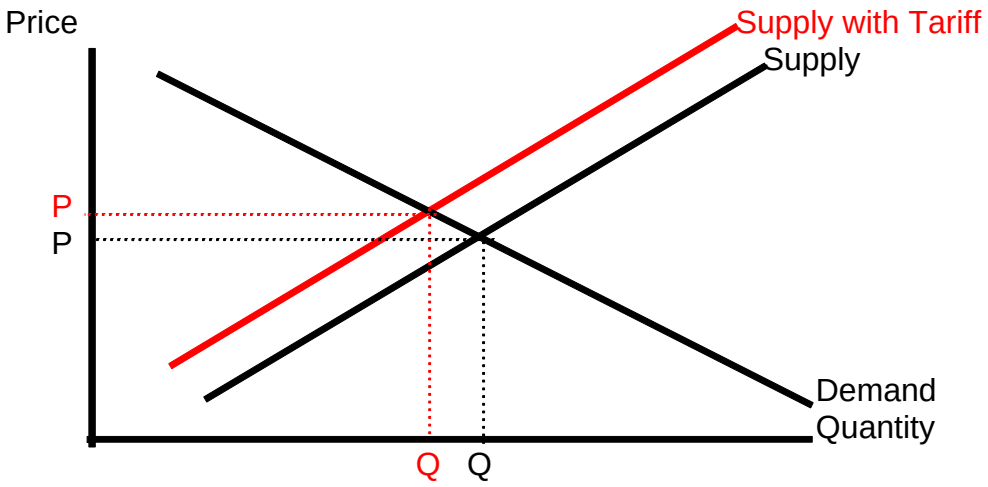
10. Bretton Woods and World Bank

    a. Data gathering
    b. Economic Development
    c. IMF

11. Controversies Concerning International Trade

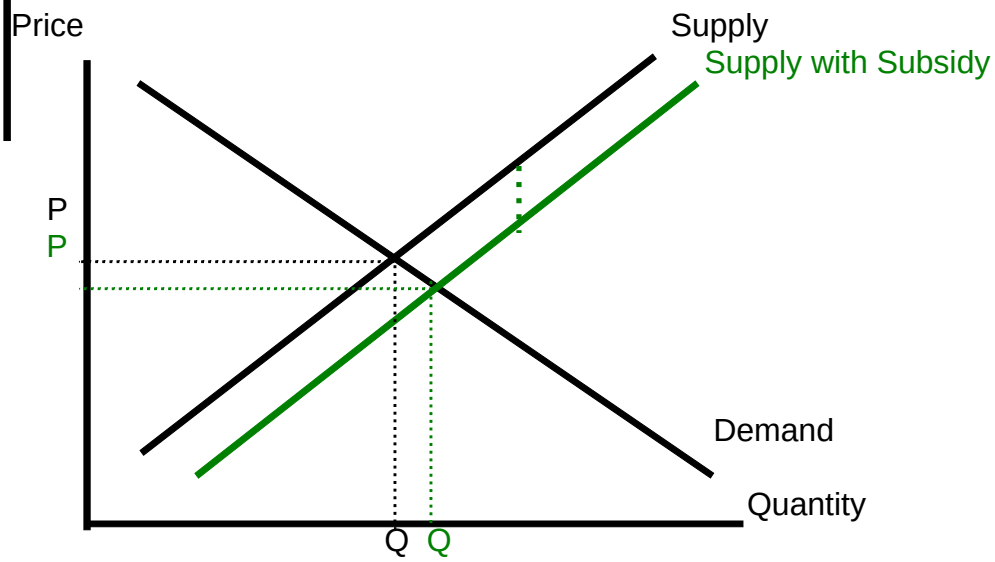
Lecture Notes

1. Historical Context of Protectionism
    A. Wilson Administration
        1. Technology - Oceans no longer barriers
        2. Commercial ventures of the 1920s
            a. Fordlandia
            b. Latin fruit, mid-east oil
    B. Commercial colonization, the rise of Nationalism in third world
2. Protectionist Policies
    A. Currency controls
    B. Embargoes
    C. Tariffs
        1. A tariff is an *ad valorem* tax. Income base not until 1930s
    D. Tariff in Competitive market:



The result of a one-dollar tariff, for the price of the commodity will depend on the elasticity of demand and the elasticity of supply. If there was a perfectly inelastic demand curve, then the tariff would all be reflected in the price of the commodity.

E. Subsidies by foreign governments to foreign producers:

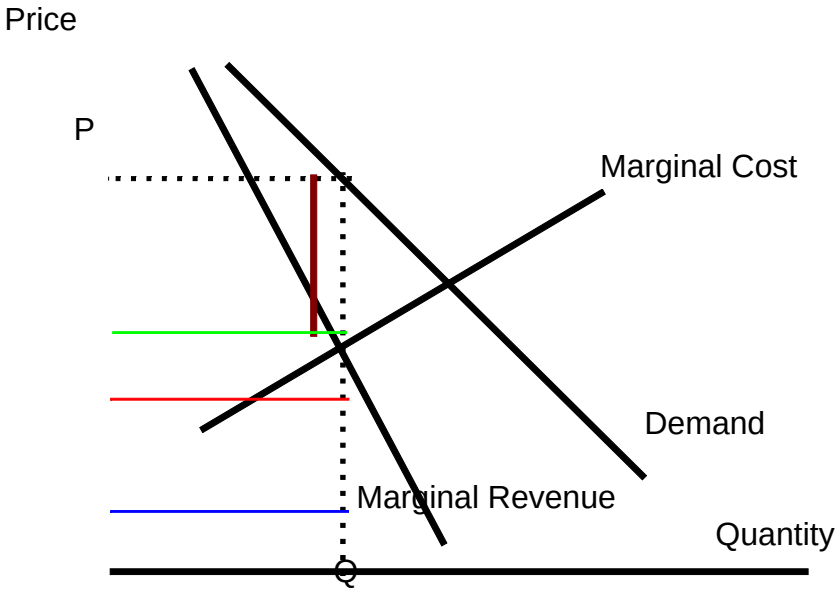


In this case, the policy makers who impose a tariff on this commodity would do so in an amount equal to the vertical distance between the green demand curve and the black one, which is the amount of the subsidy.

F. Problems with market structures

1. Pure competition doesn't exist, hence imperfect market structures are the appropriate models

2. Tariffs have different effect in imperfect product markets



If the blue line shows the amount of fixed cost with this total revenue, the red line the variable cost, and the green line the total cost, then you may place a tariff up to as much as the brown line per unit of the commodity sold without affecting either the price or the quantity sold in the marketplace.

3. Legitimate Reasons for Protectionism

    A. Imperfect versus perfect market structures.

    B. Fair versus Free Trade

    C. Infant industries refers to the fact that certain domestic industries may find it difficult to get a foothold if they are forced to compete with foreign producers.

        1. economies of scale which requires a firm to be given an opportunity to progress to a point where it can become competitive

    D. National security is also a powerful argument for trade restrictions.

        1. World War II & Japanese scrap iron and iron

    E. Fair trade is becoming a more complex problem.

        1. When comparative advantage arises from the exploitation of labor that raises an array of ethical and moral problems.

F. Free trade is one thing, but when comparative advantage is based in labor markets, which do not pay living wages, have no protections for worker safety or health, make no provision for health care or retirement, then that is not a comparative advantage. What this describes is a system abroad that is corrupt and corrosive. Such corruption and devastation of the a foreign labor force cannot and should not be misunderstood as a comparative advantage upon which normal commercial relations can be tolerated. Cost minimization has its limits, and when it involves less than a living wage that is not a viable long-term solution to a comparative advantage relationship with trading partners.

G. In some of our trading partners health care is provided through social programs paid for at taxpayer expense.

4. Exchange Rates

A. Pegging Chinese Currency

1. Artificially creates comparative advantage by manipulating exchange rate.

B. Weak Dollar Policies

1. National Debt

2. Foreign Policy

3. Monetary Supply

C. Political constraints

1. Foreign Wars

2. Political Controversy

READING ASSIGNMENTS

DECISION MAKING AND ECONOMIC ENVIRONMENT
IN A GLOBAL ECONOMY

A524

CHAPTER 1

Introduction to Economics

This chapter will focus on specific definitions, policy, and objective thinking. A discussion of the role of assumptions in model building will also be offered as a basis for understanding the economic models that will be built in the following chapters.

Definitions

Economics is a social science. In other words, it is a systematic examination of human behavior, based on the scientific method, and reliant upon rigorous analysis of that behavior. Economics is the mother discipline from which most of the business disciplines arose. Most people have a vague idea of what the word economics means, but precise definitions generally require some academic exposure to the subject.

Economics is the study of the ALLOCATION of SCARCE resources to meet UNLIMITED human wants. In other words, economics is the study of human behavior as it pertains to material well-being. The key words in this definition are in all capital letters. Because there are a finite number of resources available, the fact that human want exceed that (are unlimited) then the resources are scare relative to the want for them. Because there are fewer resources than wants there must be allocation mechanism of some sort – markets, government, law of the jungle, etc.

Robert Heilbroner describes economics as the "Worldly Philosophy." A "Worldly Philosophy" is concerned with matters of how our material or worldly well-being is best served. In fact, economics is the organized examination of how, why and for what purposes people conduct their day-to-day activities, particularly as it relates to the accumulation of wealth, earning an income, spending their resources, and other matters concerning material well-being. This worldly philosophy has been used to explain most rational human behavior. (Irrational behavior being the domain of specialties in sociology, psychology, history, and anthropology.) Underlying all of economics is the base assumption that people act in their own perceived best interest (at least most of the time and in the aggregate). Without the assumption of rational behavior, economics would be incapable of explaining the preponderance of observed economic activity. As limiting as this assumption may seem, it appears to be an accurate description of reality.

In 1776 Adam Smith penned *An Inquiry into the Nature and Causes of the Wealth of Nations.* With its publication, capitalism was born, from the ashes of the mercantilist system that preceded it. Smith described an economic system of cottage industries and relatively unfettered pursuit of self-interest, and how that unfettered pursuit of self-interest could result in a system that distributed its limited resources in an efficient fashion.

Adam Smith's view of self-interest and exchange

An Inquiry in the Nature and Cause of the Wealth of Nations, Adam Smith, New York: Knopf Publishing, 1910, p. 14.

. . . In almost every other race of animals each individual, when it is grown to maturity, is entirely independent, and in its natural state has occasion for the assistance of no other living creature. However, man has almost constant occasion for the help of his brethren, and it is in vain for him to expect it from their benevolence only. He will be more likely to prevail if he can interest their self-love in his favour, and show then that it is for their own advantage to do for him what he requires of them. Whoever offer to another a bargain of any kind, proposes to do this. Give, which I want, and you shall have this, which you want, is the meaning of every such offer; and it is in this manner that we obtain from one another the far greater part of those good office, which we stand in need of. It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest. We address ourselves, not to their humanity but to their self-love, and never talk to them of our necessities but of their advantages. . . .

Adam Smith, *Wealth of Nations.* New York: Alfred A. Knopf, 1991, p. 13.

Experimental economics, using rats in mazes, suggests that rats will act in their own best interest (incidentally, Kahneman won a Nobel Prize for this sort of research – it is serious business, not just fun and games like it sounds). Rats, it was discovered, prefer root beer to water. The result is that rats will pay a greater price (longer mazes and electric shocks) to obtain root beer than they will to obtain water. Therefore it appears to be a reasonable assumption that humans are no less rational – as Adam Smith postulates in his view of how we might best obtain our dinner.

Most academic disciplines have evolved over the years to become collections of closely associated scholarly endeavors of a specialized nature. Economics is no exception. An examination of one of the scholarly journals published by the American Economics Association, *The Journal of Economic Literature,* reveals a classification scheme for the professional literature in economics. Several dozen specialties are identified in that classification scheme, everything from national income accounting, to labor economics, to international economics. In other words, the realm of economics has expanded over the centuries that it is nearly impossible for anyone to be an expert in all aspects of the discipline, so each economist generally specializes in some narrow portion of the discipline. The decline of the generalist is a function of the explosion of knowledge in most disciplines.

In general, economics is bifurcated by the focus of the analysis – that is, there are two bundles of issues that are examined by economists. These bundles of issues

are considered together, by the level of the activity upon which the analysis is focused. Economics is generally classified into two general categories of inquiry, these two categories are: (1) microeconomics and (2) macroeconomics.

Microeconomics is concerned with decision-making by individual economic agents such as firms and consumers. In other words, microeconomics is concerned with the behavior of individuals or groups organized into firms, industries, unions, and other identifiable agents. The focus of microeconomics is on decision-making, and hence markets. Microeconomics is the subject matter of the first half of this course.

Macroeconomics is concerned with the aggregate performance of the entire economic system. That is, the performance of the U.S. economy or, in a more modern sense, the global economy. The issues of unemployment, inflation, economic development and growth, the balance of trade, and business cycles are the topics that occupy most of the attention of students of macroeconomics. These matters are the topics to be examined in the second half of this course.

Methods in Economics

Economists seek to understand the behavior of people and economic systems using scientific methods. These scientific endeavors can be classified into two categories of activities, these are: (1) economic theory and (2) empirical economics. Theoretical and empirical economics are very much related activities, even though distinguished here for simplicity of presentation.

Economic theory relies upon principles to analyze behavior of economic agents. These theories are typically rigorous, mathematical representations of human behavior with respect to the production or distribution of goods and services in microeconomics – and the aggregate economy in macroeconomics. A good theory is one that accurately predicts future human behavior and can be supported with evidence.

Nobel Prize Winners in Economic Science

1969 J. Tinbergen (Netherlands); R. Frisch (Norway)
1970 P.A. Samuelson (USA - **Indiana**)
1971 S. Kuznets (USA, Soviet Union)
1972 J. R. Hicks (United Kingdom); K. J. Arrow (USA)
1973 W. Leontief (USA)
1974 F. A. Hayek (Austria, USA); K. G. Myrdal (Sweden)
1975 T. Koopmans (USA); L. Kantorovich (Soviet Union)
1976 M. Friedman (USA)
1977 B. Ohlin (Sweden); J. Meade (United Kingdom)
1978 H. A. Simon (USA)
1979 T. W. Schultz (USA); A. Lewis (United Kingdom)
1980 L. R. Klein (USA)
1981 J. Tobin (USA)
1982 G. J. Stigler (USA)
1983 G. Debreu (USA)
1984 R. Stone (United Kingdom)
1985 F. Modigliani (Italy, USA)
1986 J. Buchanan (USA)
1987 R. M. Solow (USA)
1988 M. Allais (France)
1989 T. Haavelmo (Norway)
1990 H. Markowitz (USA); M. Miller (USA); W. Sharpe (USA
1991 R. H. Coase (United Kingdom, USA)
1992 G. S. Becker (USA)
1993 R. W. Fogel (USA); D. C. North (USA)
1994 R. Selten (Germany); J. C. Harsanyi (USA); J. F. Nash (USA)
1995 R. E. Lucas (USA)
1996 J. A. Mirrlees (United Kingdom); William Vickery (Canada, USA)
1997 R. C. Merton (USA); M. S. Scholes (USA)
1998 A. Sen (India, United Kingdom)
1999 R. A. Mundell (USA)
2000 J. J. Heckman (USA); D. L. McFadden (USA)
2001 G. A. Akerlof (USA); A. M. Spence (USA); J. E. Stiglitz (USA - **Indiana**)
2002 D. Kahneman (USA, Isreal); V. L. Smith (USA)
2003 C. Granger (USA, England), R. F. Engle (USA)
2004 F. E. Kyland (Norway), E. C. Prescott (USA)
2005 R. J. Aumann (Isreal), T. C. Schelling (USA

Economic theory tends to be a very abstract area of the discipline. Mathematical modeling was introduced into the discipline early in the eighteenth century by such scholars as Mill and Ricardo. In the middle of the twentieth century, an economist, Paul Samuelson, from M.I.T., published his book, *Mathematical Foundations of Economic Analysis*, and from the that point forward, economic theory was to become heavily mathematical – gone were the days of the institutionalists from the mainstream of economic theory. (Incidentally Paul Samuelson won the Nobel Prize for *Foundations,* and he is a Hoosier, Stiglitz is also from Indiana, and both are from Gary, Indiana).

The above table presents a list of those who have won Nobel Prizes in Economic Science. Notice that the overwhelming majority of these persons are Americans – two of whom are from Indiana, and several are from the University of Chicago. It is also interesting to note that one must be living to receive the Nobel Prize, so many famous economists who met their end before receiving the prize will not be listed. Further, it is also interesting to note that the Nobel Prize in Economic Sciences is the newest of the prizes, beginning with Tinbergen's award in 1969.

Empirical economics relies upon facts to present a description of economic activity. Empirical economics is used to test and refine theoretical economics, based on tests of economic theory.

The area referred to as **econometrics** is the arena in economics in which empirical tests of economic theory occurs. The area is founded in mathematical statistics and is critical to our ability to test the veracity of economic theories.

Theory concerning human behavior is generally constructed using one of two forms of logic – inductive logic or deductive logic. Most of the social studies, i.e., sociology, psychology and anthropology typically rely on inductive logic to create theory.

Inductive logic creates principles from observation. In other words, the scientist will observe evidence and attempt to create a principle or a theory based on any consistencies that may be observed in the evidence.

Economics relies primarily on deductive logic to create theory. **Deductive logic involves formulating and testing hypotheses.** In other words, the theory is created, and then data is applied in a statistical test to see if the theory can be rejected.

Often the theory that will be tested comes form inductive logic or sometimes informed guess-work. The development of rigorous models expressed as equations typically lend themselves to rigorous statistical methods to determine whether the models are consistent with evidence from reality. The tests of hypotheses can only serve to reject or fail to reject a hypothesis. Therefore, empirical methods are focused on rejecting hypotheses and those that fail to be rejected over large numbers of tests generally attain the status of principle.

However, examples of both types of logic can be found in each of the social sciences and in most of the business disciplines. In each of the social sciences it is common to find that the basic theory is developed using inductive logic. With increasing regularity standard statistical methods are being employed across all of the social sciences and business disciplines to test the validity and the predictability of theories developed using these logical constructs.

The usefulness of economics depends on how accurate economic theory predicts human behavior. In other words, a good theory is one that is an accurate

description of reality. Economics provides an objective mode of analysis, with rigorous models that permit the discounting of the substantial bias that is usually present with discussions of economic issues. The internal consistency brought to economic theory by mathematical models of economic behavior provides for this consistency. However, no model is any better than the assumptions that underpin that model. If the assumptions are unrealistic, so too will be the models' predictions.

The objective mode of analysis is an attempt to make a social study more scientific. That is, a systematic analysis of rational human behavior. “Rational” is a necessary component of this attempt. It is the rationality that makes behavior predictable, and what most economists don’t like to admit is without this underlying premise, economics quickly falls into a quagmire of irreproducible results and disjointed theories.

The purpose of economic theory is to describe behavior, but behavior is described using models. **Models are abstractions from reality** - the best model is the one that best describes reality and is the simplest ***(the simplest requirement is called Occam's Razor***). Economic models of human behavior are built upon assumptions; or simplifications that allow rigorous analysis of real world events, without irrelevant complications. Often (as will be pointed-out in this course) the assumptions underlying a model are not accurate descriptions of reality. When the model's assumptions are inaccurate then the model will provide results that are consistently wrong (known as bias).

One assumption frequently used in economics is **ceteris paribus** which means all other things equal (notice that economists, like lawyers and doctors will use Latin for simple ideas). This assumption is used to eliminate all sources of variation in the model except those sources under examination (not very realistic!).

Economic Goals, Policy, and Reality

Most people and organizations do, at least, rudimentary planning, the purpose of planning is the establishment of an organized effort to accomplish some economic goals. Planning to finish your education is an economic goal. Goals are, in a sense, an idea of what should be (what we would like to accomplish). However, goals must be realistic and within our means to accomplish, if they are to be effective guides to action. This brings another classification scheme to bear on economic thought. Economics can be again classified into positive and normative economics. **Positive economics is concerned with what is; and normative economics is concerned with what should be.** Economic goals are examples of normative economics. Evidence concerning economic performance or achievement of goals falls within the domain of positive economics.

The normative versus positive economics arguments begs the question of whether economics is truly a value free science. In fact, economics contains numerous

value judgments. Rational behavior assumes that people will always behave in their own self-interest. Self-interest is therefore presented as a positive element of behavior. In fact, it is a value judgment. Self-interest is probably descriptive of the majority of Americans' behaviors over the majority of time, however, each of us can think of instances where self-less behavior is observed, and is frequently encouraged.

Efficiency is a measurable concept, and is taken as a desirable outcome. However, efficiency is not always desirable. Equity, or fairness is also something prized by most people. The efficiency criterion in economics is not always consistent with equity, in fact, these two ideas are often in conflict.

Economics also generally assumes that more is preferred to less by all consumers and firms. However, there are disposal problems, distributional effects, and other problems where more may not be such a good thing. Obesity is a result of more, but a bad result. Pollution, poverty, and crime may also be examined as more begetting problems.

Economics can hardly be separated from politics because the establishment of national goals occurs through the political arena. Government policies, regulations, law, and public opinion will all effect goals and how goals are interpreted and whether they have been achieved. A word of warning, e**CON**omics can be, and has often been used, to further particular political agendas.

The assumptions underlying a model used to analyze a particular set of circumstances will often reflect the political agenda of the economist doing the analysis. An example liberals are fond of is, Ronald Reagan argued that government deficits were inexcusable, and that the way to reduce the deficit was to lower peoples' taxes -- thereby spurring economic growth, therefore more income that could be taxed at a lower rate and yet produce more revenue. Mr. Reagan is often accused, by his detractors, of having a specific political agenda that was well-hidden in this analysis. His alleged goal was to cut taxes for the very wealthy and the rest was just rhetoric to make his tax cuts for rich acceptable to most of the voters. (Who really knows?) Conservatives are more fond of criticizing the Clinton administration's assertions that the way to reduce the deficit was to spend money where it was likely to be respent, and hence grow the economy and the result was more tax revenues, hence eliminate the deficit. Most political commentators, both left and right, have mastered the use of assumptions and high sounding goals to advance a specific agenda. This adds to the lack of objectivity that seems to increasingly dominate discourse on economic problems.

On the other hand, goals can be public spirited and accomplish a substantial amount of good. President Lincoln was convinced that the working classes should have access to higher education. The Morrell Act was passed 1861 and created Land Grant institutions for educating the working masses (Purdue, Michigan State, Iowa State, and Kansas State (the first land grant school) are all examples of these types of schools). By educating the working class, it was believed that several economic goals could be

achieved, including growth, a more equitable distribution of income, economic security and freedom. In other words, economic goals that are complementary are consistent and can often be accomplished together. Therefore, conflict need not be the centerpiece of establishing economic goals.

Because any society's resources are limited there must be decisions about which goals should be most actively pursued. The process by which such decisions are made is called prioritizing. Prioritizing is the rank ordering of goals, from the most important to the least important. Prioritizing of goals also involve value judgments, concerning which goals are the most important. In the public policy arena prioritizing of economic goals is the subject of politics.

Objective Thinking

Most people bring many misconceptions and biases to economics. After all, economics deals with people's material well-being – a very serious matter to most. Because of political beliefs and other value system components rational, objective thinking concerning various economic issues fail. Rational and objective thought requires approaching a subject with an open-mind and a willingness to accept what ever answer the evidence suggests is correct. In turn, such objectivity requires the shedding of the most basic preconceptions and biases -- not an easy assignment.

What conclusions an individual draws from an objective analysis using economic principles, are not necessarily cast in stone. The appropriate decision based on economic principles may be inconsistent with other values. The respective evaluation of the economic and "other values" (i.e., ethics) may result in a conflict. If an inconsistency between economics and ethics is discovered in a particular application, a rational person will normally select the option that is the least costly (i.e., the majority view their integrity as priceless). An individual with a low value for ethics or morals may find that a criminal act, such as theft, as involving minimal costs. In other words, economics does not provide all of the answers, it provides only those answers capable of being analyzed within the framework of the discipline.

There are several common pitfalls to objective thinking in economics. Among the most common of these pitfalls, which affect economic thought, are: (1) the fallacy of composition, and (2) post hoc, ergo prompter hoc. Each of these will be reviewed, in turn in the following paragraphs.

The fallacy of composition is the mistaken belief that what is true for the individual must be true for the group. An individual or small group of individuals may exhibit behavior that is not common to an entire population. For example, if one individual in this class is a I.U. fan then everyone in this class must be an I.U. fan is an obvious fallacy of composition. Statistical inference can be drawn from a sample of individuals, but only within confidence intervals that provide information concerning the likelihood of making an erroneous conclusion.

Post hoc, ergo prompter hoc means after this, hence because of this, and is a fallacy in reasoning. Simply because one event follows another does not necessarily imply there is a causal relation. One event can follow another and be completely unrelated, this is simple coincidence. One event can follow another, but there may be something other than direct causal relation that accounts for the timing of the two events. For example, during the thirteenth century people noticed that the black plague occurred in a location when the population of cats increased. Unfortunately, some concluded that the plague was caused by cats so they killed the cats. In fact, the plague was carried by fleas on rats. When the rat population increased, cats were attracted to the area because of the food supply. The rat populations increased, and so did the population of fleas that carried the disease. This increase in the rat population also happened to attract cats, but cats did not cause the plague, if left alone they may have gotten rid of the real carriers (the rats, therefore the fleas).

Perhaps it is interesting to note that in any scientific endeavor there is a basic truth. ***Simple answers to complex problems are appealing, abundant, and often wrong.*** This twist on Occam's razor is true. Too often the desire to have a simple solution will blind individuals, and public opinion to the more complex and often more harsh realities. One must take great care to assure that this simple trap does not befall one in their search for truth, because not all truth is simple.

Policy is fraught with danger. Failure to anticipated the consequences of certain aspects of policy may cause results that were neither intended or anticipated by the policy-makers; this is referred to as the law of **unintended consequences.**

The following box presents an excellent historical example of the law of unintended consequences.

Law of Unitended Consequences "The Legend of Pig Iron"
(David A. Dilts, *Indiana Policy Review, Vol. 1, No. 5, pp. 28-29.)*

Many a cliché seems to center on pork. The head of the household is supposed to " put bacon on the table," "pork barrels," and politicians are frequently accused of being in too close a proximity. It only seems fitting that one more story concerning pork should be brought to your attention.

During World War II, farmers in the corn belt argued that regulation of the price of pork had no effect on the war effort, and that they should be permitted to sell their commodities without government interference. The farmers brought political pressure to bear on the Congress and our representatives to deregulate the price of pork. The end result was to shut down the steel mills in Gary.

Shut down our steel mills? How could this be?

Since it is not intuitively obvious how this happened, I'll explain. In 1942, there had been a change in management in the Philippines. And, as luck would have it, we didn't have good trade relations with the new management -- the Japanese. Therefore we did not have access to Manila fibre, necessary in making everything from rope to battleships. We had not yet developed synthetic fibre and therefore has to rely on the fibre previously available. That fibre was hemp.

Now hemp grows in the same places, under the same climatic conditions as does corn. Corn is what hogs eat. And because corn was not being grown in the Midwest, the farmers sought alternative feed for the increased number of hogs they were raising. (Remember, increased price results in a larger quantity supplied.) Oats, wheat and barley were available from the Great Plains region. The problem was shipping it to where the hogs were raised in the Corn Belt of the Lower Midwest.

In their search for transportation, the farmers found that railroads were regulated and reserved for military and heavy industry; trucks needed gasoline and rubber, both in short-supply; and airplanes were being built almost exclusively for military purposes.

This left the farmers without a ready source of domestic transportation for the needed grain. But they eventually found a source of shipping that was neither regulated nor controlled, because it was international in nature -- the iron-ore barges on the Great Lakes.

They bid up the price and the barges started hauling oats to the pigs and stopped hauling ore to the Gary steel mills. And there you have it:

Without the requisite iron ore the steel mills could not produce; they were actually shut down for a period as a direct result of deregulating the price of pork.

Statistical Methods in Economics

The use of statistical methods in empirical economics can result in errors in inference. Most of the statistical methods used in econometrics (statistical examination of economic data) rely on correlation. **Correlation is the statistical association of two or more variables.** This statistical association means that the two variables move predictably with or against each other. To infer that there is a causal relation between two variables that are correlated is an error. For example, a graduate student once

found that Pete Rose's batting average was highly correlated with movement in GNP during several baseball seasons. This spurious correlation cannot reasonably be considered path-breaking economic research.

On the other hand, we can test for causation (where one variable actually causes another). **Granger causality states that the thing that causes another must occur first, that the explainer must add to the correlation, and must be sensible.** As with most statistical methods Granger causality models permit testing for the purpose of rejecting that a causal relation does not exist, it cannot be used to prove causality exists. These types of statistical methods are rather sophisticated and are generally examined in upper division or graduate courses in statistics.

As is true with economics, statistics are simply a tool for analyzing evidence. Statistical models are also based on assumptions, and too often, statistical methods are used for purposes for which they were not intended. Caution is required in accepting statistical evidence. One must be satisfied that the data is properly gathered, and appropriate methods were applied before accepting statistical evidence. Statistics do not lie, but sometimes statisticians do!

Objectivity and Rationality

Objective thinking in economics also includes rational behavior. The underlying assumptions with each of the concepts examined in this course assumes that people will act in their perceived best interest. Acting in one's best interests is how rationality is defined. The only way this can be done, logically and rigorously, is with the use of marginal analysis. This economic perspective involves weighing the costs against the benefits of each additional action. In other words, if benefits of an additional action will be greater than the costs, it is rational to do that thing, otherwise it is not. Too often people permit the costs already paid to influence their decision-making, and hence they are lead astray by not focusing on the margin.

The problem with rationality is perception. Often what people believe is in their own self-interest may not be. (Remember the Pig Iron example). Education and the gathering of information helps to make perceptions more accurate views of reality. In other words, the more we can eliminate our biases and faulty perceptions, the more likely we are to act in our own interest. However, there are costs associated with information gathering and with education, therefore rationality may be costly.

The Economizing Problem

Economics is concerned with decision-making. An economic decision is one that allocates resources, time, money, or something else of use or value. The fundamental question in economics is called the economizing problem. The economizing problem follows directly from the definition of economics offered in Chapter 1. **The economizing problem involves the allocation of resources among competing wants.** The

economizing problem exists because there is **scarcity.** Scarcity arises because of two facts; (1) there are unlimited human wants, but (2) there are limited resources available to meet those wants. In other words, scarcity exists because we do not have sufficient resources to produce everything we want. Perhaps at some date in the future, a utopian world may be obtained where everyone's desires can be fully satisfied -- most economists probably hope that will not happen in their lifetimes because of their own self-interest.

Economists do not differentiate between wants and needs in examining scarcity. Unfortunately, the want of a millionaire for a new Porsche is not differentiated from the need of a starving child for food in the aggregate. However, in a realistic sense, social welfare and the implications of needs versus wants are partially addressed later in this chapter in the discussions offered for allocative efficiency and economic systems.

The concept of scarcity is embedded in virtually every analysis found in economics. Because there is scarcity there is always the question of how resources are allocated and the effects of allocations on various economic agents. Each decision allocating resources to one use or economic agent is also, by necessity, a decision not to allocate resources to an alternative use.

To fully understand the idea of scarcity, each of its components must be mastered. The following section of this chapter examines resources. The next sections will examine economic efficiency, opportunity costs and allocations, before proceeding to the production possibilities model and economic systems.

Productivity is the key

Head to Head (Lester Thurow, New York: William Morrow and Company, Inc., 1992, p. 273.)

If the "British disease" is adversarial labor-management relations, the "American disease" is the belief that low wages solve all problems. When under competitive pressure, American firms first go the low-wage nonunion parts of America and then on to succession of countries with ever-lower wages. But the strategy seldom works. For a brief time lower wages lead to higher profits, but eventually other with even lower wages enter the business (low wages are easy to copy), prices fall, and the higher profits generated by lower wages vanish.

The search for the holy grail of high profitability lies elsewhere -- in a relentless upscale drive in technology to ever-higher levels of productivity -- and wages. Since rapid productivity growth is a moving target and therefore hard to copy, high long-run profits can be sustained. But to get the necessary human talent to employ new technologies, large skill investments have to be made. High wages have to be paid, but paradoxically high wages also leave firms with no choice but to go upscale in technology. High wages and high profits are not antithetical -- they go together.

Resources and factor payments

The resources used to produce economic goods and services (also called commodities) are called **factors of production.** These resources are the physical assets needed to produce commodities. The way that these resources are combined to produce is called **technology.** For example, a man with a shovel digging a ditch is one technology from which ditches can be obtained. Another technology that can produce the same commodity as a man with a shovel is a backhoe and an operator -- the former is more labor intensive, and the latter is more capital intensive.

Land is a factor of production. **Land includes space, natural resources, and what is commonly thought of as land.** A building lot, farm land, or a parking space is what people normally think of when they think of land. However, iron ore, water resources, oil, and other natural resources obtained from land are also one dimension of this factor of production. Another, perhaps equally important dimension, is space. The location of a building site for a business is an important consideration. For example, a retail establishment may succeed or fail because of location, therefore location is another important aspect of the resource called land. **The factor payment that accrues to land for producing is rent.**

Capital includes the physical assets (i.e., plant and equipment) used in the production of commodities. Often accountants refer to capital as money balances that are earmarked for the purchase of plant or equipment. The accounting view of capital is not the physical asset envisioned by economists (in reality the difference is

one of a future claim (the accountant's view) and a present stock of capital (the economist's view) and is not trivial). **Capital receives interest for its contributions to production.**

There is one important variation on capital. Economists also called the skills, abilities, and knowledge of human beings as **human capital**. Human capital is a characteristic of labor. Human capital can be acquired (i.e., education) or may be something inherent in a specific individual (i.e., size, beauty, etc.).

Labor includes the broad range of services (and their characteristics) exerted in the production process. Labor is a rather unique factor of production because it cannot be separated from the human being who provides it. Human beings also play other roles in the economic system, such as consumer that complicates the analysis of labor as a productive factor. The amount of human capital possessed by labor varies widely from the totally unskilled to highly trained professionals and highly skilled journeymen. Labor also includes hired management, and the lowest paid janitor. **Labor is paid wages for its contribution to the production of commodities.**

Entrepreneur (risk taker) is the economic agent who creates the enterprise. Entrepreneurial talent not only assumes the risk of starting a business, but is generally responsible for innovations in products and production processes. The vibrancy of the U.S. economy is, in large measure, due to a wealth of entrepreneurial talent. **This factor of production receives profits for its contribution to output.**

To obtain the maximum amount of output from the available productive resources an economic system should have full employment. **Full employment is the utilization of all resources that is consistent with normal job search and maintenance of productive capacity**. Full employment includes the natural rate of unemployment, which economists estimate to be between four and six percent (unemployment due to job search and normal structural changes in the economy). Empirical evidence suggests that about 80% capacity utilization is consistent with the natural rate of unemployment. When the economy is operating at rates consistent with the natural rate of unemployment it is producing the potential total output. However, full production, 100% capacity utilization involves greater than full employment and cannot be maintained for a prolonged period without labor and capital breaking-down.

Underemployment has been a persistent problem in most developed economies. Underemployment results from the utilization of a resource that is less than what is consistent with full employment. There are two ways that underemployment manifests itself. First, individuals can be employed full time, but not making use of the human capital they possess. For example, in many European countries it is not uncommon for an M.D. to be employed as a practical nurse. The second way that underemployment is typically observed is when someone is involuntarily a part-time employee rather than employed full-time in an appropriate position.

Economic Efficiency

Economic efficiency consists of three components; these are: (1) allocative efficiency, (2) technical or productive efficiency, and (3) full employment. For an economy to be economically efficient all three conditions must be fulfilled.

Allocative efficiency is concerned with how resources are allocated. In a perfectly competitive economy, without institutional impediments, monopoly power, or cartels the markets will allocate resources in an allocatively efficient manner. Allocative efficiency is measured using a concept known as Pareto Optimality (or Superiority in an imperfect world).

Pareto Optimality is that allocation where no person could be made better-off without inflicting harm on another. A Pareto Optimal allocation of resources can exist, theoretically, only in the case of a purely competitive economy (which has never existed in reality). What is of practical significance is a Pareto Superior allocation of resources. A Pareto Superior allocation is that allocation where the benefit received by one person is more than the harm inflicted on another. [cost - benefit approach]

Technical or productive efficiency is a somewhat easier concept. **Technical efficiency is defined as the minimization of cost for a given level of output or (alternatively) for a given level of cost you maximize output.** In other words, for an economic system to be efficient, each firm in each industry must be technically efficient. Again, a technically efficient operation is difficult to find in the real world. However, most profit-maximizing firms (as well as government agencies and non-profit organizations) will at least have technical efficiency as one of its operational goals.

For an economic system to be economically efficient then full employment is also required. Due primarily to the business cycles, no economic system can consistently achieve full employment. The U.S. economy typically has one (during recoveries) to four percent (during recessions) unemployment above that associated with the natural rate of unemployment.

Allocative Efficiency

The Economics of Welfare, fourth edition (A. C. Pigou, London: Macmillan Publishing Company, 1932, p. 89.)

. . . Any transference of income from a relatively rich man to a relatively poor man of similar temperament, since it enables more intense wants to be satisfied at the expense of less intense wants must increase the aggregate sum of satisfaction. The old "law of diminishing utility" thus leads securely to the proposition: Any cause which increases the absolute share of real income in the hands of the poor, provided that it does not lead to a contraction in the size of the national dividend from any point of view, will, in general, increase economic welfare.

Pigou states the basic proposition of Pareto Superiority in the real world; an application of income re-distribution. The “transference of income from a relatively rich man to a relatively poor man of similar temperament” making one less poor, and the other less rich, results in an application of the principle of diminishing marginal utility and, hence, allocative efficiency. In other words, the cost-benefit approach on the margin. We take the last dollar from those with less value for that dollar and add that to those more desperate for an additional dollar of income. Not only is this allocatively efficient, but there are those who would argue that this is also fair.

Economic Cost

Economic cost consists of two distinct types of costs: (1) explicit (accounting) costs, and (2) opportunity (implicit) costs. Explicit costs are direct expenditures in the production process. These are the items of cost with which accountants are concerned. **An opportunity cost is the next best alternative that must be foregone as a result of a particular decision.** Rather than a direct expenditure, an opportunity cost is the implicit loss of an alternative because of a decision. For example, reading this chapter is costly, you have implicitly decided not to watch T.V. or spend time doing something else by deciding to read this chapter. Every choice is costly; that is, there is an opportunity cost. Economic costs are dealt with in greater detail in Chapter 3.

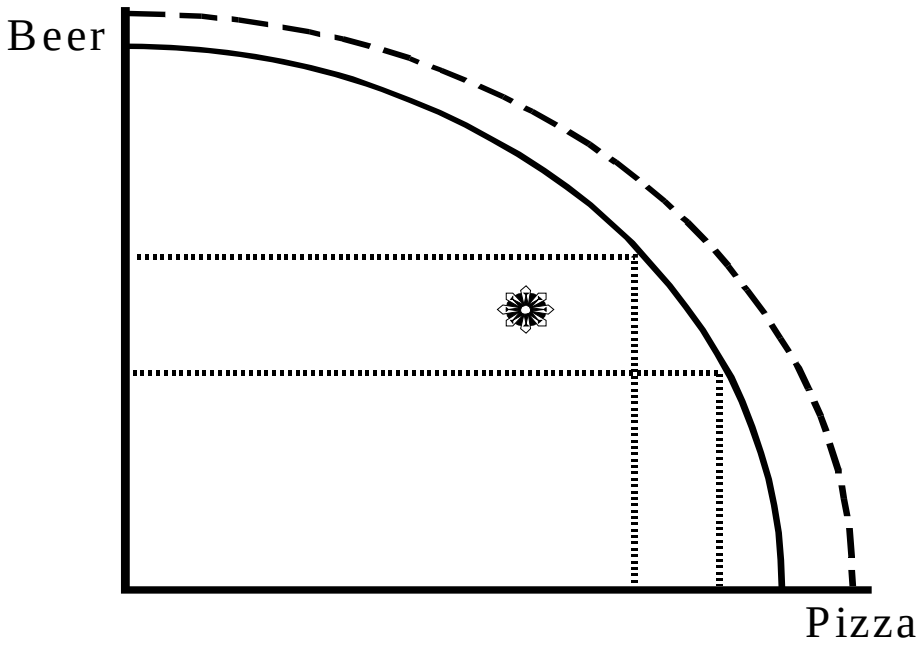
Production Possibilities

The production possibilities frontier (or curve) is a simple model that can be used to illustrate what a very simple economic system can produce under some restrictive assumptions. The production possibilities model is used to illustrate the concepts of opportunity cost, productive factors and their scarcity, economic efficiency (unemployment etc.) and the economic choices an economy must make with respect to what will be produced.

There are four assumptions necessary to represent the production possibilities in a simple economic system. The assumption, which underpin the production possibilities

curve model are: (1) the economy is economically efficient, (2) there are a fixed number of productive resources, (3) the technology available to this economy is fixed, and (4) in this economy we are going to produce only two commodities. With these four assumption we can represent all the combinations of two commodities that can be produced given the technology and resources available are efficiently used.

Consider the following diagram:



Along the vertical axis we measure the number of units of beer we can produce and along the horizontal axis we measure the number of units of pizza we can produce. Where the solid line intersects the beer axis shows the amount of beer we can produce if all of our resources are allocated to beer production. Where the solid line intersects the pizza axis indicates the amount of pizza we can produce if all of our resources are allocated to pizza production. Along the solid line between the beer axis and the pizza axis are the intermediate solutions where we have both beer and pizza being produced.

The reason the line is curved, rather than straight, is that the resources used to produce beer are not perfectly useful in producing pizza and vice versa. The dashed line represents a second production possibilities curve that is possible with additional resources or an advancement in available technology.

Increasing Opportunity Costs is illustrated in the above production possibilities curve. Notice as we obtain more pizza (move to the right along the pizza axis) we have to give up large amounts of beer (downward move along beer axis). In other words, the slope of the production possibilities curve is the marginal opportunity cost of the production of one additional unit of one commodity, in terms of the other commodity.

Inefficiency, unemployment, and underemployment are illustrated by a point inside the production possibilities curve, as shown above. A point consistent with inefficiency, unemployment, or underemployment is identified by the symbol to the inside of the curve.

Economic growth can also be illustrated with a production possibilities curve. The dashed line in the above model shows a shift to the right of the curve. The only way this can happen is for there to be more resources or better technology and this is called economic growth. It is also possible that the curve could shift to the left (back toward the origin -- the intersection of the beer axis with the pizza axis), this could result from being forced to use less efficient technology (pollution controls) or the loss of resources (racism or sexism).

Economic Systems

Production and the allocation of resources occur within economic systems. Economic systems rarely exist in a pure form and the pure forms are assumed simply for ease of illustration. The following classification of systems is based on the dominant characteristics of those systems.

Pure capitalism is characterized by private ownership of productive capacity, very limited government, and motivated by self-interest. Laissez faire means that government keeps their hands-off and markets perform the allocative functions within the economy. This type of system has the benefit of producing allocative efficiency if there is no monopoly power, but this type of system tends towards heavy market concentration left unregulated. There are substantial costs associated with pure capitalism. These costs include significant loses of freedom, poverty, income inequity and several social ills associated with the lack of protections afforded by stronger government. What is perhaps the saving grace, is that pure capitalism does not exist in the course of economic history. Pure capitalism exists only in the tortured minds of economists, and pages of the *Wealth of Nations.*

In the following box, Thorstein Veblen discusses his view of capitalism and the “struggle” associated with the pursuit of self-interest in a system marked with private interests.

The Struggle

The Theory of the Leisure Class, Thorstein Veblen, New York: Penguin Books, 1899, pp. 24-25.

Wherever the institution of private property is found, even in a slightly developed form, the economic process bears the character of a struggle between men for the possession of goods. It has been customary in economic theory, and especially among those economists who adhere with least faltering to the body of modernised classical doctrines, to construe this struggle for wealth as being substantially a struggle for subsistence. Such is, no doubt, its character in large part during the earlier and less efficient phases of industry. Such is also its character in all cases where the "niggardliness of nature" is so strict as to afford but a scanty livelihood to the community in return for strenuous and unremitting application to the business of getting the means of subsistence. But in all progressing communities an advance is presently made beyond this early stage of technological development. Industrial efficiency is presently carried to such a pitch as to afford something appreciably more than a bare livelihood to those engaged in the industrial process. It has not been unusual for economic theory to speak of the further struggle for wealth on this new industrial basis as a competition for an increase in the physical comforts of life, – primarily for an increase of the physical comforts which the consumption of goods affords.

Virtually all economic systems are mixed systems. A mixed system is one that contains elements of more than one of the above pure systems. The U.S. economy is a mixed system, with significant amounts of capitalism, command, and socialism. The U.S. economy also has some very limited amounts of communism and tradition that have helped shape our system. Much of the political controversies concerning the budget deficit, social security, and the environment focuses on the what the appropriate mix of systems should exist in our economic system.

Division of Labor – and possibly society

Class Warfare, Noam Chomsky, Monroe, Maine: Common Courage Press, 1996, pp.19-20.

. . . People read snippets of Adam Smith, the few phrases they teach in school. Everyone reads the first paragraph of *The Wealth of Nations* where he talks about how wonderful the division of labor is. But not many people get to the point hundreds of pages later, where he says that division of labor will destroy human beings and turn them into creatures as stupid and ignorant as it is possible for a human being to be. And therefore in any civilized society the government is going to have to take some measures to prevent division of labor from proceeding to its limits.

Most developed economies are mixed systems. As a society grows and becomes more complex, simple pure examples of economic systems are incapable of handling the demands placed on them. Complexity generally requires elements of command, socialism and capitalism to properly allocate resources and produce commodities. This is no more evident in the troubles being experienced in the former Soviet Union and in China. As these economies attempt to modernize and develop, the policy makers have discovered the utility of market systems for many economic decisions.

Developed economies are generally high income economies, because the production processes tend be capital intensive, and focused on high value-added products. An economy that has a per capita GDP of $8000 or more is a high income economy. Less developed economies fall into two categories, middle income $8000 to $800, and low income economies or those below $800. Low income economies are concentrated in South Asia, and Africa South of the Sahara. Middle income economies are in the Middle East, Eastern Europe and Latin America. The majority of the world's population, over half, live in low income economies.

Perhaps the greatest economic issue facing the current generation is what can be done to bring the low income economies into meaningful participation in the global economy. The poverty of the low income economies is a serious matter without any other issue. AIDS, malaria, and a host of other health problems are associated with the poverty in these nations. Perhaps more importantly, with rising incomes in these parts of the world come several benefits globally. As income rise in low income countries, cheap labor is no longer a cause for outsourcing from the high income, industrialized parts of the world. Further, as income rise, so too does the demand for goods and services. The often used cliché "a rise tide makes all boats float higher" is exactly the case in these nations emergence into full participation in the global economy.

Open Economic System

The modern economy of most nations is no longer a closed-localized system. Virtually every nation on earth has some sort of relations with other nations. The extent to which an economic system is involved in economic relations with other countries is the degree to which that economy is **open**. Foreign economic relations involves the importation and exportation of goods and services. When you buy a Toyota you are having economic relations with Japan. When you work for Philips (Aero-Quip etc.) you are having economic relations with Holland (Philips is a Dutch company). Over the past three decades our reliance on foreign produced goods has become increasingly important to our standard of living. On the other hand, foreigners have become increasingly reliant on American goods. Without trade among nations then everyone would suffer the loss of goods they desire that must be imported.

Foreign investment in the United States has been and continues to be an important component of our economic development. From the very beginnings of the United States European countries, i.e., France, Britain and Germany have heavily invested in the United States. In the Nineteenth Century the motivation was that the U.S. was far from the turmoil of the repeated European wars (Napoleon etc.) and investment here was protected by the expanse of the two Oceans on our east and west. As our institutions developed and became more secure, investment was attracted by the safety offered by our financial institutions and government regulations. At the same time, American industry sought to move into markets they presently served only by exportation.

Controversy abounds concerning international economic relations. The outsourcing of jobs abroad has real costs for the affected households and is a source of discontent among workers who have lost their jobs to foreign competition (more concerning this will discussed in chapter 12). In many cases these job loses are simply employers taking advantage of very low income populations in poor countries – with all of the social and political ills associated with economic exploitation. Over the next several decades these issues will take a more central place in political debate, and concerns over the social responsibility of business.

Technology transfers are also controversial. There are currently bands on the transfer of certain technologies that have implications for national defense. However, in general, technology transfers is the exportation of ideas, knowledge and equipment that may permit less fortunate nations to more adequately participate in the global economic system.

The United States is presently experiencing large deficits in our balance of payments. The **balance of payments** is the net investment abroad (capital accounts) plus the net exports (current accounts) of the United States. If the balance of payments is positive, ignoring investment (capital accounts) for the moment, that means we are exporting more than we are importing. With the capital accounts that means we invest

more abroad, than foreigners invest in the U.S. Together, if the balance of payment is negative, that means the net of the capital and current accounts is a negative number (i.e., we invest less abroad than foreigners invest here, and we import more than we export).

Capitalist Ideology

Ideology is defined by Webster's Dictionary as: ***that system of mental philosophy, which exclusively derives our knowledge from sensation.*** Webster's also appropriately defines capitalism as: ***An economic system characterized by private ownership of natural resources and means of production.*** However, what our system is, and what ideology has grown up around the system are two different things. We have a mixed system, which includes a significant amount of market allocation mechanisms, but it is not a pure capitalist system. Further, what Adam Smith envisioned for capitalism is in many respects very much different from the more radical proponents of capitalism would have us believe is the ideal system. One should remember that a mixed system evolved for a reason, and that the ideology ought not taint the wonders of that system and the standard of living it provides.

The following box is an excerpt from Adam Smith's *Wealth of Nations*, which clearly and unambiguously examines the idea of social welfare, with respect to the pursuit of individual welfare. Bear in mind Adam Smith was the father of capitalism as you read this excerpt.

Individual Self-Interest and Social Welfare

An Inquiry into the Nature and Causes of the Wealth of Nations (Adam Smith, New York: Random House, Modern Library editions, 1937 [original published 1776] Book IV, Ch. 2)

Every individual necessarily labours to render the annual revenue of the society as great as he can. He generally, indeed, neither intends to promote the public interest, nor knows how much he is promoting it. By preferring the support of domestic to that of foreign industry, he intends only his own security; and by directing that industry in such a manner as its produce may be of the greatest value, he intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention. Nor is it always the worse for society that it was no part of it. By pursuing his own interest he frequently promotes that of the society more effectually than when he really intends to promote it. I have never known much good done by those who affected to trade for the public good. It is an affectation, indeed, not very common among merchants, and very few words need be employed in dissuading them from it.

Capitalist ideology is therefore what we wish to perceive it to be, rather a dispassionate observation of some characteristics of a our economic system. The characteristics of a market system are dispassionate observations about markets and their operation. Therefore capitalist ideology is different than the characteristics of a market system.

The characteristics of a capitalist economy are familiar to anyone who has grown up in western industrialized countries. The elements of a capitalist ideology are: **(1) freedom of enterprise, (2) self-interest, (3) competition, (4) markets and prices, and (5) a limited role for government**.

Freedom of enterprise, self-interest and a limited role for government are related characteristics of capitalist ideology. By limiting government participation in the economy it is thought that economic freedom to pursue one's self-interest increases – hence government participation is often called "interference." To the extent that government limits the freedom of enterprise, there is merit to this argument. However, there are often problems associated with the pursuit of self-interest. One of the primary problems with this aspect of the ideology is it is based on the assumption that the power to limit people's self-interest comes only from government. There is also a significant amount of potential to limit economic freedom by predatory behaviors from the private sector. For example, large businesses running small ones out of business to obtain a monopoly to permit prices to increase.

Again, assuming that monopoly power is not exerted over otherwise competitive markets, the competition among producers in a market economy will approximate a Pareto Optimal allocation of resources. Competition does provide for alternate sources of supply that generally increases quality and keeps prices in check. The market system is largely responsible for our high standard of living and the ability to effectively respond to changes in the global economy.

Maybe the best example of the benefits that arise from a capitalist economy is the U.S. automobile industry. In the 1970s the U.S. car producers did not have effective competition, and their prices increased as the quality of U.S. built cars declined. The Japanese entered the U.S. markets and successfully competed with the U.S. manufacturers. This caused the U.S. manufacturers to significantly increase the quality of their products and keep their prices in check. By 2004 many of the top ten vehicles in quality according to consumer reports are U.S. automobiles. (http://auto.consumerguide.com/auto/new/index.cfm)This is a significant benefit from competition that is fundamental to capitalism.

However, capitalism has its drawbacks. Poverty, high rates of litigation, pollution, crime and several other social problems are associated with freedom and limiting government's role. There is a broad range of legitimate roles for government in a capitalist economy. As social responsibility by producers and consumers declines, the legitimate roles of government generally expand.

Worse still, over the past three or four years, businesses in the U.S. have been rocked by scandals. The accounting and analyst frauds at Enron, WorldCom, Health South, and an array of brokerage firms and investment banks, have illustrated that the ethic of self-interest is hardly a reasonable basis for an economic system – without some countervailing forces. Self-interest, without government, or at least effective government regulation, may produce results that are extremely harsh for those without the resources to defend themselves. Therefore there is a strong need not only for a strong ethic of honest and forthright dealings, but also governmental regulation to proscribe the worst abuses.

For the tendency of capitalism toward monopoly and market power to be held in proper balance government must have a significant role. The exact magnitude of the role of government in a free economy has always been controversial, but there is little doubt of its potential for positive outcomes. President Bush, during his first election campaign argued that he envisioned American society becoming "kinder and gentler" society. This reference was for the need for certain elements of socialism to provide limited assurance for the disabled, the elderly, and children freedom from poverty. In the years since George Bush, it seems that neither Democrats or Republicans shared the first President Bush's vision. Mixed economic systems are the response to the drawbacks of capitalism.

Not all people accept our view of the proportions of market activity that should be in evidence in a mixed economy. The Europeans and major Asian economies have far more socialism than we do. On the other hand, many of the Less Developed Countries permit far more free enterprise than we do. Whatever the proportions, two things are certain. First, no two societies are alike in their mix of allocative mechanisms, and second the mix evolves and changes over time with the societies the system serves.

Market System Characteristics

The characteristics of the market system is both practically and intellectually different than capitalist ideology. The characteristics of the market system are those things upon which the operationalization of markets depend to decide what is produced and how it will be allocated. The characteristics of a typical of market system are: **(1) the division of labor & specialization, (2) significant reliance on capital goods, and (3) reliance on comparative advantage.** These characteristics have significant interactions and together are responsible for the competitive well-being of most market system economies.

In market economies the competition among producers requires high levels of technical efficiency, which, in turn, requires labor to become specialized and focused on narrow aspects of a particular production process. By dividing tasks into small

components people become better at repetitive movements and therefore their efficiency increases. As efficiency increases, cost per unit declines.

Division of Labor and Production

An Inquiry into the Nature and Causes of the Wealth of Nations (Adam Smith, New York: G. P. Putnam and Sons, 1877 (original published 1776) Book II, Chapter V.)

To take an example . . . from a very trifling manufacture; but one in which the division of labour has been very often taken notice of, the trade of the pin-maker; a workman not educated to this business (which the division of labour had rendered a distinct trade), nor acquainted with the use of machinery employed in it (to the invention of which the same division of labour has probably given occasion), could scarce, perhaps, with his utmost industry make one pin in a day, and certainly could not make twenty. But in the way in which this business is now carried on, not only the whole work is a peculiar trade, but it is divided into a number of branches, of which the greater part are likewise peculiar trades. One man draws out the wire, another straights it, a third cuts it, a fourth points it, a fifth grinds it at the top for receiving the head; to make the head requires two or three distinct operations; to put it on, is a peculiar business, to whiten pins is another; it is even a trade by itself to put them into the paper; and the important business of making a pin is, in this manner, divided into about eighteen distinct operations, which in some manufactories, are all performed by distinct hands, though in others the same man will sometimes perform two or three of them. I have seen a small manufactory of this kind where ten men only were employed, and where some them consequently performed two or three distinct operations. But though they were poor, and therefore indifferently accommodated with the necessary machinery, they could, when they exerted themselves, make among them about twelve pounds of pins in a day. There are in a pound upwards of four thousands pins of middling size. Those ten persons, therefore, could make among them upwards of forty-eight thousand pins in a day. Each person, therefore making a tenth part of forty-eight thousand pins, might be considered as making four thousand eight hundred pins in a day. But if they had all wrought separately and independently, and without any of them having been educated to this peculiar business, they certainly could not each them have made twenty, perhaps not one pin in a day.

Because of the need to compete, capital is typical used where it is less costly. Capital can be substituted for labor in many production processes and significantly reduce per unit costs of production.

Comparative Advantage and Trade

However, comparative advantage is somewhat more complicated. Comparative advantage is the motivation for trade among people (and nations). Terms of trade are

those upon which the parties may agree and depends on the relative cost advantages of trading partners and their respective bargaining power.

Interdependence and Comparative Advantage

An Inquiry into the Nature and Causes of the Wealth of Nations (Adam Smith, New York: Random House, Modern Library editions, 1937 [original published 1776] Book IV, Ch. 2)

. . . It is the maxim of every prudent master of a family, never to attempt to make at home what it will cost more to make than to buy. The taylor does not attempt to make his own shoes, but buys them of the shoemaker. The shoemaker does not attempt to make his own clothes, but employs a taylor. The farmer attempts to maler neither the one nor the other, but employs those different artificers. All of them find it for their interest to employ their whole industry in a way in which they have some advantage over their neighbors, and to purchase with a part of its produce, or what is the same thing, with the price of a part of it, whatever else they have occasion for.

What is prudence to the conduct of every private family, can scarce be folly in that of a great kingdom. If a foreign country can supply us with a commodity cheaper than we ourselves can make it, better buy it of them with some part of the produce of our own industry, employed in a way in which we have some advantage.

Consider the following illustration:

	Texas	Florida
Cows	1000	100
Oranges	100	1000

The data above show what each state could produce if all of their resources were put into each commodity. For example, if Texas put all their resources in cattle production they could produce 1000 cows but no oranges. Assuming the data give the rate at which the commodities can be substituted, if both states equally divided their resources between the two commodities, Texas can produce 500 cows and 50 oranges and Florida can produce 50 cows and 500 oranges (for a total of 550 units of each commodity produced by the two states together). If Texas produced nothing but cows it would produce 1000, and if Florida produced nothing but oranges it would produce 1000). If the countries traded on terms where one orange was worth one cow then both states would have 500 units of each commodity and obviously benefit from specialization and trade. In this example notice that oranges are relatively expensive.

Trade between industries and individuals also arises from comparative advantage. However, **barter (direct trading of commodities)** becomes increasingly difficult as an economic system becomes more complex. Barter requires a

coincidence of wants, it does no good to have apples if you want oranges and the only people who have oranges hate apples. No transaction will occur under this scenario unless a third-party can be found that has a commodity that both original trading parties value and who accept both apples and oranges. Therefore, as complexity rises, so does the need for the ability to conduct business without reliance on barter, therefore the need for money.

TRADE SUMMARY - U.S. Department of Commerce, International Trade Administration

(billions of dollars)

Year	Total Exports	Total Imports	Balance of Trade
2000	$1064.2	$1442.9	–$378.7
2001	998.0	1356.3	– 358.3
2002	971.7	1407.3	– 435.7
2003 (est)	988.8	1489.2	– 501.4

Money in an Economic System

Money facilitates market activities and is necessary in complex market systems. With money people can avoid the problems associated with coincidence of wants. Among, these problems is the pricing of commodities. Prices stated in the terms of all possible trading goods makes it difficult to determine what anything costs. In barter economies hours are spent in negotiating for even simple transactions, these hours are resources that could have been spent on other activities (therefore the hours of negotiations are the opportunity cost of a money economy).

The functions of money include; (1) **medium of exchange**, (2) **store of value**, and (3) **a measure of worth**. Because money is acceptable as a form of payment for all commodities, barter is no longer needed. Money can be easily stored in a tin can or bank account, so commodities need not be stored and can be purchased when needed. Because money is acceptable in virtually all transactions, prices can be stated in terms of dollars or yen thereby simplifying transactions substantially. In other words, money is the grease that lubricates any complex economic system.

Fiat money is what is common in modern economic systems. **Fiat money is money that is defined as legal tender by either a government or some organization with the authority to define legal tender.** In the United States the Federal Reserve System issues Federal Reserve Notes, which serve as the legal tender for the United States. The currency used here is backed by nothing except the faith of the general public that this money will be acceptable by everyone else with whom you could have an economic transaction.

President Nixon in 1971 took the United States off of the gold standard. Up to that point of time the value of the dollar was expressed in some fixed ratio to the commodity – gold. The end result was the dollar had become seriously over-valued, and something had to be done so that American exports could resume to our trading partners. When the U.S. abandoned the gold standard gold went from less than forty dollars an ounce, to over $1000 an ounce in a matter of weeks. Thus illustrating the folly of pegging one's currency to the value of some commodity.

Fiat money is not a new idea. Some European historians identify the first use of fiat money in Europe resulting from gold and silver smiths issuing their customers receipts for gold or silver left in their care. The receipts were commands over that gold and silver, and began to trade as easily as the commodity itself, to the extent that the parties to the transaction knew of the smith and the note bearer. This trade in receipts dates back to the mid-fifteenth century. Hence, in this case the value of money is based on some mutual trust between the principles to these transactions.

The first recorded use of fiat money, however, dates to three hundred years earlier in Asia. Because of the shortage of gold and silver to run the Mongol Empire, Genghis Kahn began to issue orders, in writing, that the written order was to be given deference as a specific amount of gold or silver. Genghis was known to a be no-nonsense sort of guy, and the violation of his decrees were clearly unhealthy acts, therefore these orders were the first fiat money recorded in history, and not backed by anything save the martial might of the Mongol Army. Perhaps, in retrospect, it is better that currency be acceptable on economic grounds, than under threat of violence from a government.

Foreign Exchange

International economic relations also depend, in large measure, on monetary issues. You are unlikely to accept the Turkish Lire in payment for your wages in this country, simply because you can't easily use that money to buy anything. You want U.S. dollars in payment for your services, because you can easily spend the dollar. Countries act the same way you do. There are currencies that virtually everyone accepts as payment, and those widely accepted currencies are called **hard currency.** The currency of the big, developed, high income economies are the hard currencies – U.S. dollar, Japanese Yen, Canadian dollar, British pound and the E.E.U.s' Euro.

Prior to the Euro, there were seven countries whose currencies were considered hard currencies. In addition to the U.S., Japan, Canada, and the United Kingdom, the French Franc, German Mark, and Italian Lire were also considered hard currencies. These seven nations are called the G-7 countries because the size and strength of their economies made them the leading economic forces on the planet, and their currencies the most accepted.

The relative value of currency is called the **exchange rate**. For example, one U.S. dollar may buy 109 Japanese Yen but only .85 Euros. It is these currency exchange rates that, in large measure, determine net exports and foreign investment in the U.S.

As the dollar gains strength, i.e., goes from 109 Yen to the dollar to 120 Yen to the dollar, then imports are cheaper. If at 110 Yen to the dollar a particular Japanese car costs $20,000 that is also 2.2 million Yen. If the dollar gains strength, and it can now purchase 125 Yen per dollar, then that 2.2 million Yen car is only $17,600. As can be readily seen the strong dollar give the American consumer an advantage in buying imports. If the dollar becomes weak then that advantage turns to disadvantage. Going back to the example above, if the 2.2 million Yen vehicle was available at $17,600 at 125 Yen per dollar, the additional cost of $2400 would be observed if the dollar could only purchase 110 Yen.

The same sort of analysis applies to American exports. With an expensive dollar it is hard to sell American goods abroad. If the Mexican Peso will buy 10 cents we may be able to sell some goods in Mexico, however if the dollar becomes stronger and Mexicans can only get 5 cents per peso, we will observe a marked decline in exports to Mexico.

Currency also impacts foreign investment. If our Mexican friends invest 2 million pesos in the U.S. when the peso buys 10 cents ($200,000), and then suddenly the peso becomes worth 25 cents ($500,000) the foreign investor just made 250% on his investment simply because the U.S. dollar weakened with respect to the Mexican peso. On the other hand, if the Mexican investor bought dollars at 25 cents per peso and over a year the dollar fell to 10 cents per peso, his investment went from $500,000 to only 40% of his original investment. In other words, foreign investment becomes more attractive with strength in the host countries' currency.

A strong dollar policy means that the government will undertake policies that will increase the value of the dollar with respect to other currencies. Contractionary fiscal and monetary policies are typically associated with strong dollar policy and is properly the subject of the next course (macroeconomics). Strength a nation's currency is typically a reflection of its strong economy and institutions. The relative supply and demand for a currency will also impact the currency exchange rates.

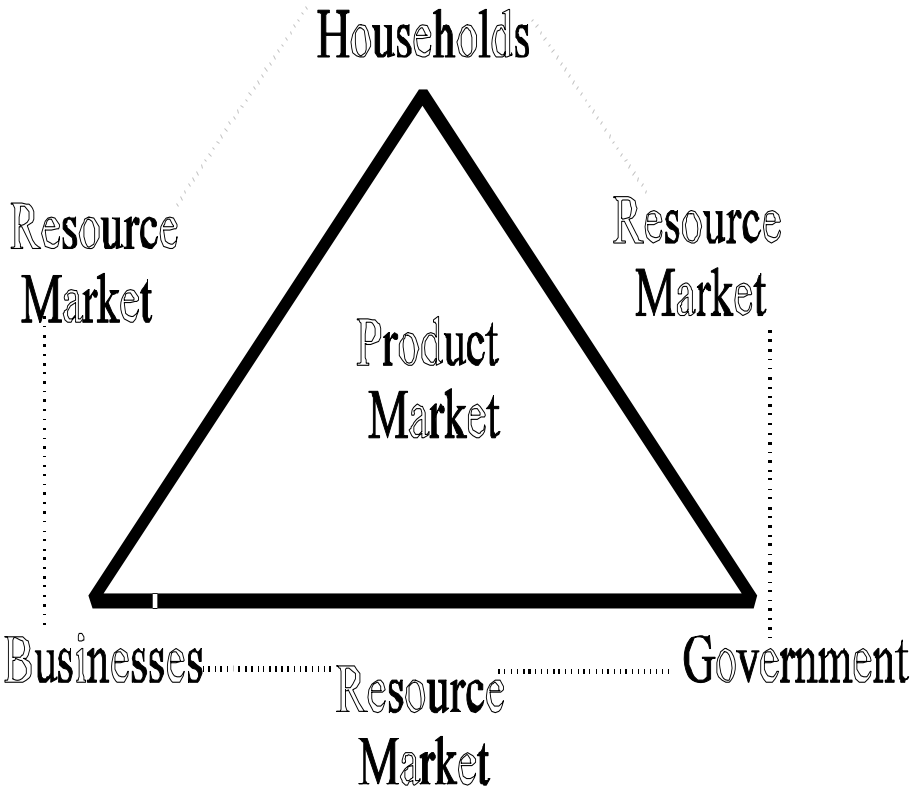
Strong dollar policies promote the importation of goods and services from abroad, and foreign investment in our domestic enterprises. On the other hand, a weak dollar policy promotes the exportation of goods and services abroad, and U.S. investment overseas. Often, the international aspects of domestic monetary and fiscal policies are less important than political consideration in the U.S. or policy consideration concerning unemployment or inflation. However, one must always remember that lobbyists and special interest groups are quick to point-out to policy makers the advantages and disadvantage of either policy for their constituents back home.

The Circular Flow Diagram

The circular flow diagram is used to show the interdependence that exists among sectors of the economy. The diagram illustrates that there are several collections of similar economic agents, called sectors. Households provide resources to government and business and consume the outputs of these other sectors. The markets in which land, labor, capital, and entrepreneurial talent are sold are called resource markets. The markets in which the output of business and in some cases government is sold are called product markets.

To this point, the circular flow diagram is relatively simple. However, when a foreign sector or substantial governmental sector is added it becomes more complicated. It is not unusual for a modern economy to have substantial participation in both the product and resource markets from both foreigners and governments (sometimes even foreign governments).

Consider a relatively simple open-economy, trade and foreign investment occurs. The following diagram illustrates this relatively simple economic system. The interdependence in the sectors is represented by the flows in both the resource and factor markets. Resources flow from household to both the government and businesses. Private goods and services flow from the businesses to households and government, and public goods and services flow from the government to both households and businesses. The triangle representing these domestic sectors rests on a foundation called the foreign sector. Foreign households, business, and even governments (in limited ways) participate in the flows that would otherwise have been purely domestic if the economy was a closed economy.



FOREIGN SECTOR

As can be easily observed the government provides public goods and services to both businesses and households and receives resources and private goods and services in return; the business sector sells commodities to households and households provide resources to businesses. This is the nature of interdependence.

CHAPTER 2

The Basics of Supply and Demand

The purpose of this chapter is to develop one of the most powerful methods of analysis in the economist's tool kit. In this chapter, we will develop the model of a simple market – supply and demand (the industry in pure competition – discussed further in Chapter 5). The demand schedule and supply schedule will be developed and put together to form the analysis of a market. The market presented here is the starting point for the analysis of all market structures.

Markets

A market is nothing more or less than the locus of exchange; it is not necessarily a place, but simply buyers and sellers coming together for transactions. Transactions occur because consumers and suppliers are able to purchase and sell at a price that is determined through the free interaction of demand and supply.

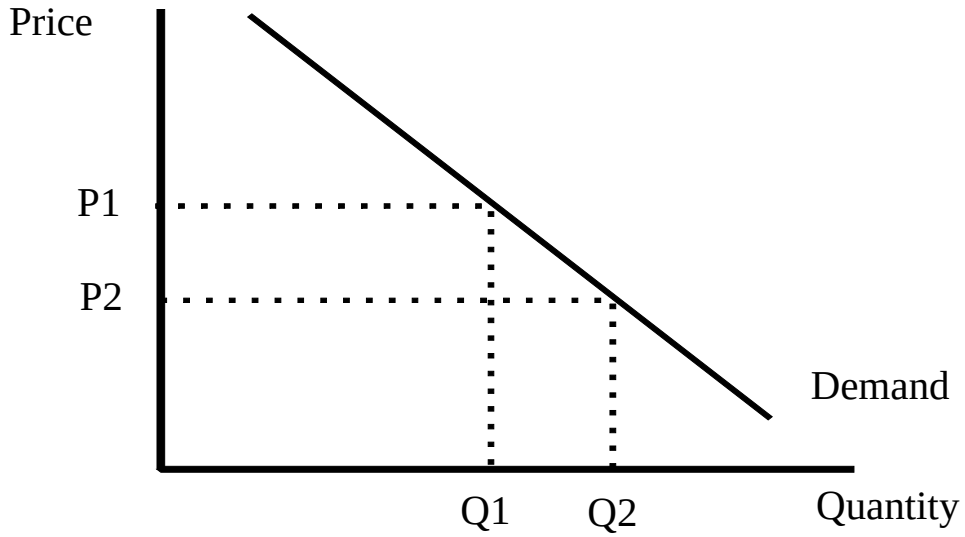
Adam Smith, in the *Wealth of Nations*, described markets as almost mystical things. He wrote that the interaction of supply and demand "as though moved by an invisible hand" would determine the price and the quantity of a good exchanged. In fact, there is nothing mystical about markets. If competitive, a market will always satisfy those consumers willing and able to pay the market price and provide suppliers with the opportunity to sell their wares at the market price. To understand the market, one need only understand the ideas of supply and demand and how they interact.

Demand

The law of demand is a principle of economics because it has been consistently observed and predicts consumers' behavior accurately. **The law of demand states that as price increases (decreases) consumers will purchase less (more) of the specific commodity, ceteris paribus.** In other words, there is an inverse relationship between the quantity demanded and the price of a particular commodity. This law of demand is a general rule. Most people behave this way; they buy more the lower the price. However, everyone knows of a specific individual who may not behave as predicted by the law of demand, but remember the fallacy of composition -- because an individual or small group behaves contrary to the law of demand does not negate it.

The demand schedule (demand curve) reflects the law of demand. The demand curve is a downward sloping function (reflecting the inverse relationship of price to

quantity demanded) and is a schedule of the quantity demanded at each and every price.



As price falls from P1 to P2 the quantity demanded increases from Q1 to Q2. This is a negative relation between price and quantity, hence the negative slope of the demand schedule; as predicted by the law of demand.

Consumers obtain utility (use, pleasure, jollies) from the consumption of commodities. Economists have long recognized that past some point, the consumption of additional units of a commodity bring consumers less and less utility. The change in utility derived from the consumption of one more unit of a commodity is called **marginal utility.** The idea that utility with the amount added to total utility will decline when additional units are consumed past some point has also the status of principle. This principle is called **diminishing marginal utility**.

Because consumers make rational choices, that is they act in their own self-interest, there are two effects that follow from their attempts to maximize their well-being when the price of a commodity changes. These two effects are called the; (1) income effect, and (2) the substitution effect. Together these effects guarantee a downward sloping demand curve.

The income effect is the fact that as a person's income increases (or the price of item goes down [which effectively increases command over goods] more of everything will be demanded. The income effect suggests that as income goes down (price increases) then less of the commodity will be purchased.

The substitution effect is the fact that as the price of a commodity increases, consumers will buy less of it and more of other commodities. In other words, a consumer will attempt to substitute other goods for the commodity that became

more expensive. The substitution effect simply reinforces the idea of a downward sloping demand curve.

The demand schedule can be expressed as a table of price and quantity data, a series of equations, or in a downward sloping graph. To this point, our discussion has focused on individuals and their behavior. Assuming that at least a significant majority of consumers are rational, it is a simple matter to obtain a market demand curve. One needs only to sum all of the quantities demanded by individuals at each price to obtain the market demand curve.

Changes in the price of a commodity causes movements along the demand curve; such movements are called **changes in the quantity demanded**. If price decreases, then we move down and to the right along the demand curve; this is an increase in the quantity demanded. If price increases, then we move upward and to left along the demand curve, this is a decrease in the quantity demanded. Remember, (it is important) such changes are called changes in the quantity demanded because the demand curve is a schedule of the quantities demanded at each price.

Movements of the demand either curve itself, to the left or right are called **changes in demand**. A change in demand is caused by a change in one or more of the nonprice determinants of demand. A shift to the right of the demand curve is called an increase in demand; and a shift to the left of the demand curve is called a decrease in demand.

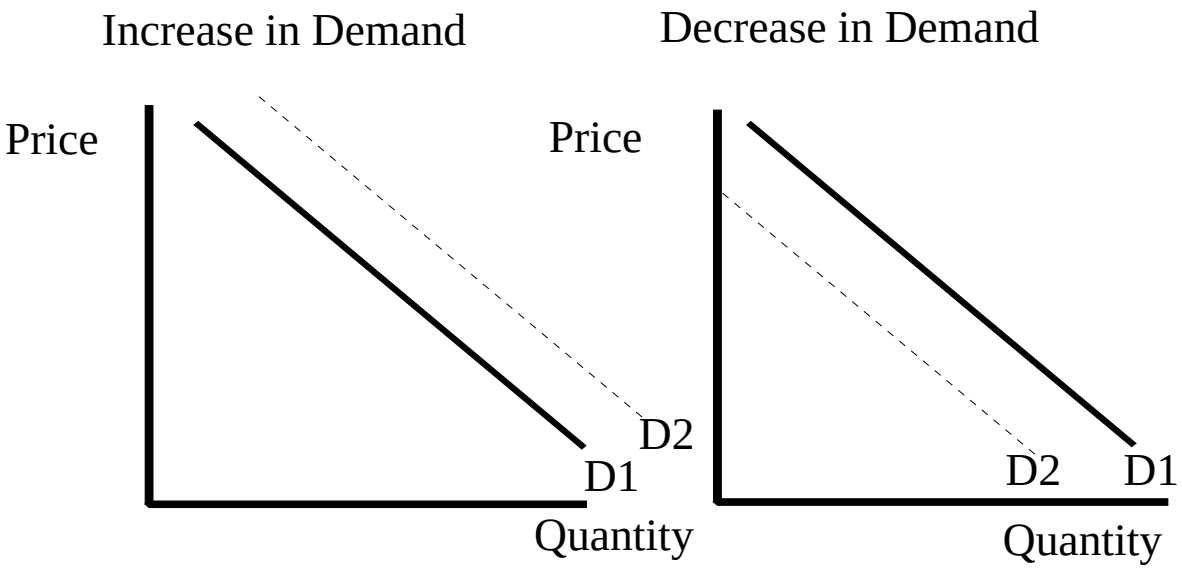
The nonprice determinants of demand are; (1) tastes and preferences of consumers, (2) the number of consumers, (3) the money incomes of consumers, (4) the prices of related goods, and (5) consumers' expectations concerning future availability or prices of the commodity.

If the tastes and preferences of consumers change, they will shift the demand curve. If consumers find a commodity more desirable, ceteris paribus, then an increase in demand will be observed. If consumer tastes wan for a particular product then there will be a shift to the left of the demand (a decrease in demand).

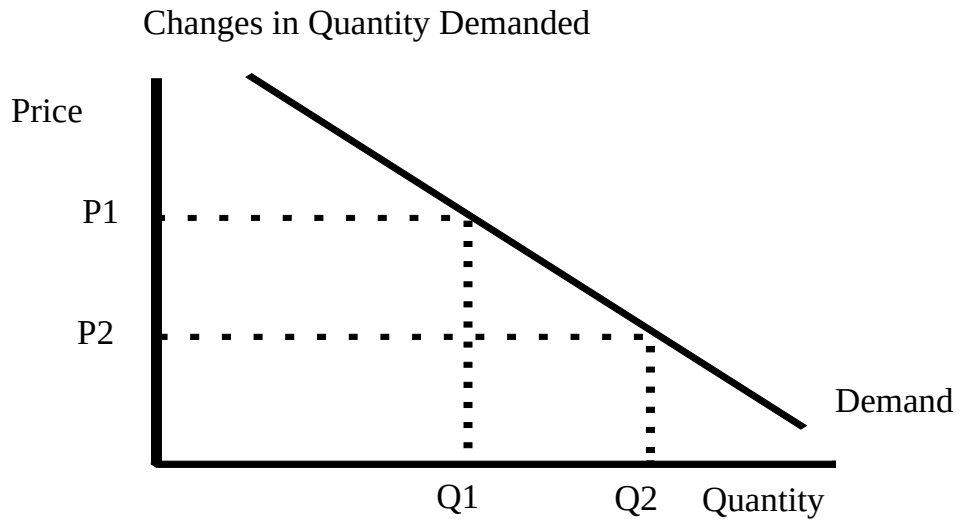
An increase in the number of consumers or their money income will result in a shift to the right of the demand curve (an increase in demand). A decrease in the number of consumers or their income will result in a shift of the demand curve toward the origin (a decrease in demand). Consumers will also react to expectations concerning future prices and availability. If consumers expect future prices to increase, their present demand curve will shift to the right; if consumers expect prices to fall then we will observe a decrease in current demand.

The prices of related commodities also affect the demand curve. There are two classes of related commodities of importance in determining the position of the demand curve; these are (1) substitutes, and (2) complements. A substitute is something that is alternative commodity, i.e., Pepsi is a substitute for Coca-Cola. A complement is

something that is required to enjoy the commodity, i.e., gasoline and automobiles. If the price of a substitute increases, then the demand for our commodity will increase. If the price of a substitute decreases, so too will the demand for our commodity. In other words, the price of a substitute and the demand for our commodity move in the same direction. For complements, the price of the complement and the demand for our commodity move in opposite directions. If the price of a complement increases, the demand for our commodity will decrease. If the price of a complement decreases, the demand for our commodity will increase.



An increase in demand is shown in the first panel, notice that at each price there is a greater quantity demanded along D2 (the dotted line) than was demanded with D1 (the solid line). The second panel shows a decrease in demand, notice that there is a lower quantity demanded at each price along D2 (the dotted line) than was demanded with D1 (the solid line).



Movement along a demand curve is called a change in the quantity demanded. Changes in quantities demanded are caused by changes in price. When price decreases from P1 to P2, the quantity demanded increases from Q1 to Q2; when price increases from P2 to P1 the quantity demanded decreases from Q2 to Q1.

Supply

The law of supply is that producers will supply more the higher the price of the commodity. The supply curve is an upward sloping function showing a direct relationship between prices and the quantity supplied. In other words, the supply curve has a positive slope that shows that as price increase (decreases) so too does quantity supplied.

As with the demand curve, a change in the price will result in a **change in the quantity supplied.** An increase in price will result in an increase in the quantity supplied, and a decrease in price will result in a decrease in the quantity supplied. Again, this is because the supply curve is a schedule of the quantities supplied at each price.

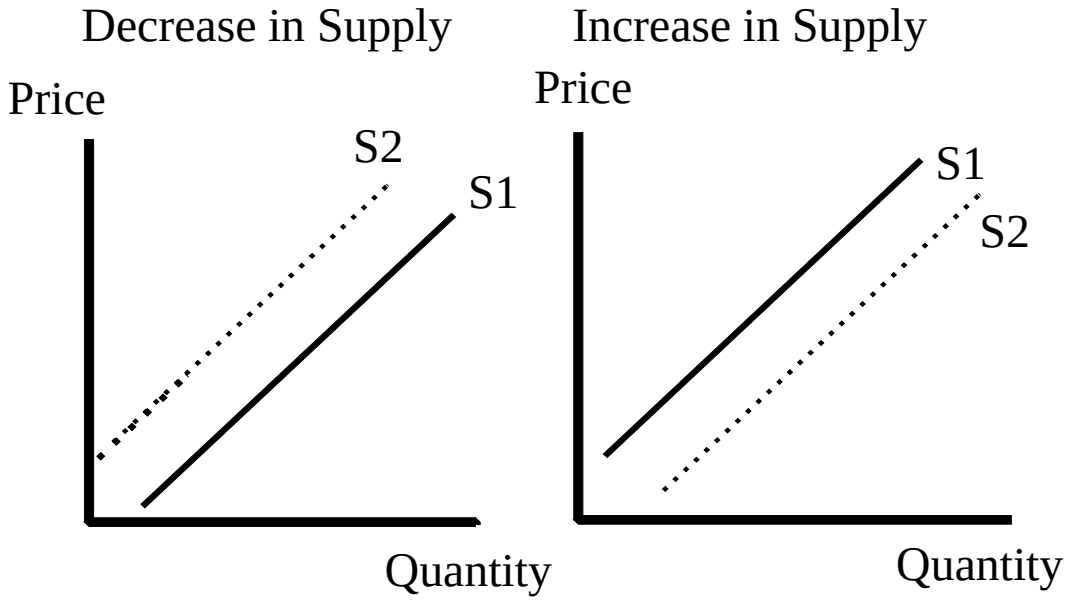
Changes in one or more of the nonprice determinants of supply cause the supply curve to shift. A shift to the left of the supply curve is called a decrease in supply; a shift to the right is called an increase in supply. The nonprice determinants of supply are; (1) resource prices, (2) technology, (3) taxes and subsidies, (4) prices of other goods, (5) expectations concerning future prices, and (6) the number of sellers.

When resource prices increase, supply decreases (shifts left); and when resource prices decrease, supply increases (shifts right). If a more cost effective technology is discovered then supply increases, increases in taxes cause the supply

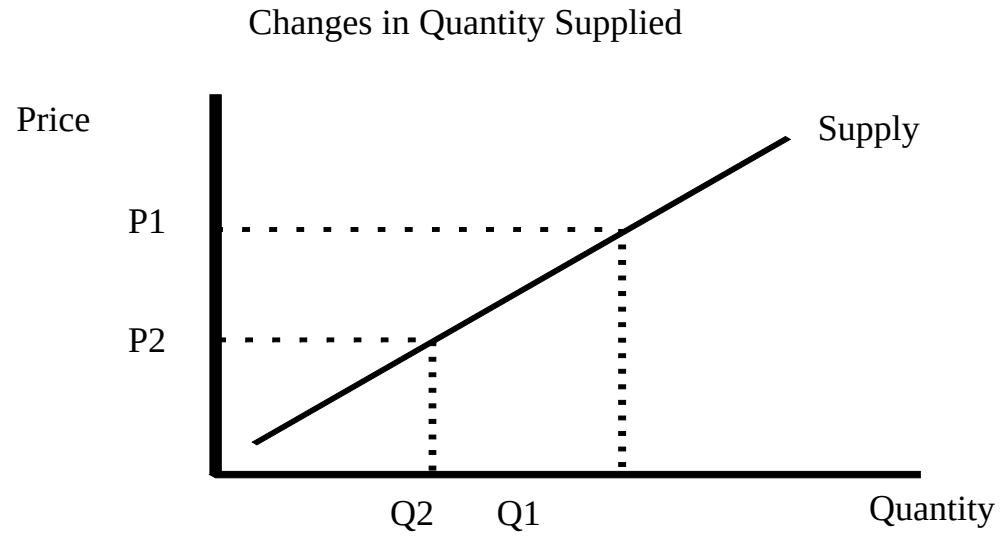
curve to shift left (decrease). An increase in a subsidy affects the supply curve in the same way as a cut in taxes, an increase in supply.

If the price of other goods a producer can supply increases, the producer will reallocate resources away from current production (decrease in supply) and to the goods with a higher market price. For example, if the price of corn drops, a farmer will supply more beans.

If producers expect future prices to increase, current supply will decline in favor of selling inventories at higher prices later. In other words, supply will decrease (a shift to the left, and exactly the opposite response will occur if producer expect future prices to be lower. If the number of suppliers increases, so too will supply, but if the number of producers declines, so too will supply.



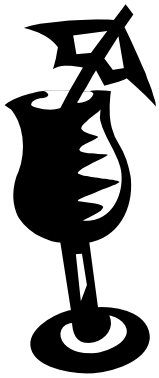
A decrease in supply is shown in the first panel, notice that there is a lower quantity supplied at each price with S2 (dotted line) than with S1 (solid line). The second panel shows an increase in supply, notice that there is a larger quantity supplied at each price with S2 (dotted line) than with S1 (solid line).



Changes in price cause changes in quantity supplied, an increase in price from P2 to P1 causes an increase in the quantity supplied from Q2 to Q1; a decrease in price from P1 to P2 causes a decrease in the quantity supplied from Q1 to Q2.

Market Equilibrium

Market equilibrium occurs where supply equals demand (supply curve intersects demand curve). An equilibrium implies that there is no force that will cause further changes in price, hence quantity exchanged in the market. This is analogous to a cherry rolling down the side of a glass; the cherry falls due to gravity and rolls past the bottom because of momentum, and continues rolling back and forth past the bottom until all of its' energy is expended and it comes to rest at the bottom - this is equilibrium [a rotten cherry in the bottom of a glass].

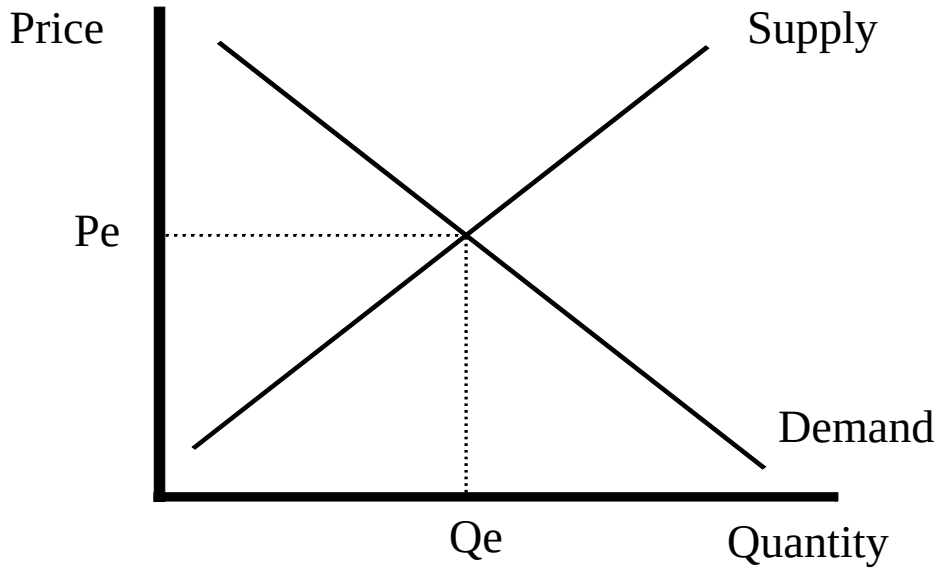


Price and Value

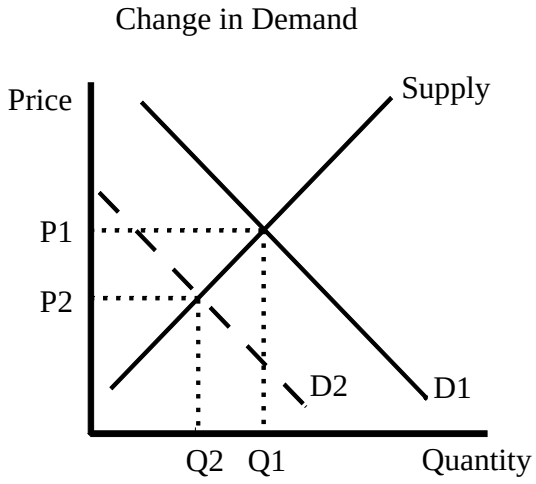
Principles of Economics, 8th edition (Alfred Marshall, London: Macmillan Publishing Company, 1920, p. 348.)

. . . We might as reasonably dispute whether it is the upper or the under blade of a pair of scissors that cuts a piece of paper, as whether value is governed by utility or cost of production. It is true that when one blade is held still, and the cutting is effected by moving the other, we may say with careless brevity that the cutting is done by the second; but the statement is not strictly accurate, and is to be excused only so long as it claims to be merely a popular and not a strictly scientific account of what happens.

The following graphical analysis portrays a market in equilibrium. Where the supply and demand curves intersect, equilibrium price is determined, (Pe) and equilibrium quantity is determined (Qe)

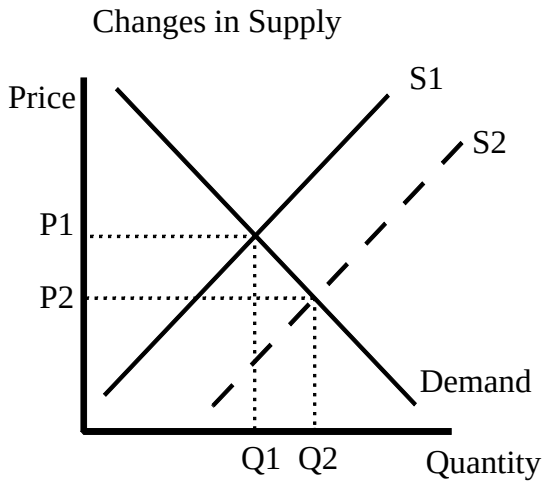


Changes in supply and demand in a market result in new equilibria. The following graphs demonstrate what happens in a market when there are changes in nonprice determinants of supply and demand.

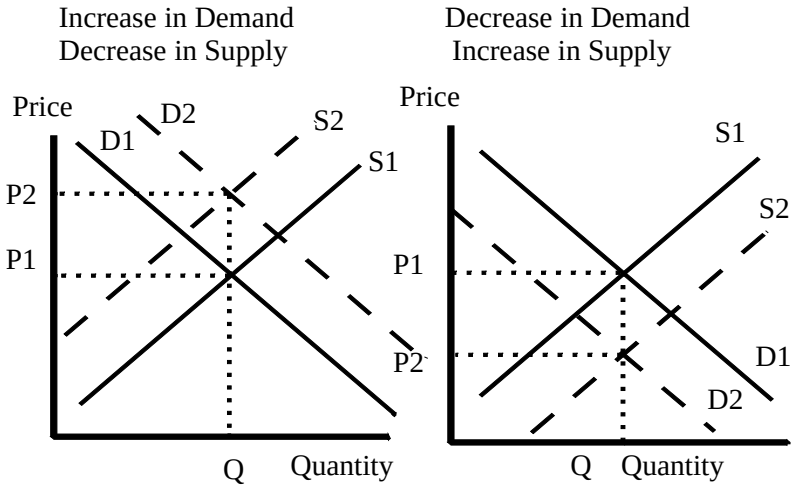


Movement of the demand curve from D1 (solid line) to D2 (dashed line) is a decrease in demand (as demonstrated in the above graph). Such decreases are caused by a change in a nonprice determinant of demand (for example, the number of consumers in the market declined or the price of a substitute declined). With a decrease in demand, there is a shift of the demand curve to the left along the supply curve, therefore both equilibrium price and quantity decline. If we move from D2 to D1 that is called an increase in demand, possibly due to an increase in the price of a substitute good or an increase in the number of consumers in the market. When demand increases both equilibrium, price and quantity increase as a result.

Considering the following graph, movement of the supply curve from S1 (solid line) to S2 (dashed line) is an increase in supply. Such increases are caused by a change in a nonprice determinant (for example, the number of suppliers in the market increased or the cost of capital decreased). With an increase in supply there is a shift of the supply curve to the right along the demand curve, therefore equilibrium price and quantity move in opposite directions (price decreases, quantity increases). If we move from S2 to S1 that is called an decrease in supply, possibly due to an increase in the price of a productive resource (capital) or the number of suppliers decreased. When supply decreases, equilibrium price increases and the quantity decreases as a result. That is the result of the supply curve moving up along the negatively sloped demand curve (which remains unchanged).



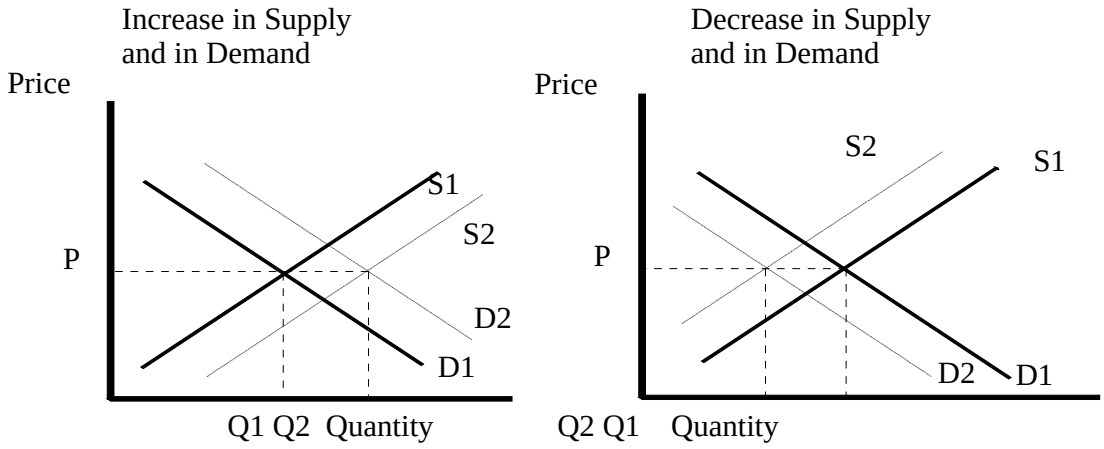
If both the demand curve and supply curve change at the same time the analysis becomes more complicated. Consider the following graphs:



Notice that the quantity remains the same in both graphs. Therefore, the change in the equilibrium quantity is indeterminant and its direction and size depends on the relative strength of the changes between supply and demand. In both cases, the equilibrium price changes. In the first case where demand increases, but supply decreases the equilibrium price increases. In the second panel where demand decreases and supply increases, the equilibrium price decreases.

In the event that demand and supply both increase then price remains the same (is indeterminant) and quantity increases, and if both decrease then price is

indeterminant and quantity decreases. These results are illustrated in the following diagrams.



The graphs show that price remains the same (is indeterminant) but when supply and demand both increase quantity increases to Q2. When both supply and demand decrease quantity decreases to Q2.

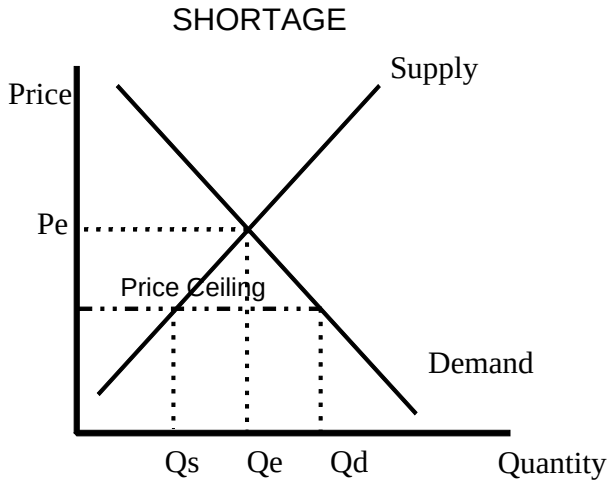
Shortages and Surpluses

There is some rationale for limited government intervention in a free market economy. Perhaps the most powerful rationale for limited government arises from the effects of price controls in competitive markets. Shortages and surpluses can only result because by having some sort of price controls in the market.

For example, the Former Soviet Union had a centrally planned economy and the government decided what would be produced and for what price that production would be sold. The government also was the sole employer and paid very low wages, therefore prices were also controlled at below market equilibrium levels. The result was that whenever any commodity was available in the market, there were long lines observed at any store with anything to sell, prices were low but there was nothing to buy (shortages). The popular Russian immigrant comedian, Yakov Simirnov, summed-up the plight of the working class consumer in Russia prior to break-up of the Soviet Union. He said, "In Russia we used to pretend to work, but that was alright, the government only used to pretend to pay us!"

Shortage is caused by an effective price ceiling (the maximum price you can charge for the product). Effective, in this sense, means that the government can and does actively enforce the price ceiling. With the exception of the Second World War,

there is little evidence that the government can effectively enforce price ceilings. Consider the following diagram that demonstrates the effect of a price ceiling in an otherwise purely competitive industry.

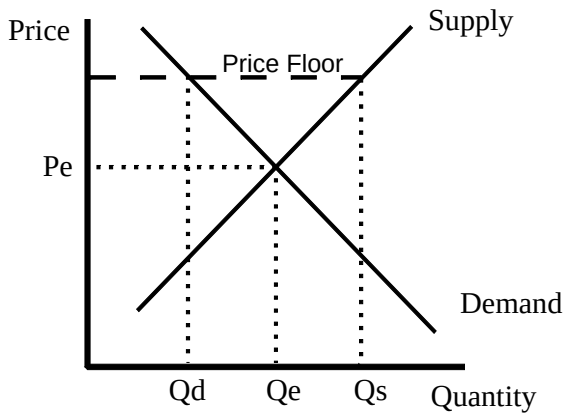


For a price ceiling to be effective, it must be imposed below the competitive equilibrium price. Note that the Qs is below the Qd, which means that there is an excess demand for this commodity that is not being satisfied by suppliers at this artificially low price. The distance between Qs and Qd is called a shortage.

It is interesting to consider the last time that wage and price controls were attempted during the Carter administration. These short-lived price ceilings resulted in producers technically complying with the price restrictions, but they frequently changed the product. For example, warranties were no longer included in the sales price, service was extra, delivery was extra, and where possible, the product was reduced in size. For example, in the previous administration's failed wage and price controls, (Nixon) candy bars were made smaller and they put fewer M & Ms in the package and the price for these treats was not changed – effectively cutting costs, but not price, hence increasing the profit margin without raising the price of the candy. The lesson is simple, if government is going to control prices, they must be prepared to control virtually all other aspects of doing business.

Surplus is caused by an effective price floor (minimum you can charge):

SURPLUS



For a price floor to be effective, it must be above the competitive equilibrium price. Notice that at the floor price Qd is less than Qs, the distance between Qd and Qs is the amount of the surplus.

Implicit in these analyses is the fact that without government we could have neither shortage or surplus. In large measure, the suspicion of government is because it has the power to create these sorts of peculiar market situations. Even with the power of government to enforce law, the only way that a shortage or surplus could occur is if the price ceiling or the price floor were effective.

Markets and Reality

As intuitively pleasing as these analyses are, they are only models, and these models are based on assumptions that are not very good approximations of reality. In Chapter 4, the analysis of a purely competitive market is offered. What this chapter presents is the *industry* in pure competition, which is based on assumptions that do not exist in reality. The assumptions are (1) perfect information about all past, and future prices, (2) no barriers to entry or exit from the market, (3) no non-price competition (advertising etc.), (4) atomized competition (so many suppliers and consumers that none can appreciably affect price or quantity), and (5) there is a standardized product (corn is corn is corn). If all of these assumptions accurately represent reality, then the firm must sell at whatever price is established in the industry. To sell at a lower price denies the firm revenue it could have otherwise earned, and to sell at a higher price would mean the firm could sell nothing. In other words, the competitive industry impose price discipline on all of the firms that together comprise that competitive industry.

Part of the controversy in almost any discussion of microeconomic activity is whether the results of policy can be predicted by the simple supply and demand model.

Often the results of the simple supply and demand diagram are not bad rough approximations of reality – but remember that it is only a rough approximation – based on assumptions that are not very accurate depictions of reality. However, more often imperfect market models are more accurate approximations of reality – because one or more the assumptions underpinning those models more accurately reflects reality. One must be careful in applying these models, and in policy debates concerning these models. To the extent that the assumptions are not fulfilled, then the results may not be accurate.

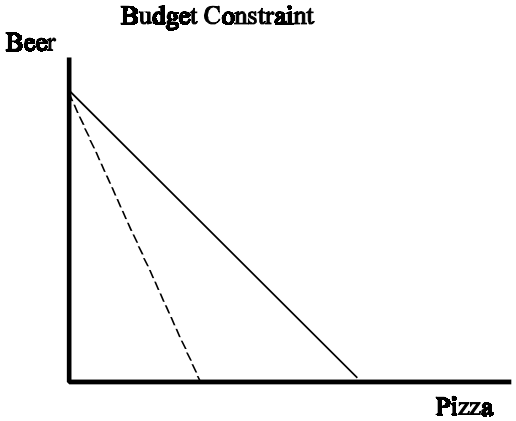
The real value of the simple supply and demand model is to provide a beginning point for coming to understand how markets really work. In most respects the simple supply and demand model is little more than the beginning point for constructing one of the more realistic market models. Pure monopoly, monopolistic competition and oligopoly are, in some important respects, refinements from the purely competitive market model.

Income and Substitution Effects

The demand curve is dependent on the individual consumer's tastes and preference. Therefore, we can derive an individual demand curve using what we have learned about utility in this chapter.

Individual preferences can be modeled using a model called indifference curve - budget constraint and from this model we can derive an individual demand curve.

A consumer's budget constraint is a mapping of the ability to purchase goods and services. We assume that there are two goods and that the budget constraint is linear. The following budget constraint shows the consumer's ability to purchase goods, beer and pizza.

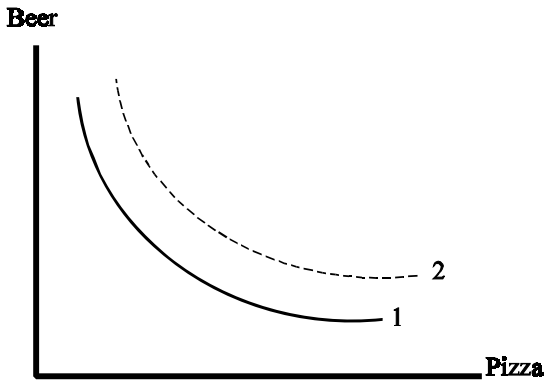


The consumer is assumed to spend their resources on only beer and pizza. If all resources are spent on beer then the intercept on the beer axis is the amount of beer the consumer can purchase; on the other hand, if all resources are spent on pizza then the intercept on that axis is the amount of pizza that can be had.

If the price of pizza doubles then the new budget constraint becomes the dashed line. The slope of the budget constraint is the negative of the relative prices of beer and pizza.

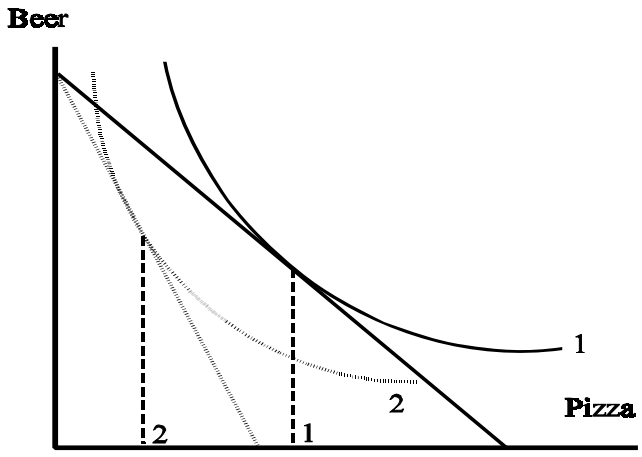
An indifference curve is a mapping of a consumer's utility derived from the consumption of two goods, in this case beer and pizza. There are three assumptions necessary to show a consumer's utility with an indifference mapping. These three assumptions are: (1) every point in the positive/positive quadrant is associated with exactly one indifference curve (every place thick), (2) indifference curves do not intersect (an indifference above another shows greater utility unequivocally), and (3) indifference curves are strictly convex toward the origin (bow toward the origin).

The following indifference curve shows the consumer's preferences:



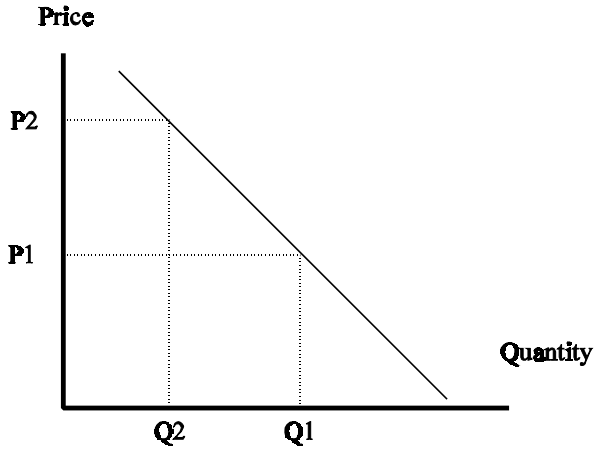
The dashed line (2) shows a higher level of total satisfaction than does the solid line (1). Along each indifference curve is the mix of beer and pizza that gives the consumer equal total utility.

Consumer equilibrium is where the highest indifference curve they can reach is exactly tangent to their budget constraint. Therefore, if the price of pizza increases we can identify the price from the slope of the budget constraint and the quantities purchased from the values along the pizza axis and derive and individual demand curve for pizza:



When the price of pizza doubled the budget constraint rotated from the solid line to the dotted line and instead of the highest indifference curve being curve 1, the best the consumer can do is the indifference curve labeled 2.

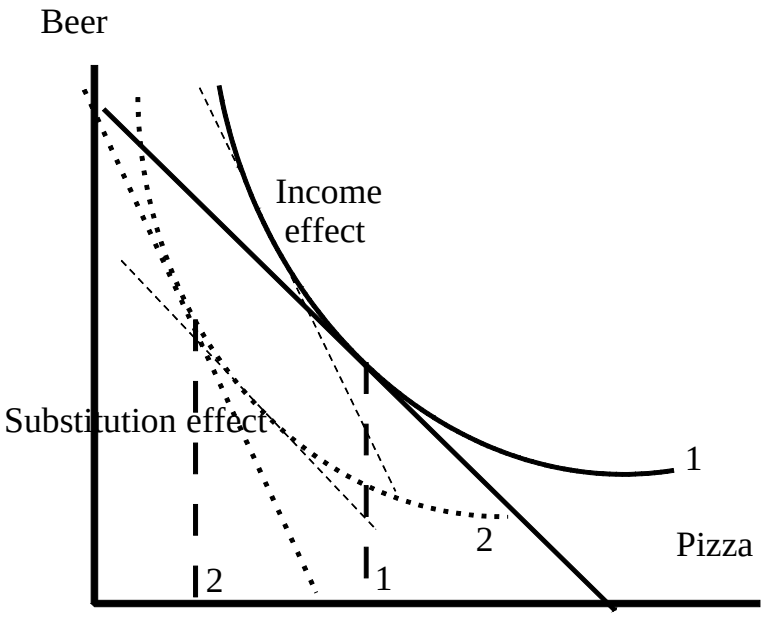
Deriving the individual demand curve is relatively simple. The price of pizza (with respect to beer) is given by the (-1) times slope of the budget constraint. The lower price with the solid line budget constraint results in the level the higher level of pizza being purchased (labeled 1for the indifference curve - not the units of pizza). When the price increased the quantity demanded of pizza fell to the levels associated with budget constraint 2.



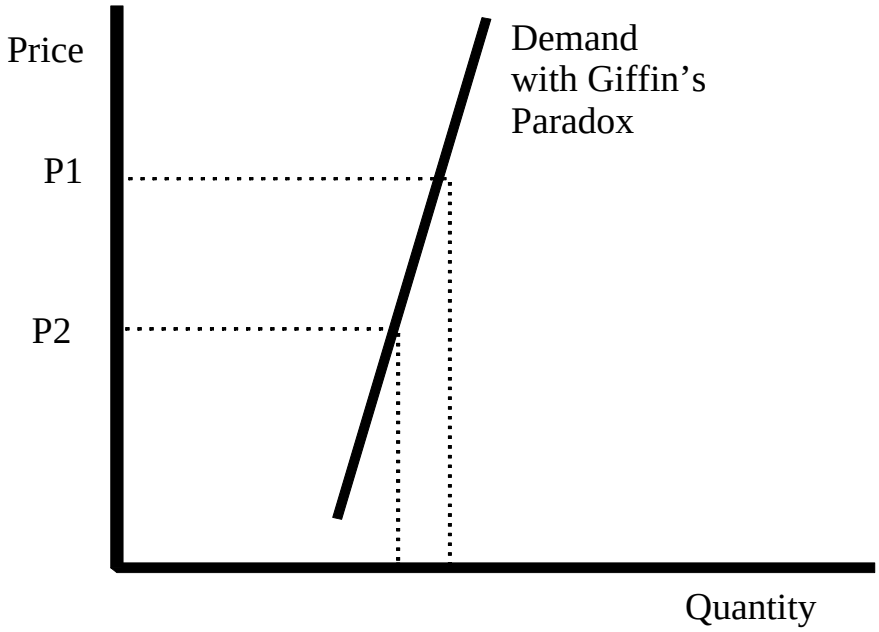
Notice that Q2 and P2 are associated with indifference curve 2 and budget constraint 2, and that Q1 and P1 result from indifference curve 1 and budget constraint 1. The above model shows this individual consumer's demand for pizza.

The results of the indifference curve analysis can be described in words. The income effect results from the price of a commodity going down having the effect of a consumer having to spend less on that commodity, hence the same as having more resources. This is the dashed line in the above graph, where the dashed budget constraint has the same slope as the budget constraint with the new higher price for pizza - but cannot be obtained.

As consumers realize they cannot maintain the old higher level of total satisfaction they will have to slip down to a lower indifference curve that is exactly tangent to the new indifference curve with the new higher pizza price. However, as price increases, the consumer will purchase less of that commodity and buy more of a substitute, this is the substitution effect. This is the lower dashed line, with the same slope as the old budget constraint, but moved downward to a point of tangency with the new indifference curve. It is the combination of the income and substitution effects, and their relative strength, that causes an individual (hence generally a market) demand curve to slope downward. The combination of the income and substitution effects will normally result in the income effect dominating and hence a downward sloping demand curve, as derived above.



However, there is an interesting exception to this general rule -- Giffin's Paradox. In Giffin's paradox, the income effect overwhelms the substitution effect, the end result is that the substitution effect cannot dominate and the demand curve has the wrong slope, it slopes upwards as shown in the following diagram.



Giffin's Paradox is the fact that some commodities may have an upward sloping demand curve. Such commodities are called inferior products. (Not necessarily because of quality problems with the product, but because the analysis is inferior -- not generalizable to all commodities). This happens because the income effect results in a lesser demand for a product. (In other words, the income effect overwhelms the substitution effect).

There are at least two types of goods that often exhibit an upward sloping demand curve. One is necessity for very poor people and the other is one for which a high price creates a snob effect. Each case will be reviewed, in turn, in the following paragraphs.

In the diagram above notice that as price is decreased from P1 to P2 the quantity demanded decreases, hence snob appeal may go down from the loss of a prestigiously high price – consumers who value the product simply because it is high priced leave the market as the price falls. As price increases from P2 to P1 poor people can't afford other more luxurious items, therefore they have to buy more of the very commodity whose price wrecked their budgets.

In the case of poor people who experienced the price of necessity increasing, their limited resources may result in their buying more of the commodity when its price increases. For example, if the price of rice increases in a less developed country, people may buy more of it because of the pressure placed on their budget prevents them from buying beans or fish to go with their rice. To maintain their caloric intake rice will be substituted for the still more expensive beans and fish.

The other situation is where a luxury is involved. There is the snob appeal possibility where the higher the price, the more desired the commodity it. Often people will drive expensive cars, simply because of the image it creates. If the car is extremely expensive, i.e., Rolls Royce, the snob effect may be the primary motivation for the purchase. This also works with less expensive commodities. For example, Joy Perfume advertised itself as the world's most expensive to attract consumers that their marketing surveys indicated would respond to the snob effect.

Consumer Equilibrium

Incentive and Economic Welfare

Principles of Economics, 8th ed. (Alfred Marshall, London: Macmillan Publishing Company, 1920, pp. 15-16.)

. . . If then we wish to compare even physical gratifications, we must do it not directly, but indirectly by the incentives, which they afford to action. If the desires to secure with of two pleasures will induce people in similar circumstances each to do just an hour's extra work, or will induce men in the same rank of life and with the same means each to pay a shilling for it; we they may say that those pleasures are equal for our purposes, because the desires for them are equally strong incentives to action for persons under similar conditions.

Rational behavior was defined as economic agents acting in their self-interest. It is the idea of rational behavior that permits the rigorous examination of economic activity. Without rationality, our analyses fail to conform with the basic underlying assumption upon which most of economics is based.

Consumers (when acting in their own self interest) will generally attempt to maximize their utility, given some fixed level of available resources and income with which to purchase goods and services. The utility maximizing rule is that consumers will balance the utility they receive from the consumption of each good or service against the cost of each commodity they purchase; to arrive at how much of each good they need to maximize their total utility.

The algebraic restatement of the rule:

$$MU_a/P_a = MU_b/P_b = . . . = MU_z/P_z$$

When the consumer reaches equilibrium, each of the ratios of marginal utility to price will be equal to one. If any single ratio is greater than one, the marginal utility received from the consumption of the good is greater than the price, and this means the consumer has not purchased enough of that good. Therefore the consumer must

purchase more of that good (causing price to increase and marginal utility to go down to the point they are equal), where MU > P. If the ratio is less than one, where MU< P, then the consumer has purchased too much of the commodity (price is larger than the marginal utility received from the commodity) and needs to cut back.

Whether consciously or not, rationality requires each individual consumer to allocate their resources in such a manner as to meet the restrictions of the above equation that is when the consumer is said to be in equilibrium. In reality, a consumer is always seeking those levels, but because of changing prices and changing preferences, it is understood that the consumer is always seeking, but never quite at equilibrium.

CHAPTER 3

More on Supply & Demand: Price Elasticities

The purpose of this chapter is to extend the supply and demand analysis presented in the previous chapter. Specifically, this chapter will develop the methods employed by economists to measure consumer responsiveness to price changes -- the price elasticity of demand. Other topics examined in this chapter are the price elasticity of supply, cross-elasticities, the income elasticity of demand and the interest elasticity of demand.

Price Elasticity of Demand

The price elasticity of demand is how economists measure the responsiveness of consumers to changes in prices for a commodity. In other words, as price increases (decreases), the quantity demanded by consumers will decrease (increase). The relative proportions of the changes in price and the respective quantities demanded are the responses of consumers and are referred to as the price elasticity of demand. It is this consumer responsiveness that is the subject of this chapter.

Business decisions concerning prices are not always a simple matter of adding some margin to the cost of production of the commodity (cost-plus pricing). Suppliers will wish to obtain the most revenue the market will bear from the sales of their products – in other words, maximize their profits. It is therefore necessary for business to have some idea of what the market will bear, and that is where the price elasticity of demand enters the picture in business decision-making.

There are three methods that are used to measure the price elasticity of demand, these are; (1) the price elasticity coefficient (midpoints formula), (2) the total revenue test, and (3) a simple examination of the demand curve. Each of these will be examined in turn, in the following paragraphs.

Elasticity Coefficient

The **elasticity coefficient** is a number calculated using price and quantity data to determine how responsive consumers are to changes in the price of a commodity. The elasticity coefficient may be calculated in two distinct ways. Point elasticity is measuring responsiveness at a specific point along a demand curve. The other

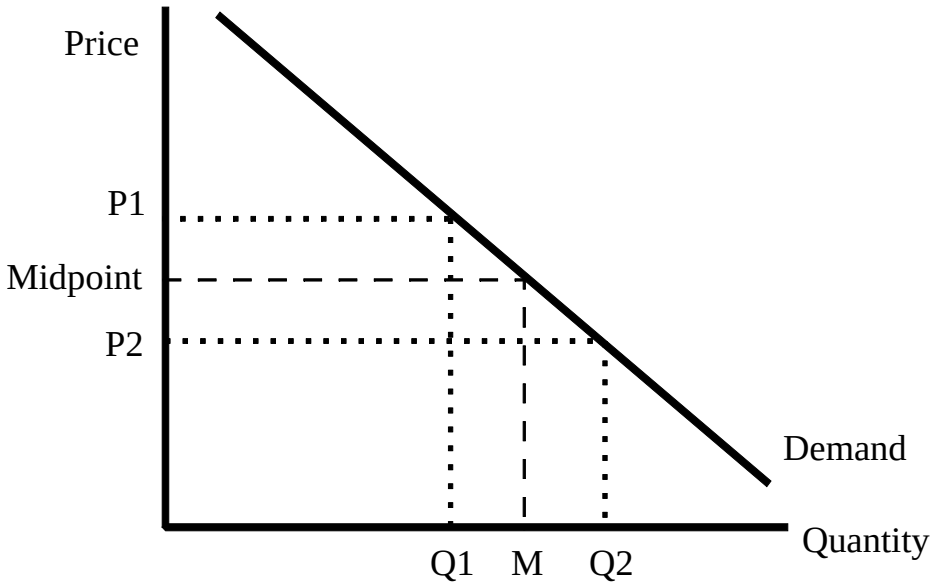
method is using the mid-point of the difference in the price and the mid-point in the difference of the quantity numbers. Because the midpoints formula cuts down on the confusion of which prices and quantities are to be used, it is the only coefficient we will use in this course.

The **price elasticity coefficient (midpoints)** is calculated using the midpoints formula:

$$E_d = \frac{\text{Change in Qty}}{(Q1 + Q2)/2} \div \frac{\text{Change in price}}{(P1 + P2)/2}$$

Calculating the elasticity coefficient will yield a specific number. The value of that number provides the answer as to whether demand is price elastic or price inelastic. Elastic demand means that the consumers' quantities demanded respond (more than proportionately) to changes in price; with **elastic demand, the coefficient is more than one**. Inelastic demand means that the consumers' quantities demanded do not respond very much to changes in price; **with inelastic demand, the coefficient is less than one**. Unit elastic demand means that the consumers' quantity demanded respond proportionately to change in price; **with unit, elastic demand the coefficient is exactly one.**

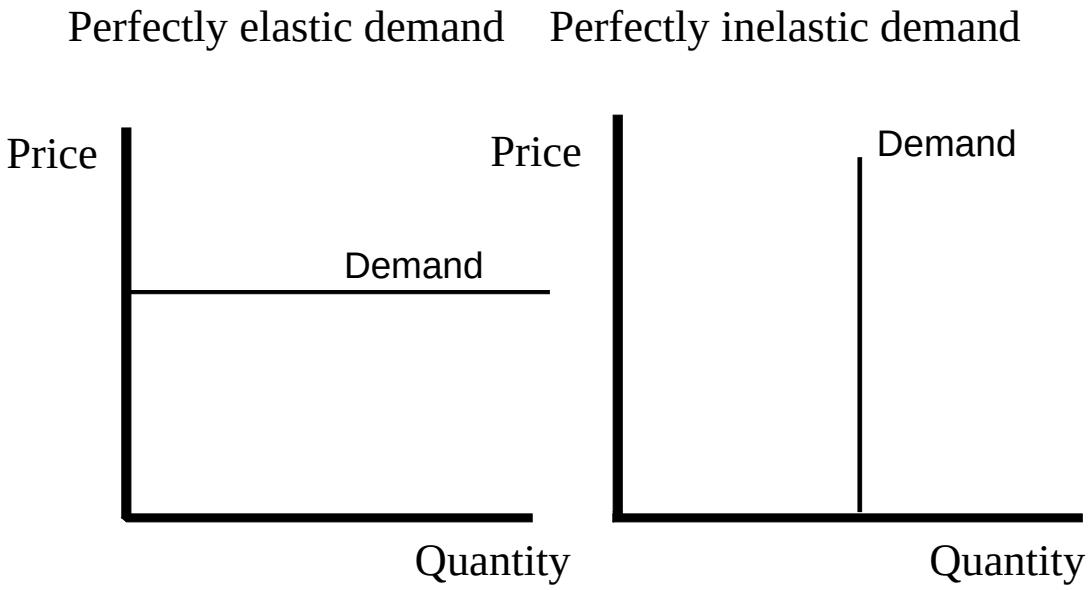
What this equation states is illustrated in the graph below. The midpoint between price one (P1) and price two (P2) is labeled Midpoint along the price axis and M on the quantity axis.



On the graph, this number is the difference between Q1 and Q2 divided by the distance between the origin and the point labeled M on the quantity axis for the numerator and the difference between P1 and P2 divided the distance between the origin and the point labeled midpoint on the price axis for denominator. The ratio of the numerator to the denominator on this graph is the same number yielded by the equation.

Examining the demand curve can also provide clues concerning the price elasticity of demand. A perfectly vertical demand curve indicates that the quantity demanded will be exactly the same, regardless of price. This type of demand curve is called a perfectly inelastic demand curve. A perfectly horizontal demand curve indicates that consumers will have almost any quantity demanded, but only at that price. This is called a perfectly elastic demand curve. Perfectly unit elastic demand curves are not linear, they have slopes that vary across ranges.

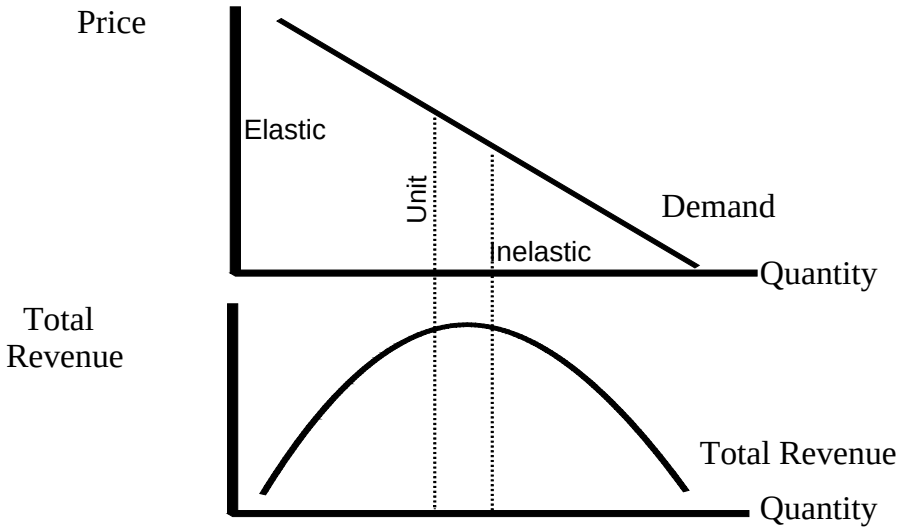
Perfectly Elastic and Perfectly Inelastic Demand Curves



There is a trick to remembering inelastic and elastic demand. Notice in the above graphs that the perfectly elastic demand curve is horizontal, (add one more horizontal line at the top of the price axis and it will look like an E). The perfectly inelastic demand curve is vertical (looks like an I). If you have problems remembering the concept of inelastic or elastic demand you need only draw the curves above and observe what happens to the quantity demanded when the price changes. In the case of perfectly inelastic demand consumers will buy exactly the same quantity of a product without regard for its price. In the case of a perfectly elastic demand curve, if producers raise the price of the product, then they will sell nothing.

Slope and elasticity are two different concepts. With linear demand curves, elasticity changes along the demand curve, however its slope does not. Elasticity is concerned with responses in one variable to changes in the other variable. The slope of the curve is concerned with values of the respective variables at each position along the curve (i.e., its' shape and direction).

Demand Curve and Total Revenue (total revenue = P x Q) Curve



The total revenue curve in the bottom graph is plotted by multiplying price and quantity to obtain total revenue and then plotting total revenue against quantity. In examining the above graphs, notice that as total revenue is increasing, demand is elastic. When the total revenue curve flattens-out at the top then demand becomes unit elastic, and when total revenue falls demand is inelastic. In other words, moving from left to right on the demand curve, as price and total revenue move in the opposite direction demand is price elastic, and when price and total revenue move in the same direction demand is price inelastic.

The total revenue test uses the relation between the total revenue curve and the demand curve to determine the price elasticity of demand. In general, price and total revenue will move in the same direction of the demand is price inelastic (hence consumers are unresponsive in quantity purchased when price changes) and move in opposite directions if price elastic (consumers' quantities being responsive to price changes).

Consider the following numerical example:

Table 1: Total Revenue Test

Total Quantity	Price per unit	Total Revenue		Elasticity
1	7	7		
			>+5	Elastic
2	6	12		
			>+3	Elastic
3	5	15		
			>+1	Elastic
4	4	16		
			> - 1	Inelastic
5	3	15		
			> - 3	Inelastic
6	2	12		
			> - 5	Inelastic
7	1	7		

Marginal revenue is the change in total revenue due to the a change in quantity demanded. The total revenue test relies on changes in total revenue (marginal revenue) to determine elasticity. **If the change in total revenue (marginal revenue) is positive the demand is price elastic, if the change in total revenue is negative the demand is price inelastic. If the marginal revenue is exactly zero then demand is unit elastic**.

The following determinants of the price elasticity of demand will determine how responsive the quantity demanded by consumers is to changes in price. The determinants of the price elasticity of demand are; **(1) substitutability of other commodities, (2) the proportion of income spent on the commodity, (3) whether the commodity is a luxury or a necessity, and (4) the amount of time that a consumer can postpone the purchase.**

If there are no close substitutes then the demand for the commodity will be price inelastic, ceteris paribus. If there are substitutes then consumers can switch their purchasing habits in the case of a price increase, but if there are no substitutes then consumers are more likely to buy even if price goes up. For example, if the price of

Pepsi goes up, then certain consumers will buy Coke, if the price of Coke has not increased, hence the demand for Pepsi is likely to be elastic.

All other things equal, the higher the proportion of income spent for the commodity more price elastic will be the demand. Most homeowners are familiar with how this determinant works. The demand for single-family dwellings is likely to be more elastic than the demand for apartments, because a higher proportion of your income will be spent on housing when you own your home.

Commodities that are viewed as luxuries typically have price elastic demand, and commodities that are necessities have price inelastic demand. There is simply no substitute for a insulin, if you are an insulin dependent diabetic. Because insulin is a necessity for which there is no substitute, the demand will be price inelastic.

Time is an important determinant of price elasticity. If a price changes, it may take consumers a certain amount of time to discover alternative lifestyles or commodities to account for the price change. For example, if the price of cars increases, a family that planned to buy a car may wait for their income or wealth to increase to make buying a new car viable alternative to continuing to drive an older vehicle. In other words, the longer the time frame for the decision to purchase the more price elastic the demand for the commodity.

Culturally there may be differences in the determinants of the price elasticity of demand across countries or regions of the world. What are considered necessities or luxuries are obvious examples. However, such things as credit and time over which a commodity may be purchased may depend very much on the acceptability of borrowing or lending money in certain culture, i.e., Islam. Social taboos may also play important roles in many cultures, birth control for example in Latin American societies. It is important to keep such issues in mind in this increasingly global economy.

Price Elasticity of Supply

The price elasticity of supply measures the responsiveness of suppliers to changes in price. The price elasticity of supply is determined by the following time frames; (1) market period, (2) short-run, and (3) long-run. **The more time a producer has to adjust output the more elastic is supply.**

The time frames for producers will be discussed in more detail in Chapter 7 as they pertain to a firm's cost structure. However, it is important to understand the basic idea behind this classification of time as it relates to price elasticity. The market period is defined to be that period in which the producer can vary nothing; therefore, the supply is perfectly inelastic. The long run is the period in which the producer can vary everything; therefore, the supply is perfectly elastic. The short-run is the period in which

plant and equipment cannot be varied, but most other factors' usage can be varied, therefore it depends on a producers capital - intensity as to how elastic supply is at any particular point.

Other Elasticities

There are three other standard applications of the elasticity of demand. The cross elasticity of demand, the income elasticity of demand, and the interest rate elasticity of demand. Each of these will be examined, in turn, in the remaining paragraphs of this chapter.

The cross elasticity of demand measures the responsiveness of the quantity demanded of one product to changes in the price of another product. For example, the quantity demanded of Coca-Cola to changes in the price of Pepsi. Cross elasticity of demand gives an indication of how close a substitute or complement one commodity is for another. This concept has substantial practical value in formulating marketing strategies for most products.

For example, as the price of coke increases, then consumers may purchase proportionately more Pepsi products. In such a case, the cross elasticity of demand of Pepsi to the price of coke would be termed elastic. The equation for the cross elasticity of demand described here is presented below.

$$E_d = \frac{\text{Change in Qty}_{pepsi}}{(Q1_{\text{Pepsi}} + Q2_{\text{pepsi}})/2} \div \frac{\text{Change in price}_{\text{coke}}}{(P1_{\text{coke}} + P2_{\text{coke}})/2}$$

The income elasticity of demand measures the responsiveness of the quantity demanded of a commodity to changes in consumers' incomes. This is typically measured by replacing the price variable with income (economists use the letter Y to denote income) in the midpoints formula. Again, in business planning the responsiveness of consumers to changes in their income may be very important. Housing and automobiles, as well as, several big-ticket luxury items have demand that is sensitive to changes in income. The income elasticity formula is presented below.

$$E_d = \frac{\text{Change in Qty}}{(Q1 + Q2)/2} \div \frac{\text{Change in income}}{(Y1 + Y2)/2}$$

Often interest rates will also present a limitation on a consumer's quantity of demand for a particular commodity. As with income, often big-ticket items are very sensitive to interest rates on the loans necessary to make those purchases. With the

record low mortgage rates in the spring of 2003, the quantity demanded for housing, both new and existing homes, witnessed dramatic increases.

The automobile companies rarely reduce prices for their vehicles, but rather, GM, Ford and Chrysler will offer incentives. Rebates, which are temporary reductions in price, and attractive financing rates are the hooks offered to get the consumer in the showroom and into the new car. In May of 2003 all of the American producers were offering zero percent financing on all but a very few of their vehicles, and even some of the European and Japanese producers were following suite with either very low rates, or zero percent financing. The interest rate elasticity formula is (where interest rate is "r"):

$$E_d = \frac{\text{Change in Qty}}{(Q1 + Q2)/2} \div \frac{\text{Change in interest rate}}{(r1 + r2)/2}$$

These analyses are important to businesses in determining what issues are important to the successful sales of their products. There are industries that have not been particularly good at understanding the notions of cross elasticity or price elasticity – the airlines in particular, and many of these firms have suffered as a result. The bankruptcies of United Airlines and US Air being excellent examples. The automobile companies have been, in some measure, forced into the financing business because of the interest rate sensitivity of consumers. By offering financing the car companies are, essentially, maintaining some modicum of control over one important aspect of their business.

Interest rate sensitivity can also be understood from another perspective. The total cost of a commodity is not just its price, but also what must be paid to borrow money to purchase that item. With modern views of instant gratification, it is rare for someone to save to purchase a house, or any other big ticket item, what is more common is to borrow the money, buy the item, and make installment payments. Therefore, the interest charges are a part of the total cost of acquiring that big-ticket item – hence consumer sensitivity to interest rates when buying a house or a car.

It is also noteworthy, that purely competitive firms are price takers, and it is the imperfectly competitive firm that has a pricing policy. What is often referred to as "pricing power" in the business press, means the ability to take advantage of the price elasticity of demand or one of the other elasticities examined here – hence implying some market structure, hence market power not otherwise identified in the model of pure competition.

CHAPTER 4

Costs of Production

The purpose of this chapter is to examine the production costs of a firm. The first section develops the economic concepts of production necessary for understanding the cost structure of a firm. The second section presents the models of short-run costs. The final section develops the long-run average total cost curve and discusses its implications for the strategic management of a business.

Production and Costs

The reason that an entrepreneur assumes the risk of starting a business is to earn profits. The fundamental assumption in the theory of production is that a rational owner of a business will seek to maximize the profits (or minimize the losses) from the operation of his business. However, before anything can be said about profits we must first understand costs and revenues. This chapter will develop the basic concepts of production costs.

An economist's view of costs includes both explicit and implicit costs. Explicit costs are accounting costs, and implicit costs are the opportunity costs of an allocation of resources (i.e., business decisions). Accountants subtract total cost from total revenue and arrive a total accounting profits. An economist, however, would include in the total costs of the firm the profits that could have been made in the next best business opportunity (e.g., the opportunity cost). Therefore, there is a significant difference in how accountants' and economists' view profits – economic profits versus accounting profits.

For the purposes of economic analysis, a normal profit includes the cost of the lost opportunity of the next best alternative allocation of the firm’s resources. In a purely competitive world, a business should be able to cover their costs of production and the opportunity cost of the next best alternative (and nothing more in the long run). In an accounting sense there is no benchmark to determine whether the resource allocation was wise. Instead various financial ratios are used to determine how the firm has done with respect to similarly situated companies.

Time Periods Revisited

As was discussed briefly in the section of elasticity of supply in Chapter 5, time periods for economic analysis are defined by the types of costs observed. These time periods differ from industry to industry, and will differ by the technology employed between firms. Again, these time periods are; (1) the market period, (2) the short-run, and (3) the long run.

In the market period, all costs are fixed costs (nothing can be varied). In the short-run, there are both fixed and variable costs observed. Generally, plant, equipment, and technology are fixed, and things like labor, electricity, and materials can still be varied. In the long run everything is variable. That is, the plant, equipment, and even the business into which you put productive assets can all be changed. In the long run, even the country in which the business is located can be changed. Because everything is fixed in the market period, this period is of little interest in economic analysis. Therefore, economists typically begin their analysis of costs with the short-run and proceed to examine the operation of the firm and the industry. The long run is of interest because it is also the planning horizon for the business.

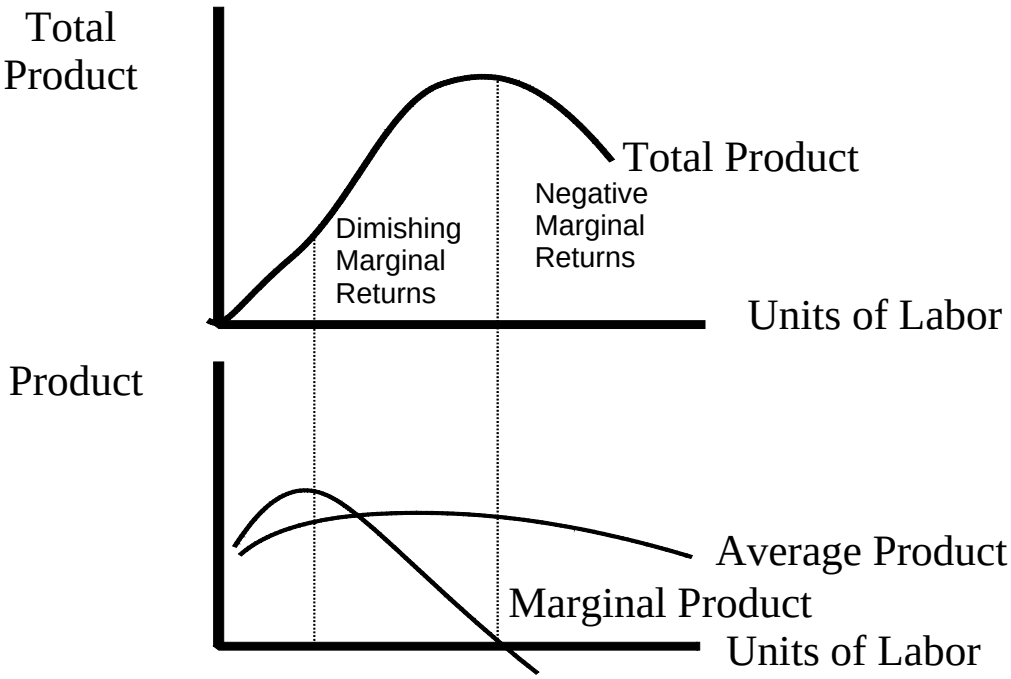
Production

Another view of the short-run cost structure is that fixed costs are those that must be paid whether the firm produces anything or not. Variable costs are called variable because they increase or decrease with the level of production. Therefore to understand short-run costs, you must first understand production.

Total product or total output is the total number of units of production obtained from the productive resources employed. Average product is total product divided by the number of units of the variable factor employed. Marginal product is the change in total product associated with a change in units of a variable factor of production.

As a firm increases its output it normally makes more efficient use of its available capital. However, with a fixed level of available capital as variable factors are added to the production process, there is a point where the increases in total output begin to diminish. **The law of diminishing returns is the fact that as you add variable factors of production to a fixed factor, at some point, the increases in total output begin to become smaller.** In fact, it is possible, at some point, that further additions in the unit's variable factors to a fixed level of capital could actually reduce the total output of the firm. This is called the uneconomic range of production. In reality, most firms come to realize that their total additions to total output diminish, long before they begin to experience negative returns to additions to their workforce or other variable factors.

The following diagram provides a graphical presentation of total, average, and marginal products for a hypothetical firm.



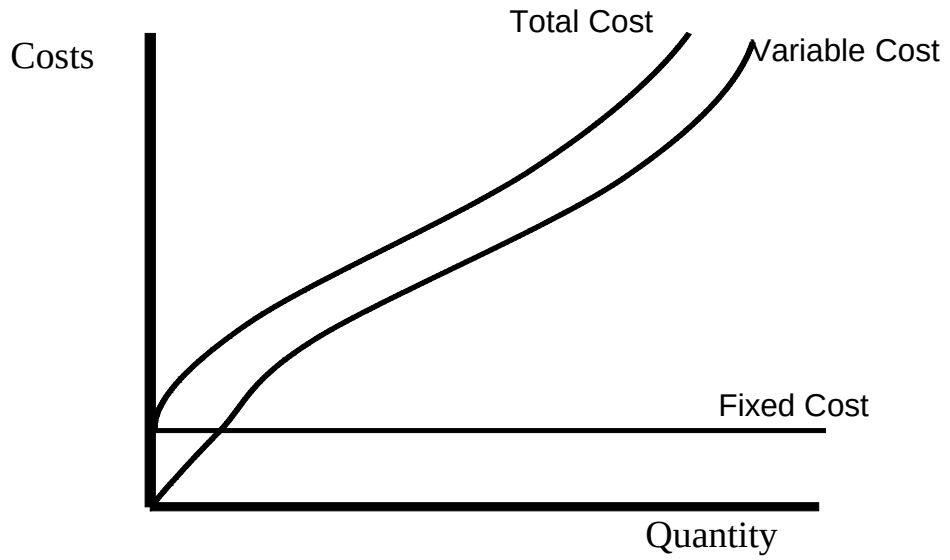
The top graph shows total product. After total product reaches its maximum marginal product where marginal product changes from positive to negative (first derivative is zero, second derivative is negative). When the total product curve reaches its maximum, increased output results in negative marginal product. The maximum on the marginal product curve is also associated with the first inflection point (the acceleration or where the curve becomes steeper) on the total product curve. The ranges of marginal returns are identified on the above graphs.

The beginning point in developing the cost structure of a firm is to examine total costs in the short run. Total costs (TC) are equal to variable costs (VC) plus fixed costs (FC).

TC = VC + FC

Variable costs are those costs that can be varied in the short-run, i.e., the cost of hiring labor. Fixed costs are those costs that cannot be varied in the short-run, i.e., plant (interest). Therefore, total costs consist of a fixed component and a variable component.

These relations are presented in a graphical form in the following diagram:



The fixed cost curve is a horizontal line. These costs are illustrated with a horizontal line because they do not vary with quantity of output. The variable cost curve has a positive slope because it varies with output. Notice that the total cost curve has the same shape as the variable cost curve, but is above the variable cost curve by a distance equal to the amount of the fixed cost. This is because we added fixed cost (the horizontal line) to variable cost (the positively sloped line).

From the total, variable and fixed cost curves we can obtain other relations. These are the marginal cost, and the total, variable, and fixed costs relation to various levels of output (averages).

Average total cost (ATC) is total cost (TC) divided by quantity of output (Q), average variable cost (AVC) is variable cost (VC) divided by quantity of output (Q), and average fixed cost (AFC) is fixed cost (FC) divided by quantity of output (Q). Marginal cost (MC) is the change (denoted by the Greek symbol delta), in total cost (TC) divided by the change in the quantity of output (Q).

These relations are presented in equation form below:

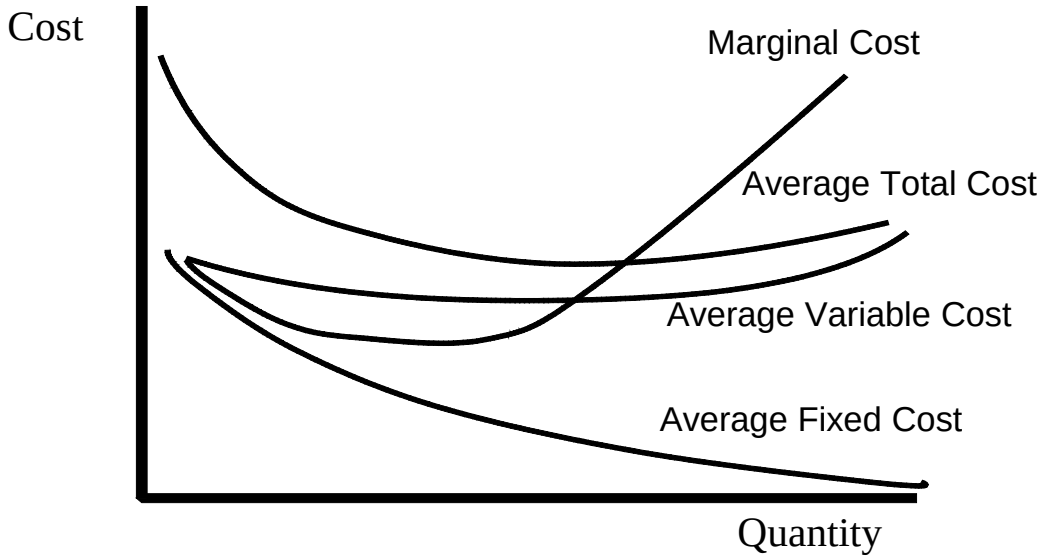
ATC = TC/Q

AVC = VC/Q

AFC = FC/Q

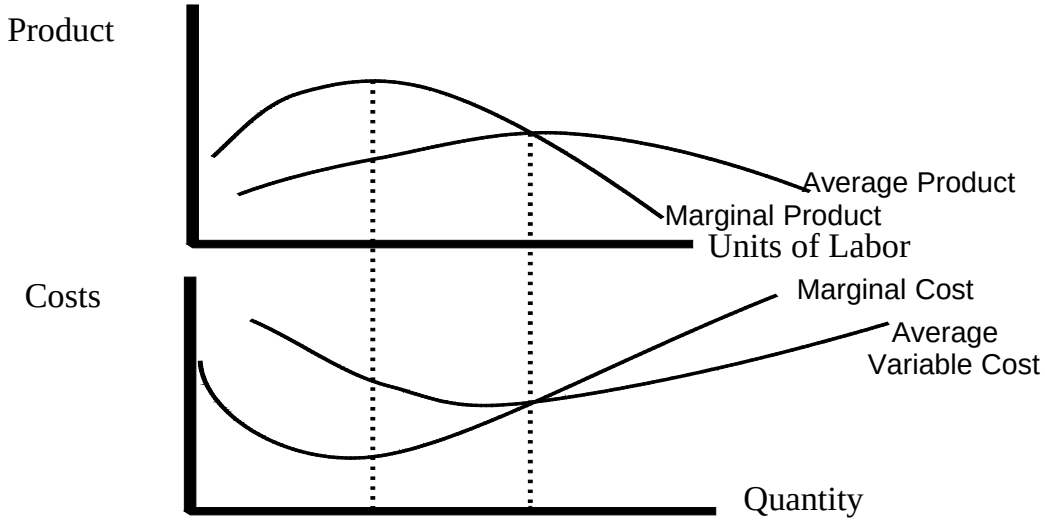
MC = ΔTC/ΔQ; where Δ stands for change in.

The following diagram presents the average costs and marginal cost curve in graphical form.



Please notice that the average fixed cost approaches zero as quantity increases. This occurs because a constant is being divided by increasingly large numbers. Average total cost is the summation of the average fixed and average variable cost curves. Because average fixed cost approaches zero, the difference between average variable cost and average total cost also approaches zero (the difference between ATC and AVC is AFC). The marginal cost curve intersects both the average total cost and average variable cost curves at their respective minimums. In other words, as marginal cost is below average total (and average variable) cost the average function is falling to meet marginal cost. As marginal cost is rising above the average function then average total (and average variable) cost are increasing.

The following graph relates average and marginal product to average variable and marginal cost.



Notice that at the maximum point on the marginal product curve, marginal cost reaches a minimum. Where marginal cost equals average variable cost, the marginal product curve intersects the average product curve. In other words, the cost structure of the firm mirrors the engineering principles giving rise to the firm's production, hence its costs.

This presents some interesting disconnects from how business is presently evolving. The high compensation levels of executives seems to not reflect the actual output of their labors. In other words, the costs of production seemingly fail to account for the history of the 21st century thus far.

Accounting, Images, and Global Economics

The purpose of accounting is not simply to gather and store data. The use of accounting data to create reports and for legal compliance is an art form, one of building images. In the United States, those images are created for a large number of purposes, tax compliance, Sarbanes-Oxley, annual shareholder reports, and numerous internal purposes. Most of these images are created using what is referred to in the U.S. as Generally Accepted Accounting Principles. The GAAP is sort of the instructor's manual, this is how it is done within limited, sort of thing. However, this is not science, it is art. What are the accounting principles in the private sector of the United States is not necessarily the same for public sector accounting. What is even more confusing is the fact that GAAP differs across national jurisdictions. What is expected in Japan or the EEU may be quite different from what is expected in the U.S. One must be ever aware of these differences in this increasing global economy.

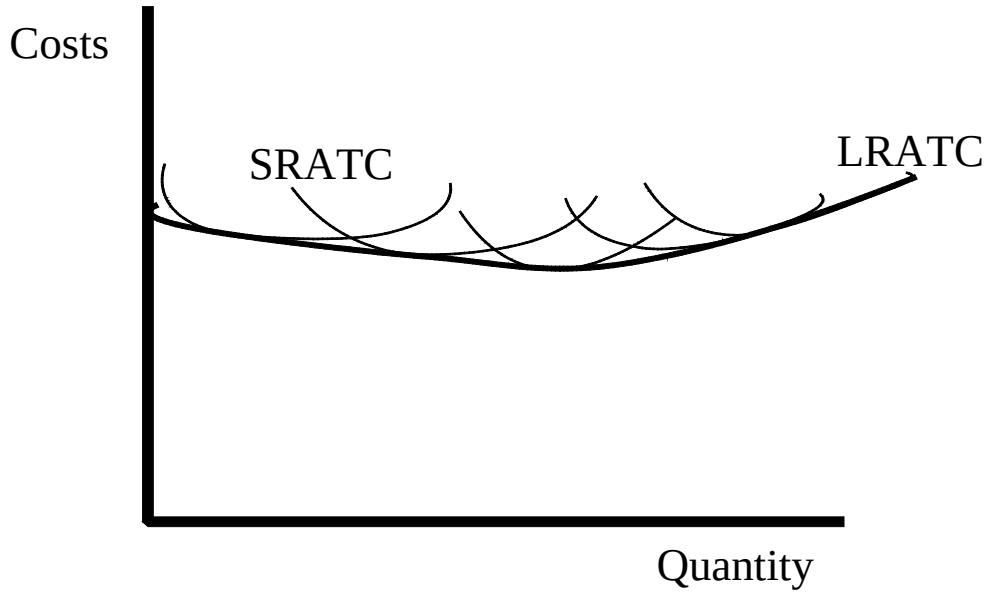
In economics, however, what costs are intended to reflect are different from what is in an accounting sense. Economists view cost as the mirror image of the product curves that is costs are the physics and chemistry of the actual production process. Wages, interest, and rents are determined in the market, scientifically and are not subject to vagaries of GAAP over time. Therefore it should come as no surprise that political contributions, charities, and excessive executive salaries are not part of the landscape used to analyze economic phenomenon in these models.

The Long Run Average Total Cost Curve

In the long run all costs are variable. In other words, a firm can vary its plant, equipment, technology and any of the factors that were either fixed or variable in the short-run. Therefore, anything that is technologically feasible is available to this firm in the long run. Further, any short-run average total cost curve (consistent with any size of operation) could be selected for use in the long run.

The long-run average total cost curve (LRATC) is therefore a mapping of all minimum points of all possible short-run average total cost curves (allowing technology and all factors of production (i.e., costs) to vary). The enveloping of these short-run total cost curves map all potential scales of operation in the long run. Therefore, the LRATC is also called the planning horizon for the firm.

The following diagram illustrates a LRATC:



The shape of the LRATC is dependent upon the available resources and technology that a firm can utilize to produce a given commodity. The downward sloping

range of the LRATC is due to economies of scale, the upward sloping range of the LRATC is due to diseconomies of scale, and if there is a flat range at the minimum point of the LRATC this is called a range of constant returns to scale.

Economies of scale are benefits obtained from a company becoming large and diseconomies of scale are additional costs inflicted because a firm has become too large. The causes of economies of scale are that as a firm becomes larger it may be able to utilize labor and managerial specialization more effectively, capital more effectively, and may be able to profitably use by-products from its operations. Diseconomies of scale result from the organization becoming too large to effectively manage and inefficiencies developing.

Constant returns to scale are large ranges of operations where the firm's size matters little. In very capital intensive operations that must cover some peak demand, the size of the firm may matter very little. Several public utilities, such as electric generating companies, telephone company, and water and sewer service have relatively large ranges of constant returns to scale.

Where the LRATC curve reaches its minimum, this is called the minimum efficient scale (size of operation). Minimum efficient scale is the smallest size of operations where the firm can minimize its long-run average costs. Minimum efficient scale varies significantly by commodity produced and technology. For example, the minimum efficient scale in agriculture in the Great Lakes area for dairy operations is relatively small (in the $200,000 range). Minimum efficient scale for wheat farmers in the Great Plains may be as large as $1,000,000.

There is an interesting implication of the LRATC analysis. There are instances where competition may be an unrealistic waste of resources. A natural monopoly is a market situation where per unit costs are minimized by having only one firm serve the market.

Minimum efficient scale is the point on the LRATC where it reaches its minimum. If that happens to be at the beginning of a long range of constant costs, it is the first point (on the left of the range) where costs are at their minimum. Remember, that technical efficiency requires that a firm produce at where it has attained minimum total long-run costs.

Where minimum efficient scale is very large for capital-intensive operations, it may be more cost effective to permit one company to spread its fixed costs over a very large number of consumers, rather than have several competing firms suffer the fixed costs of a minimum efficient scale and have to share a customer base. There are several industries that are very capital intensive and require large initial investments to operate. These types of firms are frequently natural monopolies. Railroads, electric generating companies, and airlines requires tens of millions of dollars in fixed costs.

CHAPTER 5

Product Markets

Chapter 2 developed the supply and demand diagram. The simple supply and demand diagram is the model of a perfectly competitive industry. That model will be revisited and extended in this chapter.

The purpose of this chapter is to introduce models of the firm that are not purely competitive. After a brief introduction to imperfectly competitive models we will turn our attention to the purely competitive industry and firm. In particular, this chapter will develop the model of the perfectly competitive firm, examine its relation to the industry, and then offer some critical evaluation of this important paradigm.

Firms and Market Structure

There are several models of market structure. In the product market, the two extremes are perfect competition and pure monopoly. This chapter will examine pure competition and the following chapter examines monopoly. However, there are intermediate market structures. These intermediate market structures are oligopoly and monopolistic competition.

The assumptions in pure competition are:

(1) there is atomized competition (a large number of very small suppliers and buyers relative to the market),

(2) there is complete freedom of entry and exit into and from this market,

(3) there is no nonprice competition,

(4) suppliers offer a standardized product, and

(5) firms in this industry must accept the price determined in the industry.

Purely competitive firms and industries do not exist in reality. Probably as close as the real world comes to the competitive ideal is agriculture, during the period in which this industry was dominated by the relatively small family farms prior to World War II.

The assumptions in pure monopoly are:

(1) there is one seller that supplies a large number of independent buyers,

(2) entry and exit into this market is completely blocked,

(3) the firm offers unique product,

(4) there is nonprice competition (mostly public information advertising), and

(5) this firm is a constrained price dictator.

Pure monopolies abound in reality, including public utilities and manufacturing firms producing products protected from competition by patents or copyrights. A monopolist will produce less than a competitive industry and charge a higher price, ceteris paribus.

The assumptions underlying the model of a monopolistically competitive industry are:

(1) a relatively small number of sellers compared to pure competition, but this number can still be large, in some cases a few hundred independent sellers,

(2) pricing policies exist in these firms,

(3) entry into this market is generally somewhat difficult,

(4) there is substantial nonprice competition, mostly designed to create product differentiation, at least some of which is spurious.

Numerous industries are properly characterized as monopolistic competition. These industries include computer manufacturers, software manufacturers, most retail industries, and liquor distillers. In general, monopolistic competitors produce less than pure competitors but more that pure monopolists, and charge prices that also fall between competition and monopoly. In general, the graphical analysis of a monopolistic competitive industry is identical to a monopoly, except the demand curve is somewhat more elastic than the monopolists'.

The assumptions upon which the model of oligopoly are founded are:

(1) that there are few sellers (generally a dozen or less), these firms often collude or implicitly cooperate through such practices as price leadership,

(2) entry into this market is generally difficult,

(3) there is normally very intensive non-price competition in an attempt to create product differentiation, often spurious.

Examples of oligopolies abound, the U.S. automobile industry, the soft-drink industry, the brewing industry, segments of the fast-food industry, and airplane manufacturers. Oligopoly will generally produce less than monopolistic competitors and charge higher prices, if price leadership or other collusive arrangements exist an oligopoly may be a close approximation to a pure monopoly.

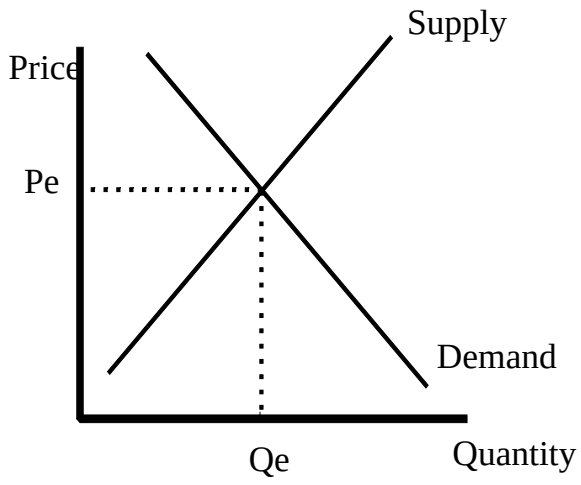
All of these market structures also assume perfect knowledge concerning present and future prices (by both producers and consumers) and all other information relative to the operation of the market, i.e., product availability, quality etc. This perfect knowledge assumption is not realistic, however, it does little violence to the models because people typically learn very quickly in aggregate, and hence there expectations approximate perfect knowledge over large numbers of persons.

The Purely Competitive Firm

Total, average and marginal product were developed with the various cost curves in Chapter 4. The missing piece of the puzzle is revenue. Because a purely competitive firm sells its output at the one price determined in the industry, price does not change as the quantity sold increases. In other words, the demand curve is horizontal, or perfectly elastic. The result is that average revenue is equal marginal revenue, and both of these are equal to price. Further , total revenue is P x Q which is the total area under the demand curve for the purely competitive firm.

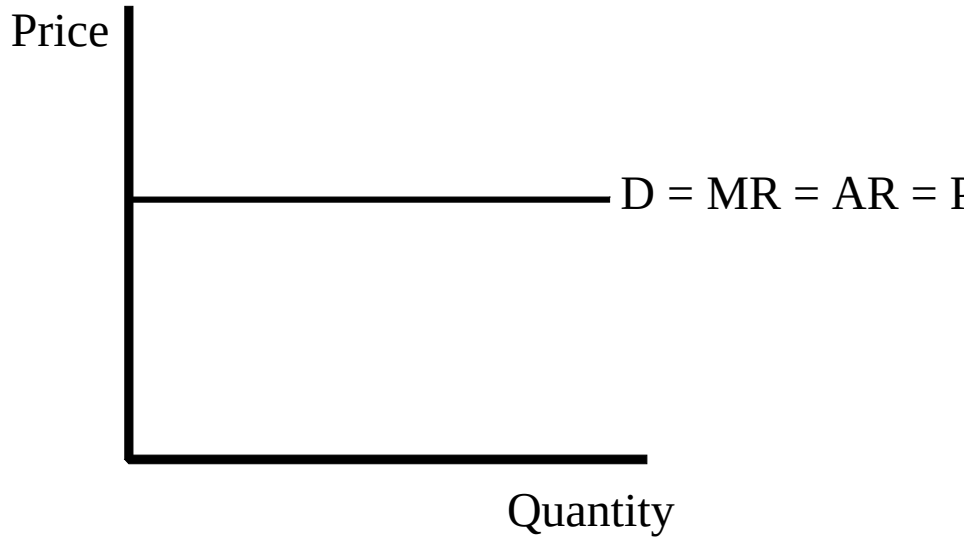
A firm is assumed to be rationally managed and therefore it will attempt to maximize its profits. The profit-maximizing rule is that a firm will maximize profits where marginal cost (MC) is equal to marginal revenue (MR). The reason for this is relatively simple. There is still a positive amount of revenue that can be had in excess of costs of the firm produces at a quantity less than where MC = MR. If a firm produces at a quantity in excess of where MC = MR, the firm adds more to its costs than it receives in revenues. Therefore the optimal, or profit maximizing level of output is exactly where MC = MR.

The model of the purely competitive industry is the simple supply and demand diagram you mastered in Chapter 2. The simple supply and demand diagram is a representation of the aggregation of a large number of independent firms and consumers. This model is revisited below:



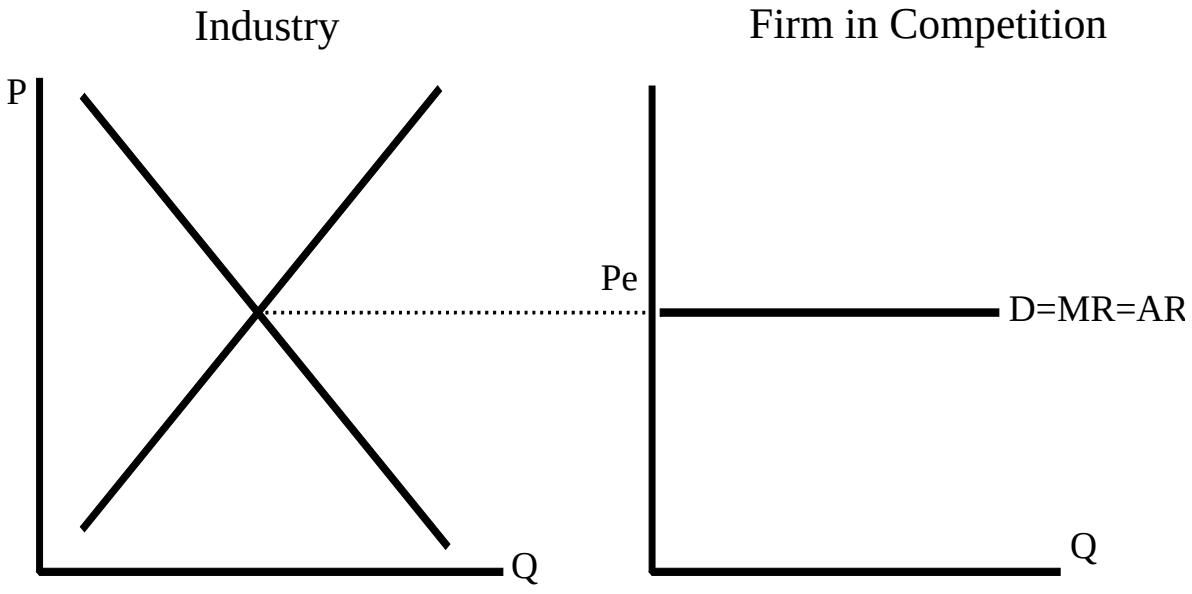
The firm in perfect competition is just one of thousands that are summed to arrive at the industry levels of output and price. Because of the atomized competition, it a firm charges a higher price that the industry it will sell nothing because consumers can obtain exactly the same commodity at a lower price elsewhere. If the firm charges a price lower that the price established in the industry it is irrational and will lose revenue it could have otherwise had. Therefore, a firm operating in a perfectly competitive industry has no choice save to sell its output at the industry-established price. Because the firm sells at the single price established in the industry it has a perfectly elastic demand curve. (In other words, it is horizontal and not downward sloping).

The demand curve for the perfectly competitive firm is illustrated below:



Because the firm is a price taker, meaning that it charges the same price across all quantities of output, marginal revenue is always equal to price, and average revenue will always be equal to price. Therefore the demand curve intersects the price axis and is horizontal (perfectly elastic) at the price determined in the industry.

Establishing the price in the industry is simply setting the equilibrium in the familiar supply and demand diagram, and that is the price at which the firm is obliged to sell its output. The following diagram illustrates how this is done:

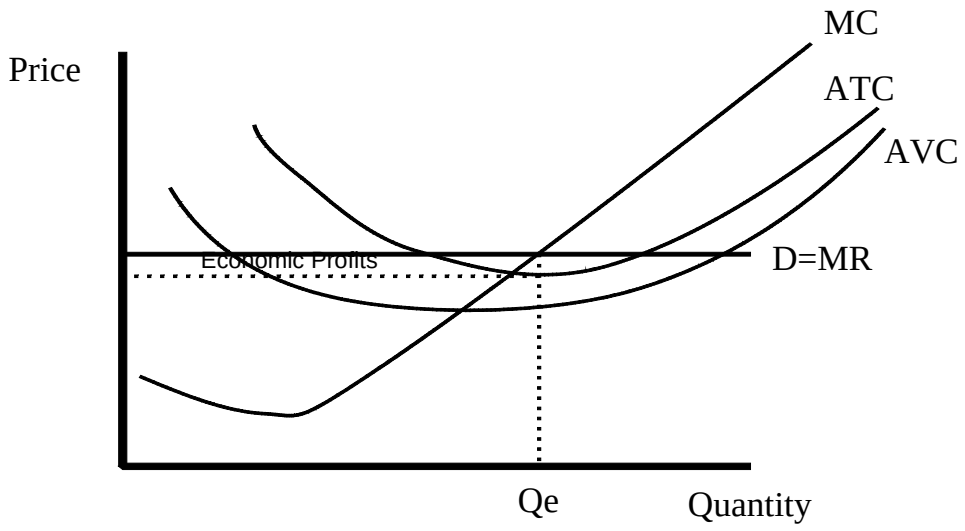


Again, the price is established by the interaction of supply and demand in the industry (Pe) and the quantity exchanged in the industry is the summation of all of the

quantities sold by the firms in the industry. However, this yields little information save what price will be charged and what quantity the industry produce. To determine what each firm will produce and what profits each firm will earn, we must add the cost structure (developed in the previous chapter).

Economic profits are total revenues in excess of total costs. Remember from Chapter 4, that profits from the next best alternative allocation of resources is included in the total costs of the firm. In this short-run it plausible that some firms in pure competition can exact an economic profit from consumers, but because of freedom of entry, the economic profit will attract new firms to the industry, hence increasing supply, and thereby lowering price and wiping out the short-run economic profits.

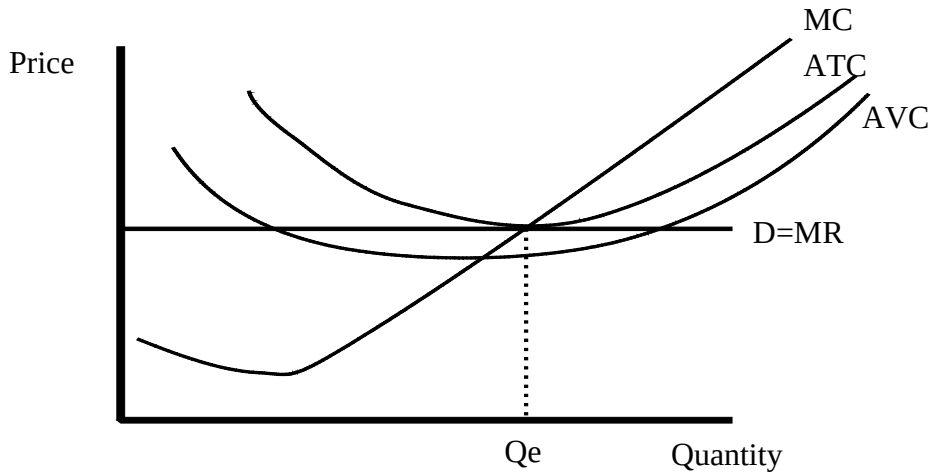
The following diagram adds the costs structure to the purely competitive firm's demand curve and with this information it is possible to determine the profits that this firm makes:



The firm produces at where MC = MR, this establishes Qe. At the point where MC = MR the average total cost (ATC) is below the demand curve (AR) and therefore costs are less than revenue, and an economic profit is made. The reason for this is that the opportunity cost of the next best allocation of the firm's productive resources is already added into the firm's ATC.

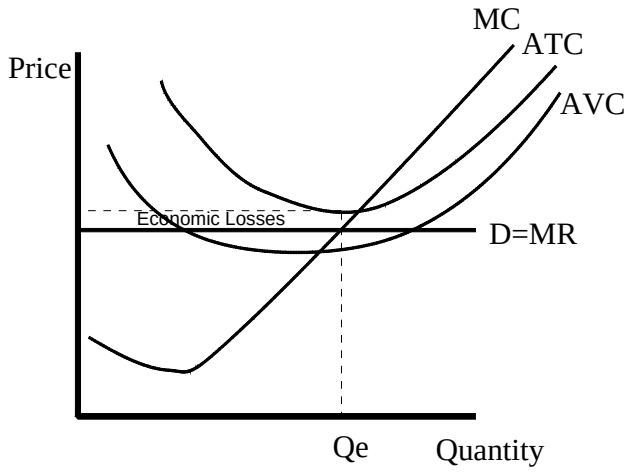
However, the firm cannot continue to operate at an economic profit because those profits are a signal to other firms to enter the market (free entry). As firms enter the market, the industry supply curve shifts to the right reducing price and thereby eliminating economic profits. Because of the atomized competition assumption, the number of firms that must enter the market to increase industry supply must be

substantial. The following diagram illustrates the purely competitive firm making a normal profit:



The case where a firm is making a normal profit is illustrated above. Where MC = MR is where the firm produces, and at that point ATC is exactly tangent to the demand curve. Because the ATC includes the profits from the next best alternative allocation of resources this firm is making a normal profit.

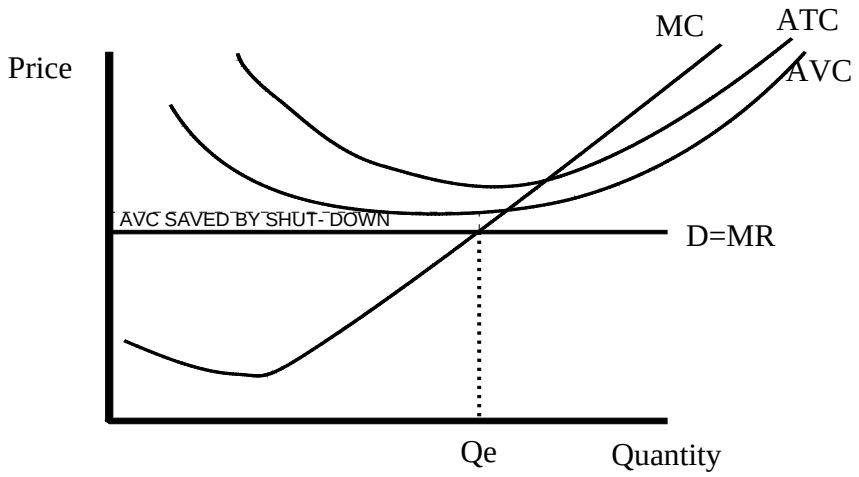
A firm in pure competition can also make an economic loss. The following diagram shows a firm in pure competition that is making an economic loss:



The case of an economic loss is illustrated above. The firm produces where MC = MR, however, at that level of production the ATC is above the demand curve, in other words, costs exceed revenues and the firm is making a loss.

Even though the firm is making a loss it may still operate. The relation of average total cost with average revenue determines the amount of profit or loss, but we to know what relation average revenue has with average variable cost to determine whether the firm will continue in business. In the above case, the firm continues to operate because it can cover all of its variable costs and have something left to pay at least a part of its fixed costs. It is shuts down it would lose all of its fixed costs, therefore the rational approach is to continue to operate to minimize losses. Therefore, the profit maximizing rule of producing at where MC = MR is also the rule to determine where a firm can minimize any losses it may suffer.

In sum, to determine whether a firm is making a loss or profit we must consider the relation of average total cost with average revenue. To determine whether a firm that is making a loss should continue in business we must consider the relation between average variable cost and average revenue. The following diagram illustrates the shutdown case for the firm making a loss:



In the case above you can see that the AVC is above the demand curve at where MC=MR, therefore the firm cannot even cover its variable costs and will shut down to minimize its losses. If the firm continues to operate it cannot cover its variable costs and will accrue losses in excess of the fixed costs. If the firm shuts-down, all that is lost is the fixed costs. Therefore the firm should shutdown in order to minimize its losses.

What may not be intuitively obvious is that this analysis determines the industry supply curve. Because firms cannot operate along the marginal cost curve below the average variable cost curve, the firm's supply curve is its marginal cost curve above average variable cost. To obtain the industry's supply curve one needs only sum all of the firms' marginal cost curves about their average variable cost curves.

Pure Competition and Efficiency

Allocative efficiency criteria are satisfied by the competitive model. Because P = MC, in every market in the economy there is no over- or under- allocation of resources in this economy. This is because the cost of production for the last unit of production is what determines supply, and that cost of production includes only the engineering costs. However, this result is obtained only if all industries in that economic system are purely competitive. This is the contribution of the models of distribution created by economists working in the marginalist's traditions. The problem is that this is economic theory that is not necessarily supported by empirical evidence.

Additionally, the technical or productive efficiency criteria are also satisfied by the competitive model because price is equal to the minimum average total cost. In the real world the ideal of technical efficiency is rarely attained. However, this criteria provides a useful benchmark to use in measuring how well a firm is doing with respect to minimizing costs for a specified level of total output.

As you may recall from the definition of economic efficiency, allocative and technical efficiency are only two of the three necessary and sufficient conditions for economic efficiency. The third condition necessary for economic efficiency is full employment. If full employment is also in evidence then a purely competitive world is economically efficient.

A few economists writing about economic problems through the past three decades have focused their analyses narrowly on the competitive models. Conclusions from the competitive models are straightforward and fairly simple, hence accessible to the population in general. These models suggest that economic utopia is found only by returning to a purely competitive world. However, as Adam Smith himself, notes there was never a point at which competition was observed, let alone, was the general rule.

This illustrates a very important point about economics. While it is true that there is a Nobel Prize in Economic Science, economics is not a science in the same vain that physics or chemistry is. Economics relies on assumptions upon which to build models to analyze material goods and their production and distribution. However, the assumptions may reflect value judgments (biases) more than what the analyst believes reflects the state of nature in the real world. Therefore, economics is not value free, as many would posit.

Criticism of Pure Competition as a Mode of Analysis for the Real World.

In theory, the purely competitive world is utopia. There are several problems that are not excluded by meeting the assumptions behind the competitive models. As wealth increases, predation could easily develop and monopoly power could be gained by the occasional ruthless businessman, especially in cases where government has

been significantly limited. Public goods and other commodities may not be available through competitive industries because of the lack of a profit potential. The competitive economic models are motivated by the suppliers seeking to maximize profits, and without the profit motive, there can be no market.

Further because of technical efficiency requirements, externalities such as pollution, work environment safety, and other such problems are likely to arise because of the constraint imposed on the firms by the price being determined by the industry. Without strong government and appropriate regulations to protect the environment or workplace, it is unlikely that any private incentive system could impose sufficient discipline upon producers to properly internalize the costs of production that can be allowed to flow to the public in general.

The distribution of income may lack equity or even technical efficiency. In a purely competitive world, workers will be paid the value of what they contribute to the total output of the firm. If the product they produce is not highly valued then some workers could be paid very low wages, even though the human capital and effort requirements are substantial. For example, a mathematician or a physicist may be paid less than a baseball player or musician – even though the value of what the mathematician or physicist is far greater than the athlete's contribution. This type of result often creates substantial social problems, i.e., alienation, occasionally resulting in alienation, crime, drug abuse, and in the developing world even political instability.

If all industries are purely competitive there be consumer dissatisfaction because each firm offers a standardized product. This standardization might very well result in a substantial loss of consumer choice. For example, if the soft drink industry was purely competitive, the product offered might well be a single cola, someplace between Coca-Cola and Pepsi-Cola, and might very well suite nobody's tastes and preferences.

The present state of technology simply requires the existence of many natural monopolies. The problems with natural monopolies are that under-production occurs at too high of a market price for the product. This misallocation of resources results in an insufficient amount of some commodities, with an excess of resources available to other products, and prices that are not specifically determined by the actual costs of production. Even so, if the natural monopolies are properly regulated at something near a competitive price, then the damage to the economy may be minimized. This issue will be discussed in greater detail later in this chapter.

It is frequently mused that if you teach a parrot to say "supply and demand" you have created a feathered economist. Perhaps the simplicity of this is appealing, however, supply and demand reflects, at best, a very superficial understanding of a modern economic system. One must be very careful in critically evaluating the assumptions that underpin an economic model, and the agenda of those who propose a particular mode of analysis. Economics, is not pure science, and it is not value free as many would lead you to believe. Economics focuses on efficiency criterion to determine

what best, equity is or fairness is often left out of the analysis because, in large measure it is difficult to quantify.

Distributive Acquisition

The Place of Science in Modern Civilization and Other Essays, Thorstein Veblen, New York: Memo, 1919, p. 183.

. . . The normal economic community, upon which theoretical interest has converged, is a business community, which centers about the market, and whose scheme of life is a scheme of profit and loss. Even when some considerable attention is obstensibly devoted to theories of consumption and production, in these systems of doctrine the theories are constructed in terms of ownership, price and acquisition, and so reduce themselves to doctrines of distributive acquisition. . . .

As one can see, Thorstein Veblen was very suspicious of economic theories of the time as being little more that an apology for self-interest of the rich and powerful posing as markets. In other words, one must be very careful not to permit economics to supplant more philosophical guidance in what is good or evil, and what is virtue or vice. Economics is a mode of analysis, and by no means a moral authority.

It is also interesting to note that the founding father of capitalism, Adam Smith, was also suspicious of the real world solutions of his time (some 140 years prior to Veblen), to wit:

Liberty?

An Inquiry into the Nature and Causes of the Wealth of Nations. Adam Smith, New York: Knopf Publishing, 1910, pp. 106-107.

Such are the inequalities in the whole of the advantages and disadvantages of the different employments if labour and stock, which the defect of any of the three requisites above mentioned must occasion, even where there is most perfect liberty. But the policy of Europe, by not leaving things at perfect liberty, occasions other inequalities of much greater importance.

It does this chiefly in the three following ways. First by restraining the competition in some employments to a smaller number than would otherwise be disposed to enter into them; secondly by increasing it in others beyond what it naturally would be; and, thirdly, by obstructing the free circulation of labour and stock both from employment to employment and from place to place.

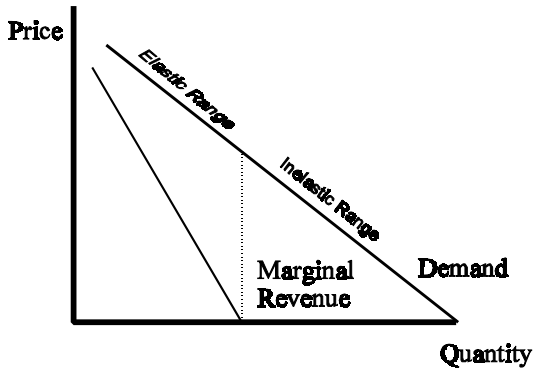
Adam Smith suspicious of the motivations of businessmen, and craftsmen in the pursuit of their own self-interest. He witnessed the monopolization of many markets in Scotland and in England, and he had also been the Director of the world's largest monopoly of the time the East India Company. Adam Smith, therefore, had first hand experience with the early beginnings of monopoly and knew their potential for evil. Smith was not only an advocate of competition, but knew that competition is what provided the consumer with alternatives in the marketplace, and hence an ability to choose among various suppliers. It is this consumer ability to choose, that motivated Smith's view that capitalism would produce socially beneficial results – and monopoly power is a threat to those results. (Hence the invisible hand)

The Monopoly Model

In the purely competitive analysis, there were two different models, one model for the industry, in which the interaction of supply and demand established the market price and quantity. The second model was that of the firm, the firm faced a perfectly elastic demand curve, in which demand, price, average revenue and marginal revenue were all the same. However, in the analysis of a monopoly there is but one model. **The firm, in monopoly, is the industry (by definition)**. Because the firm is the industry it therefore faces a downward sloping demand curve, which is also the average revenue curve for the firm (hence the industry).
If the firm wants to sell more it must lower its price therefore marginal revenue is also downward sloping, but has twice the slope of the demand curve. Remember when you lower price the average revenue falls, but not as fast as the marginal, and if the average revenue is a linear (as it is here, which is smooth, and continuously differentiable) the

there is a necessary relationship between the slope of the average and marginal functions.

Consider the following diagram:

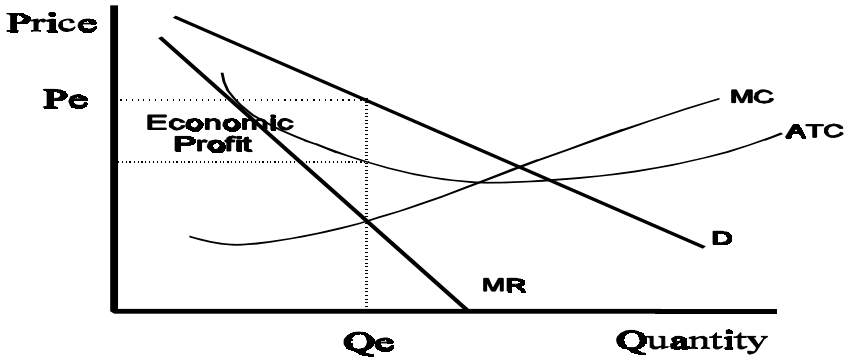


The point where the marginal revenue curve intersects the quantity axis is of significance; this point is where total revenue is maximized. Further, the point on the demand curve associated with where MR = Q is the point on the demand curve of unit price elastic demand; to the left along the demand curve is the elastic range, and to the right is the inelastic range (see Chapter 3 for a review of the relation between marginal revenue and price elasticity of demand).

Unlike the purely competitive model here is no supply curve in an industry, which is a monopoly. The monopolist decides how much to produce using the **profit maximizing rule; or where MC = MR.** In this sense, the monopolist is a price dictator, in that it is the cost structure, together with the change in total revenue with respect to change in quantity sold that directs the monopolist's pricing behavior, rather than the interaction of the monopolist's supply schedule, with the demand schedule of consumers (demand curve). With this information we can discover more about the monopoly model.

A monopolist can make an economic profit. **An economic profit is that margin above average cost, which is in excess of that necessary to cover the next best alternative allocation of the firm's assets.** As you recall from Chapter 8, in pure competition if there is an economic profit, that profit is a signal to other assets to enter the market. Because there are no barriers to entry into a purely competitive industry, the supply curve increase (shifts right) as these newly attracted resources enter the market – hence driving down the market price in the industry, and eliminating the economic profit.

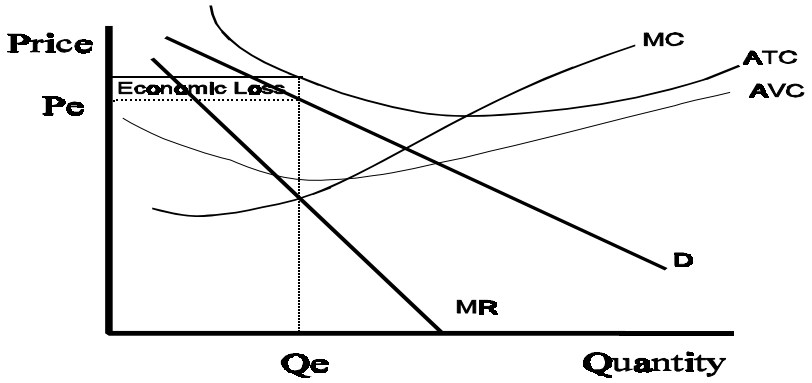
One of the objections to pure monopoly is that there is closed entry. A monopolist making an economic profit can do so as long as the cost and revenue structure permit, perhaps permanently. The self-correcting advantages from pure competition are lost because of these barriers to entry.



The above diagram shows the economic profits that can be maintained in the long run because of the barriers to entry into this industry. The monopolist produces where MC = MR (where MC intersects MR), but the price charged is all the market will bear, that is, the price on the demand curve that is immediately above the intersection of MC = MR. The rectangle mapped out by the ATC, the indicator over the price index, the origin, and Qm are the total costs, the rectangle mapped out by the demand curve, QM, the origin, and Pm is the total revenue, and the difference between these rectangles is economic profits.

On the other hand, there is nothing in the analysis that requires any given monopolist will be profitable. In fact, a monopolist can operate at an economic loss, the same as a competitive firm can.

The following diagram shows a monopolist that is unfortunate enough to be operating at an economic loss.

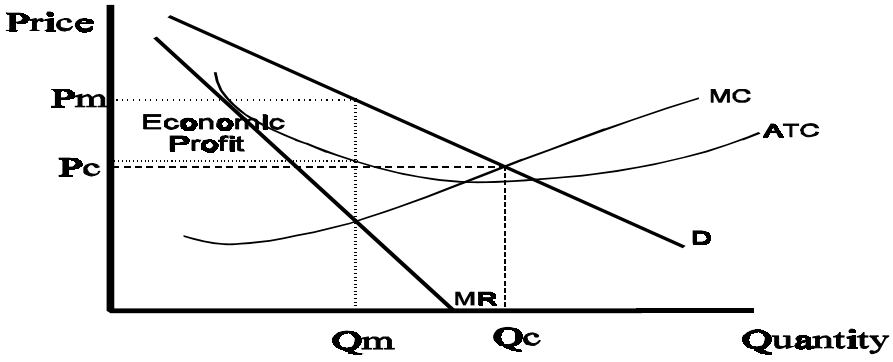


This monopolist is making an economic loss. The ATC is above the demand curve (AR) at where MC = MR (the loss is the labeled rectangle). However, because AVC is below the demand curve at where MC = MR the firm will not shut down so as to minimize its losses. The firm can pay back a portion of its fixed costs by continuing to operate at this level because the AVC is still below the demand curve. As you will remember from the discussion in Chapter 8, when AVC is above the demand curve the firm should shut down to prevent throwing good money after bad.

The Effects of Monopoly

There are several implications of the monopoly model; many of which lead to criticisms of monopoly on issues of both technical and allocative efficiency. The prices and output determined in the monopoly are not consistent with allocative efficiency criteria. In monopoly there are too many resources allocated to production of this product, for which we receive too little output as illustrated by comparison with the competitive solution, the dotted line (discussed below). Consequently, because of the barriers to entry, the price for this product is too high – hence allocatively inefficient.

Consider the following diagram of a pure monopoly making an economic profit, in this case:



The above graph shows the profit-maximizing monopolist, Pm is the price the monopoly commands in this market and Qm is the quantity exchanged in this market. However, where MC = D is where a perfectly competitive industry produces and this is associated with Pc and Qc. The monopolist therefore produces less and charges more than a purely competitive industry.

A monopolist can also segment a market and engage in price discrimination. **Price discrimination is where you charge a different price to different customers depending on their price elasticity of demand**. Because the consumer has no alternative source of supply price discrimination can be effective. This practice enhances the allocative inefficiency. When a consumer must pay more for a product, simply because of the monopoly power in the market, less of the consumers' incomes are available to purchase other commodities. The end result is even more resources flow into the monopolist's coffers, and out of other industries – hence even more inefficient allocations of productive resources.

This does not mean that monopolists are pure evil – in an economic sense. Sometimes a monopolist is in the best interests of society (besides the natural monopoly situation). Often a company must expend substantial resources on research and development (i.e., pharmaceutical firms). If these types of firms were forced to permit free use of their technological developments (hence no monopoly power) then the economic incentive to develop new technology and products would be eliminated – hence economic irrationality would have to prevail for the technological progress we have come to expect in the beginning of the twenty-first century.

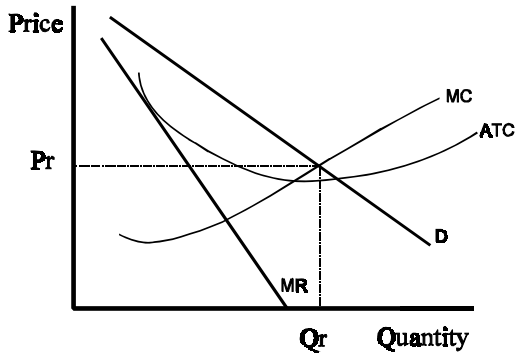
Regulated Monopoly

Because there are natural monopoly market situations it is in the public interest to permit monopolies, but traditionally in the United States they are regulated with respect to price. The purpose of the rate regulation was to ensure that the public would not suffer price gouging as a result of the monopoly position of the firms. Examples of regulated natural monopolies are electric utilities, cable TV companies, and telephone companies (local).

Throughout the 1980s and 1990s, up through 2002, there was substantial deregulation of the power industry, cable TV industry, and telecom. In the 1980s ATT was broken-up into several local telecom companies, i.e., Verizon, Southwestern Bell, Ameritech, and US West, among other, the long lines company (ATT) and Bell Labs (Lucent). The idea was to permit competition in long distance and local service. What happened was far different. The local providers had much invested in microwave towers, switches, and telephone lines – there would be charges permitted for the use of these assets by competitors, and what resulted was poorer service, at higher prices in most areas. In the summer of 2001, California consumers got a taste of what Enron could do in selling power to local public utilities. Consumers were victims of unscrupulous business practices that resulted in billions of dollars in overcharges that cannot be recovered.

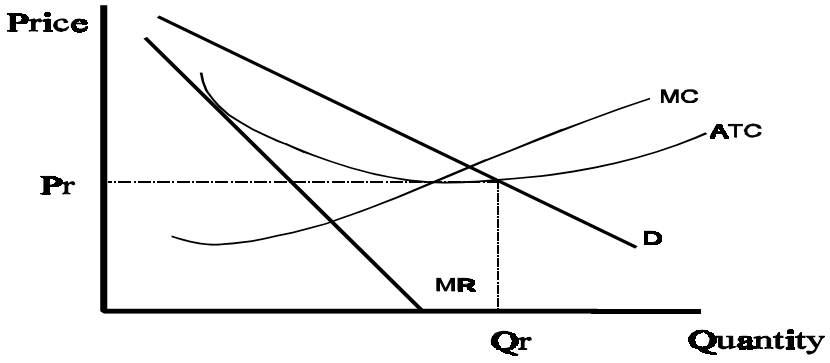
The problem with regulating the prices that monopolists can charge is that there are several competing goals that can be accomplished through rate regulation. If allocative efficiency is the goal, then the monopolist should be constrained to charge a **price where MC = D or the social optimum**. If technical efficiency is the goal then some argue that the monopolist's minimum total cost should be the basis for the rate regulation. If we are concerned about consistently and reliably having the product of the monopolist available, at a reasonable price, then it might be more sensible to regulate the monopolist to charge a **price at where ATC = D, or the fair rate of return**. So regulatory agencies have alternatives as to where to regulate any monopolists within their jurisdiction. **The potential prices at which a monopolist could be regulated, and the potential results of those price levels, is called the dilemma or regulation.** This dilemma has presented the opportunity for considerable debate about whether rate regulation is appropriate, and if so, what sorts of regulation should occur.

Consider the following diagram, this is a monopolist that is being regulated at the social optimum (MC = D):



This firm is being regulated at the social optimum, in other words, what the industry would produce if it were a purely competitive industry. The price it is required to charge is also the competitive solution. However, notice the ATC is below the demand curve at the social optimum, which means this firm is making an economic profit. It is also possible with this solution that the firm could be making an economic loss (if ATC is above demand) or even shut down (if AVC is above demand).

Consider the following diagram of a monopolist that is being regulated at the fair rate of return:



The fair rate of return enforces a normal profit because the firm must price its output and produce where ATC is equal to demand. This eliminates economic profits

and the risk of loss or of even putting the monopolist out of business. Virtually every state public utility commission relies on this model to regulate their electric companies and other public utilities.

Regulation and It's Problems

Regulation is not a panacea. There are problems with rate regulation. In our litigious society, the legal proceedings involved in rate regulation are not inexpensive for any of the parties involved, the state, public interest groups, and the firm. Because of the closeness of the legal advocates, economists, and others involved in the litigation of rate cases, there has been accusations that the public utility commissions have been over-taken by the industries they regulate. **The capture theory of regulation is that the retired executives, and economists and lawyers who have made their mark defending utilities have been appointed to public utility commissions, thereby allowing the utilities to regulate themselves.** While there have been instances where conflicts of interest have been noted, this "capture theory of regulation" probably overstates the relations between the industries regulated and the public utility commissions in most jurisdictions.

Rate regulation using invested capital as the rate base cause an incentive for firms to over-capitalize and not to be sensitive to variable costs of production. This is called the Averch-Johnson Effect. Electric companies, and other utilities are permitted to earn a rate of return only on invested capital. Therefore, given a choice, the utilities will invest in expensive (sometimes overly expensive) capital to maximize the base upon which they can earn a rate of return. By using too much capital and not enough variable factors, there firms are generally technologically inefficient, and thereby also allocatively inefficient.

Because public utilities must plan for peak load demands on the system, most of the time electric companies are operating at some fraction of total capacity. To smooth this peak out and make more consistent use of "slack" electric utilities, particularly in Europe, price their power at different rates taking into consideration the peaks and troughs in demand – higher rates in the peak times, lower rates in the troughs. This is referred to as peak load pricing.

Monopoly

Essentials of Economic Theory. John Bates Clark, New York: Macmillan Publishing Company, 1907, pp. 375-77.

. . . No description could exaggerate the evil, which is in store for a society given hopelessly over to a regime of private monopoly. Under this comprehensive name we shall group the most important of the agencies, which not merely resist, but positively vitiate, the action of natural economic law. Monopoly checks progress in production and infuses into distribution an element of robbery. It perverts the forces, which tend to secure to individuals all that they produce. It makes prices and wages abnormal and distorts the form of the industrial mechanism . . . Prices do not conform to the standards of cost, wages do not conform to the standard of final productivity of labor, and interest does not conform to the marginal product of capital. The system of industrial groups and sub-groups is thrown out of balance by putting too much labor and capital at certain points and too little at others. Profits become, not altogether a temporary premium for improvement, – reward for giving to humanity a dynamic impulse, – but partly the spoils of men whose influence is hostile to progress.

Global Implications

It is also interesting to note that the U.S. has anti-trust laws that control conspiracy to monopolize, attempts to monopolize, or monopolization of markets. This statutes from the 1890s and are part and parcel of the U.S. economic landscape. However, this is not the case around the world. The EEU has much more stringent anti-trust laws and regulations than does the U.S. What Microsoft was able to do in the U.S. resulted in fines and other corrective action in Europe. However, in Japan economic cooperation among firms is expected, and in many cases required by law. This sorts of arrangements in Japan would not be tolerated in either Europe or the U.S. Therefore, the treatment of monopoly and counter-competitive practices are jurisdictionally diverse.

Chapter 6

Measuring Aggregate Performance

The aggregate performance of a large and complex economic system requires some standards by which to measure that performance. Unfortunately our systems of accounting are imperfect and provide only rough guidelines, rather than crisp, clear measurements of the economic performance of large systems. As imperfect as the national income accounting methods are, they are the best measures we have and they do provide substantial useful information. The purpose of this chapter is to present the measures we do have of aggregate economic performance and to present the issues of business cycle, unemployment and inflation.

Gross Domestic and Gross National Product

The most inclusive measures we have of aggregate economic activity are Gross Domestic Product and Gross National Product. These measures are used to describe total output of the economy, by source. In the case of Gross Domestic Product we are concerned with what is produced within our domestic economy. More precisely, **Gross Domestic Product (GDP) is the total value of all goods and services produced within the borders of the United States (or country under analysis).** On the other hand, Gross National Product is concerned with American production (regardless of whether it was produced domestically). More precisely, **Gross National Product (GNP) is the total value of all goods and services produced by Americans regardless of whether in the United States or overseas.**

These measures (GDP and GNP) are the two most commonly discussed in the popular press. The reason they garner such interest is that they measure all of the economy's output and are perhaps the least complicated of the national income accounts. Often these data are presented as being overall measures of our population's economic well-being. There is some truth in the assertion that GDP and GNP are social welfare measures, however, there are significant limitations in such inferences. To fully understand these limitations we must first understand how these measures are constructed.

The national income accounts are constructed in such a manner as to avoid the problem of double-counting. For example, if we count a finished automobile in the national income accounts, what about the paint, steel, rubber, plastic, and other components that go into making that car? To systematically eliminate double-counting, only **value-added** is counted for each firm in each industry. The value of the paint, used in producing a car, is value-added by the paint manufacturing company, the application of that paint by an automobile worker is value-added by the car company

(but the value of the paint itself is not). By focusing only on value-added at each step of the production process in each industry national income accountants are thus able to avoid the problems of double counting.

GROSS DOMESTIC PRODUCT by COMPONENT 1940-2000
(billions of current U.S. dollars)

YEAR	Personal Consumption	Gross Domestic Investment	Government Expenditures	Net Exports	GDP
1940	71.1	13.4	14.2	1.4	100.1
1950	192.1	55.1	32.6	0.7	286.7
1960	332.4	78.7	99.8	-1.7	513.4
1970	646.5	150.3	212.7	1.2	1010.7
1980	1748.1	467.6	507.1	-14.7	2708.0
1990	3742.6	802.6	1042.9	-74.4	5513.8
2000	6257.8	1772.9	1572.6	-399.1	9224.0

The above box presents the GDP accounts in the major expenditures components. GDP is the summation of personal consumption expenditures (C), gross domestic private investment (I_g), government expenditures (G) and net exports (X_n), where net exports are total export minus total imports. Put in equation form:

$$\mathbf{GDP\ (Y) = C + I_g + G + X_n}$$

GDP can also be calculated using the incomes approach. GDP can be found by summing each of the income categories and deducting Net American Income Earned Abroad. The following illustration shows how GNP and GDP are calculated using the incomes approach as follows:

Depreciation
+
Indirect Business Taxes
+
Employee Compensation
+
Rents
+
Interest
+
Proprietors' Income
+
Corporate Income Taxes
+
Dividends
+
Undistributed Corporate Profits

= Gross National Product

- Net American Income Earned Abroad

= Gross Domestic Product

In a practical sense it makes little difference which approach to calculating GDP is used, the same result will be obtained either way. What is of interest is the information that each approach provides. The sub-accounts under each approach provide useful information for purposes of understanding the aggregate performance of the economy and potentially formulating economic policy. Under the expenditures approach we have information concerning the amount of foreign trade, government expenditures, personal consumption and investment.

The following accounts illustrates how GDP is broken down into another useful set of sub-accounts. Each of these additional sub-accounts provides information that helps us gain a more complete understanding of the aggregate economic system. The following illustration demonstrates how the sub-accounts are calculated:

Gross Domestic Product
- Depreciation =

Net Domestic Product
+ Net American Income Earned Abroad
- Indirect Business Taxes =

National Income
- Social Security Contributions
- Corporate Income Taxes
- Undistributed Corporate Profits
+ Transfer Payments =

Personal Income
- Personal Taxes =

Disposable Income

The expenditures approach provides information concerning from what sector proportions of GDP come. Personal consumption, government expenditures, foreign sector, and investment all are useful in determining what is responsible for our economic well-being. Likewise, the incomes approach provides greater detail to our understanding of the aggregate economic output. Net National Product is the output that we still have after accounting for what is used-up in producing, in other words, the capital we used-up getting GDP is netted-out to provide a measure of the output we have left. National Income takes out of Net National Product all *ad valorem* taxes that must be paid during production and net American income originating from overseas. Appropriate adjustments are made to National Income to deduct those things that do not reach households (i.e., undistributed corporate profits) and adds in transfer payments to arrive at Personal Income. The amount of Personal Income that households are free to spend after paying their taxes is called Disposable Income.

So far the national income accounts appear to provide a great deal of information. However, we do know that this information fails to accurately measure our aggregate economic well-being. There are many aspects of economic activity that do not lend themselves well to standard accounting techniques and these problems must be examined to gain a full appreciation for what this information really means.

National Income Accounts as a Measure of Social Welfare

Accounting, whether it is financial, cost, corporate, nonprofit, public sector, or even national income, provides images of transactions. The images that the accounting process provides has value judgments implicit within the practices and procedures of the accountants. National income accounting, as do other accounting practices, also has significant limitations in the availability of data and the cost of gathering data. In turn, the costs of data gathering may also substantially influence the images that the accounts portray.

GDP and GNP are nothing more than measures of total output (or income). However, the total output measured is limited to legitimate market activities. Further, national income accountants make no pretense to measure only positive contributions to total output that occur through markets. Both economic goods and economic bads are included in the accounts, which significantly limits any inference that GDP or any of its sub-accounts are accurate images of social welfare. More information is necessary before conclusions can be drawn concerning social welfare.

Nonmarket transactions such as household-provided services or barter are not included in GDP. In other words, the services of a cook if employed are counted, but the services of a man or woman doing the cooking for their own household is not. This makes comparisons across time within the United States suspect. In the earliest decades of national income accounting many of the more routine needs of the household were served by the household members' own labor. As society became faster paced, and two wage earners began to become the rule for American households, more laundry, housecleaning, child rearing, and maintenance work necessary to maintain the household were accomplished by persons hired in the marketplace. In other words, the same level of service may have been provided, but more of it is now a market activity, hence included in GNP. This is also the case in comparing U.S. households with households in less developed countries. Certainly less market activity is in evidence in less developed countries that could be characterized as household maintenance. Few people are hired outside of the family unit to perform domestic labor in less developed countries, and if they are they are typically paid pennies per hour. Less developed countries' populations rely predominately on subsistence farming or fishing, and therefore even food and clothing may be rarely obtained in the marketplace.

Leisure is an economic good but time away from work is not included in GNP. The only way leisure time could be included in GNP is to impute (estimate) a value for the time and add it to GNP (the same method would be required for household services of family members). Because of the lack of consistency in the use of time for leisure activities these imputation would be a very arbitrary, at best. However, commodities used in leisure activities are included in GNP. Such things as movie tickets, skis, and other commodities are purchased in the market and may serve as a rough guide to the benefits received by people having time away from work.

Product quality is not reflected in GNP. There is no pretense made by national income accountants that GDP can account for product or service quality. There is also little information available upon which to base a sound conclusions concerning whether the qualitative aspects of our total output has increased. It is clear that domestic automobiles have increased in quality since 1980, and this same experience is likely true of most of U.S. industry.

No attempt is made in GDP data to account for the composition output. We must look at the contributions of each sector of the economy to determine composition. The U.S. Department of Commerce publishes information concerning output and classifies that output by industry groups. These industry groupings are called Standard Industrial Codes (S.I.C.) and permits relatively easy tracking of total output by industry group, and by components of industry groups.

Over time, there are new products introduced and older products disappear as technology advances. Whale oil lamps and horseshoes gave way to electric lights and automobiles between the Nineteenth and Twentieth Centuries. As we moved into the latter part of this century vinyl records gave way to cassettes, which, in turn, have been replaced by compact disks. In almost every aspect of life the commodities that we use have changed within our lifetimes. Therefore, comparisons of GNP in 1996 with GNP in 1966 is really comparing apples and oranges because we did not have the same products available in those two years.

As we move further back in time the commodities change even more. However, it is interesting to note the relative stability of the composition of output before the industrial revolution. For centuries, after the fall of the Roman Empire, the composition of total output was very similar. Atilla the Hun would have recognized most of what was available to Mohammed and he would have recognized most of what Da Vinci could have found in the market place. Therefore, the rapid change in available commodities is a function of the advancement of knowledge, hence the advancement in technology.

Another shortcoming of national income accounting is that the accounts say nothing about how income is distributed. In the early centuries of this millennium, only a privileged few had lifestyles that most of us would recognize as middle income or above. With recent archaeological work at Imperial Roman sites, many scholars have concluded that over 95% of the population lived in poverty (the majority in life-threatening poverty), while a very few lived in extreme wealth. With the tremendous increases in knowledge over the past two-hundred years, technology has increased our productivity so substantially that in the 28 industrialized nations of the world, the majority of people in those countries do not know poverty. However, the majority of the world's population lives in less developed countries and the overwhelming majority of the people in those countries do know poverty, and a significant minority of these people know life threatening poverty. In short, with the increase in output has come an increase in the well-being of most people.

Per capita income is GDP divided by the population, and this is a very rough guide to individual income, which still fails to account for distribution. In the United States, the largest economy in the world, there are still over 40 million people (about 14½ percent) that live in poverty, and only a very few these in life threatening poverty. Something just under four percent of the population (about 1 person in 26) are classified as wealthy. The other 81 percent experience a middle-income lifestyle in the United States. The distribution of poverty is not equal across the population of this country. Poverty disproportionately falls to youngest and oldest segments of our population. Minority group persons also experience a higher proportion of poverty than do the majority.

Environmental problems are not addressed in the national income accounts. The damage done to the environment in the production or consumption of commodities is not counted in GDP data. The image created by the accounts is that pollution, deforestation, chemical poisoning, and poor quality air and water that give rise to cancer, birth defects and other health problems are economic goods, not economic bads. The cost of the gasoline burned in a car that creates pollution is included in GNP, however, the poisoning of the air, especially in places like Los Angeles, Denver, and Louisville is not deducted as an economic bad. The only time these economic bads are accounted for in GNP is when market transactions occur to clean-up the damage, and these transactions are added to GNP. The end result, is that GNP is overstated by the amount of environmental damage done as a result of pollution and environmental damage.

The largest understatement of GNP comes from something called the underground economy. **The underground economy is very substantial in most less developed countries and in the United States. It includes all illegitimate (mostly illegal) economic activities, whether market activities or not.** In less developed countries much of the underground economy is the "black market," but there is also a significant amount of crime in many of these countries. Estimates abound concerning the actual size of the underground economy in the United States. The middle range of these estimates suggest the amount of underground economic activities may be as much as one-third of total U.S. output.

The F.B.I. has, for years, tracked crime statistics in the United States and publishes an annual report concerning crime. It is clear that drugs, organized theft, robberies, and other crimes against property are very substantial in the United States. But when these crimes result in income for the offenders, there is also the substantial problem of income tax evasion from not reporting the income from the criminal activity. After all, Al Capone never went to jail for all of the overt criminal acts involved in his various criminal enterprises, he went to jail for another crime, that is, because he did not pay income taxes on his ill-gotten gains.

Drug trafficking in the United States is a very large business. The maximum estimates place this industry someplace in the order of a $500 billion per year business in the U.S. Few legitimate industries are its equal. Worse yet, the news media reports that nearly half of those incarcerated in this nation's prisons are there on drug charges. The image that the national income accounts portrays is that the $100 billion, plus that is spent on law enforcement and corrections because of drug trafficking is somehow an economic good, not a failure of our system. Drugs, however, are not the only problem. As almost any insurance company official can tell you, car theft is also another major industry. A couple of years ago CNN reported that a car theft ring operating in the Southeast (and particularly Florida) was responsible for a large proportion of vehicles sold in certain Latin American countries. Further, that if this car theft ring were a legitimate business it would be the fourteenth largest in the United States (right above Coca-Cola in the Fortune 100).

In an economy with total output of $6 trillion, when nearly 10% of that is matched by only one illegitimate industry - drugs - there is a serious undercounting problem. If estimates are anyplace close to correct, and $500 billion per year are the gross sales of drug dealers, and if the profits on this trade are only eighty percent (likely a low estimate), and if the corporate income tax rate of forty-nine percent could be applied to this sum, then instead of a $270 billion budget deficit, the Federal government would be experiencing a surplus of something in the order of $130 billion, without any reduction in expenditures for law enforcement and corrections (which could be re-allocated to education, health care or other good purposes). Maybe the best argument for the legalization of drugs is its effect on the nation's finances (assuming, of course, drugs were only a national income accounting problem).

Price Indices

Changes in the price level poses some significant problems for national income accountants. If we experience 10% inflation and a reduction of total output of 5% it would appear that we had an increase in GNP. In fact, we had an increase in GNP, but only in the current dollar value of that number. In real terms, we had a reduction in GNP. Comparisons between these two time periods means very little because the price levels were not the same. If we are to meaningfully compare output we must have a method by which we can compare output with from one period to another by controlling for changes in the price levels.

Nominal GDP is the value of total output, at the prices that exist at that time. By adjusting aggregate economic data for variations in price levels then we have data that can be compared across time periods with different price levels. **Real GDP** is the value of total output using constant prices (variations in price levels being removed).

Price indices are the way we attempt to measure inflation and adjust aggregate economic data to account for price level variations. There are a wide array of price indices. We measure the prices wholesalers must pay, that consumers must pay (either

urban consumers (CPI(U) or that wage earners must pay (CPI(W)), we measure prices for all goods and services (GNP Deflator) and we also have indices that focus on particular regions of the country, generally large urban areas, called Standard Metropolitan Statistical Areas -- S.M.S.A.).

Price indices are far from perfect measures of variations in prices. These indices are based on surveys of prices of a specific market basket of goods, at a particular point in time. The accuracy of any inference that may be drawn from these indices depends on how well the market basket of commodities used to construct the index match our own expenditures (or the expenditures of the people upon whom the analysis focuses). Further complicating matters, is the fact that the market basket of goods changes periodically as researchers believe consumption patterns change. Every five to ten years (generally seven years) the Commerce Department (Current Population Surveys) changes the market basket of goods in an attempt to account for the current expenditure patterns of the group for which the index is constructed (total GNP, consumers, wholesalers, etc.).

For the consumer price indices, there is a standard set of assumptions used to guide the survey takers concerning what should be included in the market basket. The market basket for consumers assumes a family of four, with a male wage earner, an adult female not employed outside of the home, and two children (one male, one female). There are also assumptions concerning home ownership, gift giving, diet, and most aspects of the hypothetical family's standard of living.

The cost of living and the standard of living are mirror images of one another. If someone has a fixed income and there is a two percent inflation rate per year, then their standard of living will decrease two percent per year (assuming the index used is an accurate description of their consumption patterns). In other words, a standard of living is eroded if there is inflation and no equal increase in wages (or other income, i.e., pensions). Under the two percent annual inflation scenario, a household would need a two percent increase in income each year simply to avoid a loss in purchasing power of their income (standard of living).

During most, if not all, of your lifetime this economy has experienced inflation. Prior to World War II, however, the majority of American economic history is marked by deflation. That is, a general decrease in all prices. With a deflationary economy all one must do to have a constant increase in their standard of living is to keep their income constant while prices fall. However, deflation is a problem. Suppose you want to buy a house. Most of us have mortgages, we borrow to buy a house. If you purchase a house worth $50,000 and borrow eighty percent of the purchase price, $40,000 you may have a problem. If we have five percent deflation per year, it only takes five years for the market value of that house to reach $38689. In the sixth year, you owe more on your thirty-year mortgage than the market value of the house. Credit for consumer purchases becomes an interesting problem in a deflationary economy.

On the other hand, if you owe a great deal of money, you have the opportunity to pay back your loans with less valuable money the higher the rate of inflation. Therefore, debtors benefit from inflation if they have fixed rate loans that do not adjust the rates for the effects of inflation.

The inflationary experience of the post-World War II period has resulted in our expecting prices to increase each year. Because we have come to anticipate inflation, our behaviors change. One of the most notable changes in our economic behavior has been the wide adoption of escalator provisions in collective bargaining agreements, executory contracts, and in entitlement laws (social security, veterans' benefits, etc.). Escalator arrangements (sometimes called Cost of Living Adjustments, C.O.L.A.) typically tie earnings or other payments to the rate of inflation, but only proportionally. For example, the escalator contained in the General Motors and United Auto Workers contract provides for employees receiving 1¢ per hour for each .2 the CPI increases. This protects approximately $5.00 of the employee's earnings from the erosive effects of inflation (.01/.2)100, assuming a base CPI of 100. (There is no escalator that provides a greater benefit to income receivers than the GM-UAW national agreement).

There are other price indices that focus on geographic differences. (Price data that measures changes over time are called time series, and those that measure differences within a time period but across people or regions are called cross sections). The American Chamber of Commerce Research Association (ACCRA) in Indianapolis does a cross sectional survey, for mid-sized to large communities across the United States. On this ACCRA index Fort Wayne generally ranges between about 96.0 and 102.0, where 100 is the national average and the error of estimate is between 2 and 4 percent.

There are also producer and wholesale price indices and several component part of the consumer price indices that are designed for specific purposes that focus on regions of the country or industries. For example, the components of the CPI are also broken down so that we have detailed price information for health care costs, housing costs, and energy costs among others.

Paashe v. Laspeyres Indices

There are two different methods of calculating price indices, these are the Laspeyres Index and the Paashe Index. The Laspeyres Index uses a "constant market basket" of goods and services to represent the quantity portion of the ration Q_0 so that only price changes are in the index.

$$L = \sum P_n Q_0 / \sum P_0 Q_0 \text{ X } 100$$

This is the most widely used index in constructing price indices. It has the disadvantage of not reflecting changes in the quantities of the commodities purchased over time. The

Paasche index overcomes this problem by permitting the quantities to vary over time, which requires more extensive data grubbing. The Passche index is:

$$P = \sum P_n Q_n / \sum P_0 Q_n \text{ X } 100$$

Measuring the Price Level

The discussion here will focus on the Consumer Price Index (CPI) but is generally applicable. The CPI is based on a market basket of goods and is expressed as a percentage of the value of the market baskets' value in a base year (the year with which all prices in the index are compared). Each year's index is constructed by dividing the current year market basket's value by the base year market basket's value and then multiplying the result by 100. Note that the index number for the base year will be 100.00 (or 1 X 100).

By using this index we can convert nominal values into real values (real value are expressed in base year dollars). We can either inflate or deflate current values to obtain real values. Inflating is the adjustment of prices to a higher level, for years when the index is less than 100. Deflating is the adjustment of prices to a lower level, for years when the index is more than 100.

The process whereby we inflate and deflate is relatively simple and straightforward. To change nominal into real values the following equation is used:

Nominal value/(price index/100)

For example, in 1989 the current base year the CPI is 100. By 1996 the CPI increased to 110.0. If we want to know how much $1.00 of 1996 money is worth in 1989 we must deflate the 1996 dollar. We accomplish this by dividing 110 by 100 and obtaining 1.1; we then divided 1 by 1.1 and find .909, which is the value of a 1996 dollar in 1989. If we want to know how much a 1989 dollar would buy in 1996 we must inflate. We accomplish this by dividing 100 by 110 and obtaining .909; we then divide 1 by .909 and find 1.10, which is the value of a 1989 dollar in 1996.

Because the government changes base years it may be necessary to convert one or more indices with different base years to obtain a consistent time series if we want to compare price levels between years decades apart. Changing base years is a relatively simple operation. If you wish to convert a 1982 base year index to be consistent with a 1987 base year, then you use the index number for 1982 in the 1987 series and divide all other observations for the 1982 series using the 1982 value in 1987 index series. This results in a new index with 1987 as a base year. If inflation was experienced during the entire period then the index number for 1987 will be 100, for the

years prior to 1987 the indices will be less than 100 and for the years after 1987 the numbers will be larger than 100.

The price index method has problems. The assumptions concerning the market basket of goods to be surveyed causes specific results that are not descriptive of a general population. In the case of the consumer price index, families without children or with more than two may find their cost of living differs from what the index suggests. If both parents work, the indices may understand the cost of living. For families with ten year old, fixed rate mortgages and high current mortgages rates, the CPI may understate their current cost of living. Therefore, the CPI is only a rough measure, and its applicability differs from household to household.

Cost of Living Adjustments

David A. Dilts and Clarence R. Deitsch, *Labor Relations,* New York: Macmillan Publishing Company, 1983, p. 167.

To the casual observer, COLA clauses may appear to be an excellent method of protecting the real earnings of employees. This is not totally accurate. COLA is not designed to protect the real wage of the employee but is simply to keep the employee's nominal wage, within certain limits, close to its original purchasing power. With a 1 cent adjustment per .4 increase in the CPI (if no ceiling is present) the base wage which is being protected from the erosive effect of inflation is $2.50 per hour, 1 cent per .3 increase in the CPI protects $3.33 per hour, and 1 cent per .2 increase in the CPI protects $5.00 per hour. This is quite easy to see; since the CPI is an index number computed against some base year (CPI = 100 in 1967) and the adjustment factor normally required in escalator clauses is 1 cent per some increase *x*, in the CPI, the real wage which is protected by the escalator is the inverse of the CPI requirement or 1/*x*.

Mixed Economic System and Standard of Living

American capitalism is a mixed economic system. There are small elements of command and tradition, and some socialism. However, our economic system is predominately capitalist. The economic freedom and ability to pursue our individual self-interest provides for the American people a standard of living, in the main, that is unprecedented in world history. Perhaps more important, our high standards of living are widely shared throughout American society (with fewer than 17.5% of Americans living in poverty).

The accomplishments of American society ought not be taken lightly, no other epoch and no other nation, has seen a "golden" age as impressive as modern America. However, there are aspects of our freedom of enterprise that are not so positive. Free market systems have a troubling propensity to experience recessions (at the extreme depressions) periodically. As our freedom of inquiry develops new knowledge, new

products and new technologies, our freedom of enterprise also results in the abandonment of old industries (generally in favor of new industries). At times we also seem to lose faith in accelerating rates of growth or economic progress. At other times, we have experienced little growth in incomes (at the extreme declines in consumer incomes). All of these problems have resulted in down-turns in economic activity. At other times, consumer's income have increased at accelerating rates, people have become enthusiastic about our economic future, and the growth of new industries have far outpaced the loss of old industries that have resulted in substantial expansions of economic activity. Together these down-turns and expansions are referred to as the business cycle.

Business Cycles

The business cycle is the recurrent ups and downs in economic activity observed in market economies. Troughs, in the business cycle, are where employment and output bottom-out during a recession (downturn) or depression (serious recession). Peaks, in the business cycle, are where employment and output top-out during a recovery or expansionary period (upturn). These ups and downs (peaks and troughs) are generally short-run variations in economic activity. It is relatively rare for a recession to last more than several months, two or three years maximum. The Great Depression of the 1920s and 1930s was a rare exception. In fact, the 1981-85 recession was unusually long.

One of the most confusing aspects of the business cycle is the difference between a recession and depression. For the most part, recessionary trends are marked by a downturn in output. This downturn in output is associated with increased levels of unemployment. Therefore, unemployment is what is typically keyed upon in following the course of a recession. In 1934, the U.S. economy experienced 24.9% unemployment, this is clearly a depression. The recession of 1958-61 reached only 6.7% unemployment. This level of reduced economic activity is clearly only a recession. However, in the 1981 through 1986 downturn the unemployment rate reached a high of 12%, and in both 1982 and 1983 the annual average unemployment rate was 10.7%. Probably the Reagan recession was close to, if not actually, a short depression, arguably a deep recession. This 1981-85 period was clearly the worst performing economy since World War II, but it also was clearly nothing compared to the problems in the decade before World War II.

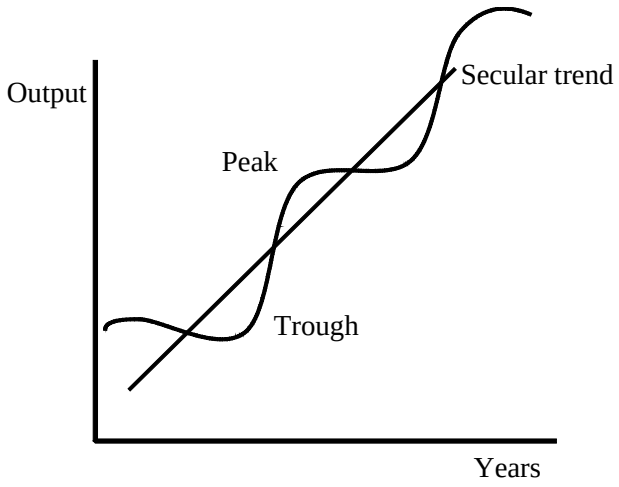
The old story about the difference between a recession and depression probably is as close to describing the difference between a recession and a depression as anything an economist can offer. That is, *a recession is when your neighbor is out of work, a depression is when you are out of work!*

In general, the peaks and troughs associated with the business cycle, are short-run variations around a long-term secular trend. **Secular trends are general**

movements in a particular direction that are observed for decades (at least 25 years in macroeconomic analyses).

Prior to World War II the secular trend started as relatively flat and limited growth period and then it took a sharp downward direction until the beginnings of the War in Europe (a period of about twenty years). Since the end of World War II we have experienced a long period of rather impressive economic growth (a period of over fifty years).

The following diagram shows a long-term secular trend that is substantially positive (the straight, upward sloping line). About that secular trend is another curved line, whose slope varies between positive and negative, this is much the same as the business cycle variations about that long-term growth trend. If we map out economic activity since World War II we would observe a positive long-term trend, with marked ups and downs showing the effects of the business cycle.



There are other variations observed in macroeconomic data. **These variations, called seasonal variations, last only weeks and are associated with the seasons of the year.** During the summer, unemployment generally increases due to students and teachers not having school in the summer and both groups seeking employment during the summer months. Throughout most of the Midwest agriculture and construction tend to be seasonal. Crops are harvested in the fall, then in the winter months farmers either focus on livestock production or wait for the next grain season. In the upper Midwest, north of Fort Wayne, outside work is very limited due to extreme weather conditions, making construction exhibit a seasonal trend. In the retail industry, from Thanksgiving through New Year's Day is when disproportionately large amounts of business are observed, with smaller amounts during the summer.

Unemployment

Unemployment is defined to be an individual worker who is not gainfully employed, is willing and able to work, and is actively seeking employment. A person who is not gainfully employed, but is not seeking employment or who is unwilling or unable to work is not counted as unemployed, or as a member of the work force. During the Vietnam War unemployment dropped to 3.6% in 1968 and 3.5% in 1969. This period illustrates two ways in which unemployment can be reduced. Because of the economic expansion of the Vietnam era more jobs were available, but during the same period many people dropped out of the work force that may otherwise have been unemployment or, alternatively, vacated jobs that became available to others to avoid military service. One way to keep from being drafted was to become a full time student, which induced many draft-age persons to go to college rather than risk military service in Vietnam. Additionally, there was a substantial expansion in the manpower needs of the military with nearly 500,000 troops in Vietnam in 1969. Therefore, the unemployment rate was compressed between more job, and fewer labor force participants.

Unemployment can decrease because more jobs become available. It can also decrease because the work force participation of individuals declines, in favor of additional schooling, military service, or leisure. Unemployment is more than idle resources, unemployment also means that some households are also experiencing reduced income. In other words, unemployment is associated with a current loss of output, and reductions in income into the foreseeable future.

Economists classify unemployment into three category by cause. These three categories of unemployment are (1) frictional, (2) structural, and (3) cyclical. Frictional unemployment consists of *search* and *wait* unemployment, which is caused by people searching for employment or waiting to take a job in the near future. Structural unemployment is caused by a change in composition of output, changes in technology, or a change in the structure of demand (new industries replacing the old). Cyclical unemployment is due to recessions, (the downturns in the business cycle). Structural unemployment is associated with the permanent loss of jobs, however, cyclical unemployment is generally associated with only temporary losses of employment opportunities.

Full employment is not zero unemployment, the full employment rate of unemployment is the same as the natural rate. The natural rate of unemployment is thought to be about 4% and is a portion of structural unemployment and frictional unemployment. However, there is not complete professional agreement concerning the natural rate, some economists argue that the natural rate, today is, about 5%. The disagreement centers more on observation of the secular trend, than any particular technical aspect of the economy (and there are those in the profession who would disagree with this latter statement).

The reason that frictional and structural unemployment will always be observed is that our macroeconomy is dynamic. There are always people entering and leaving the labor force, each year there are new high school and college graduates and secondary wage earners who enter and leave the market. There is also a certain proportion of structural unemployment that should be observed in a healthy economy. Innovations result in new products and better production processes that will result in displacement of old products and production processes that results employees becoming unnecessary to staff the displaced and less efficient technology. Therefore, the structural component of the natural rate is only a fraction of the total structural rate in periods where there is displacement of older industries that may result from other than normal economic progress. Perhaps the best example of this is the displacement of portions of the domestic steel and automobile industries that resulted from predatory trade practices (i.e., some of the dumping practices of Japan and others).

The level of output associated with full utilization of our productive resources, in an efficient manner is called potential output. Potential output is the output of the economy associated with full employment. It is the level of employment and output associated with being someplace on the production possibilities curve (from E201). This level of production will become important to us in judging the performance of the economy.

Full employment is not zero unemployment and potential GNP is not total capacity utilization (full production), such levels of production are destructive to the labor force and capital base because people fulfill other roles (i.e., consumer, parent, etc.) and capital must be maintained. The Nazi's slave labor camps (during World War II) were examples of the evils of full production, where people were actually worked to death.

Unemployment rates

The unemployment rate is the percentage of the work force that is unemployed. The work force is about half of the total population. Retired persons, children, those who are either incapable of working or those who choose not to participate in the labor market are not counted in the labor force. Another way to look at it, is that the labor force consists of those persons who are employed or unemployed who are willing, able and searching for work.

People who are employed may be either full time or part time employees. In aggregate the average number of hours worked by employees in the U.S. economy generally is something just under forty-hours per week (generally between 38 and 39 hours per week). This statistic reflects the fact that people have vacation time, are absent from work, and may have short periods of less than forty hours available to them due to strikes, inventories, or plant shut-downs.

Part time employees are included in the work force. You are not counted as unemployed unless you do not work and are actively pursuing work. Those who do not have 40 hours of work (or the equivalent) available to them are classified as part time employees. At present there are about 6.5 million U.S. workers were are involuntarily part-time workers, and about 12 million were voluntarily part-time employees, this is up about 3 million from total part time employment in 1982.

The unemployment rate is calculated as:

UR = Unemployed persons ÷ labor force

There are problems with the interpretation of the unemployment rate. **Discouraged workers** are those persons who dropped out of labor force because they could not find an acceptable job (generally after a prolonged search). To the extent there are discouraged workers that have dropped out of the work force, the unemployment rate is understated. There are also those individuals who have recently lost jobs who are not interested in working, but do not wish to lose their unemployment benefits. These individuals will typically go through the motions of seeking employment to remain eligible for unemployment benefits but will not accept employment or make any effort beyond the appearance of searching. This is called **false search** and serves to overstate the unemployment rate.

There has yet to be any conclusive research that demonstrates whether the discouraged worker or false search problem has the greatest impact on the unemployment rate. However, what evidence exists suggests that in recent years the discouraged worker problem is the larger of the two problem, suggesting that the unemployment rate may be slightly understated.

Okun's Law

As mentioned earlier, unemployment is not just a single dimensional problem. Based on empirical observation an economist determined that there was a fairly stable relation between unemployment and lost output in the macroeconomy. This relation has a theoretical basis. As we move away from an economy in full employment, non-inflationary equilibrium, we find that we lose jobs in a fairly constant ratio to the loss of output. **Okun's Law** states that for each one percent (1%) the unemployment rate exceeds the natural rate there will be a gap of two and one-half percent (2.5%) between actual GDP and potential GDP. This is why it is not technically incorrect to look to the unemployment rate to determine whether a recession has begun or stopped. It is also true that unemployment tends to trail behind total output of the economy, so it is not a perfect or current indicator.

This relationship permits some rough guesses about what is happening to total output in the economy, however, it is only a rough guide, because unemployment is a

trailing indicator. In other words, as the economy goes into recession that last variable to reflect the loss of output is the unemployment rate.

Burden of Unemployment

The individual burden of unemployment is not uniformly spread across the various groups that comprise our society. There are several factors that have been historically associated with who bears what proportion of the aggregate levels of unemployment. Among the factors that determine the burden of unemployment are occupation, age, race and gender.

The individual occupational choice will effect the likelihood of becoming unemployed. Those with low skill and educational levels will generally experience unemployment more frequently than those with more skills or education. There are also specific occupations (even highly skilled or highly educated) that may experience unemployment due to structural changes in the economy. For example, with the decline in certain heavy manufacturing many skilled-trades persons experienced bouts of unemployment during the 1980s. As educational resources declined in the 1970s and again recently, many persons with a Ph.D. level education and certified teachers experienced unemployment. However, unemployment for skilled or highly educated occupations tends to be infrequent and of relatively short duration.

Age also plays a role. Younger people tend to experience more frictional unemployment than their older, more experienced counterparts. As people enter the work force for the first time their initial entry puts them into the unemployed category. Younger persons also tend to experience a longer duration of unemployment. However, there is some evidence that age discrimination may present a problem for older workers (the Age Discrimination Act covers those persons over 40, and it appears those over 50 experience the greatest burden of this discrimination).

Race and gender, unfortunately, are still important determinants of both incidence and duration of unemployment. Most frequently the race and gender effects are the result of unlawful discrimination in the labor market. There is also a body of evidence that suggests there may be significant discrimination in the educational opportunities available to minorities.

Edmund Phelps developed a theory called **statistical theory of racism and sexism** that sought to explain how discrimination could be eliminated as a determinate of the burden of unemployment. His theory was that if there was not a ideological commitment to racism or sexism, that if employers were forced to sample from minorities they would find that there was no difference in these employees' productivity and the productivity of the majority. This formed the basis of affirmative action programs. The lack of effectiveness of most of these programs suggests that the racism and sexism that exists is ideological and requires stronger action, than simple reliance on economic rationality and sampling.

Inflation

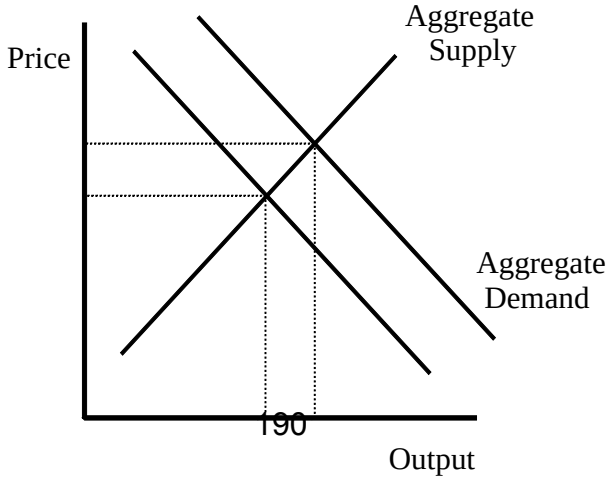
The news media reports inflation, generally, as increases in the CPI. This is not technically accurate. **Inflation is defined as a general increase in all prices (the price level).** The CPI does not purport to measure all prices, wholesale prices and producer prices are not included in the consumer data. The closest we have to a measure of inflation is the GNP deflator that measures prices for the broadest range of goods and services, but even this broader index is not a perfect measure, but its all we have and some information (particularly when we know the short-comings) is better than perfect ignorance.

One of the more interesting bits of trivia concerning inflation is something called the **Rule of 70.** The rule of 70 gives a short-hand method of determining how long it takes for the price level to double at current inflation rates. It states that the number of years for the price level to double is equal to seventy divided by the annual rate of increase (i.e., 70/%annual rate of increase(expressed as a whole number)). For example, with ten percent inflation, the price level will double every seven years (70/10 = 7).

There are three theories of inflation that arise from the real conduct of the macroeconomy. These three theories are demand-pull, cost-push, and pure inflation. There is a fourth theory that suggests that inflation has little or nothing to do with the real output of the economy, this is called the quantity theory of money. Each of these theories will be reviewed in the remaining sections of this chapter.

Demand - Pull Inflation

Using a naive aggregate supply/aggregate demand model, we can illustrate the theory of demand-pull inflation. The following chapter will develop a more sophisticated aggregate supply/aggregate demand model, but for present purposes the naive model will suffice. The naive model has a linear supply curve and a linear demand curve, much the same as the competitive industry model developed in E201. However, the price variable here is not the price of a commodity, it is the price level (the CPI for want of a better measure) and the quantity here is the total output of the economy, not some number of widgets.

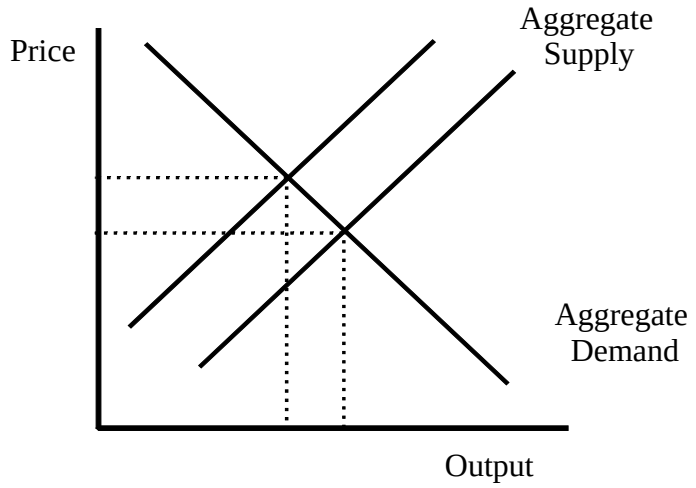


Using a naive aggregate demand\ aggregate supply model, as the aggregate demand shifts to the right or increases, all prices increase. This increase in all prices is called inflation. However, this increase in aggregate-demand is also associated with an increase in total output. Total output is associated with employment (remember Okun's Law?). In other words, even though this increase in aggregate demand causes inflation, it does not result in lost output, hence unemployment. Policy measures designed to control demand-pull inflation, will shift the aggregate demand curve to the left, (i.e., reduce aggregate demand) and this reduction in aggregate demand is associated with loss of output, hence increased unemployment.

Cost - Push Inflation

Again using a naive aggregate supply/aggregate demand approach, cost-push inflation results from particular changes in the real activity in the macroeconomy. In this case, a decrease in the aggregate supply curve.

The following diagram shows a shift to the left or decrease in aggregate supply curve.



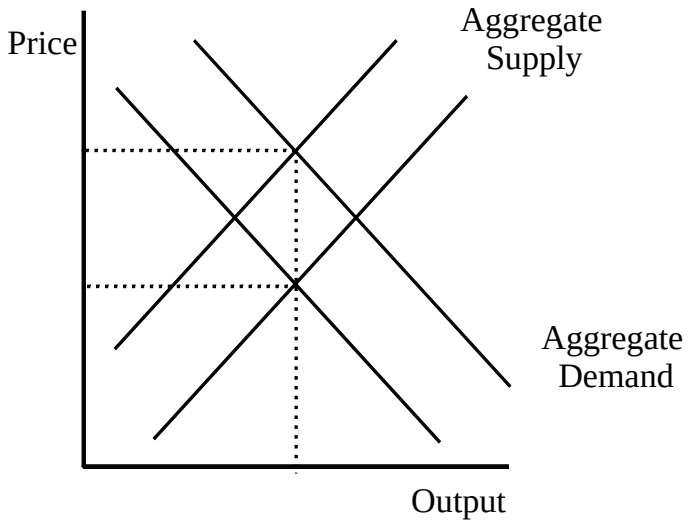
The OPEC Oil embargo may present the best case for cost-push inflation. As oil prices doubled and then tripled, the costs of production that were comprised at least in part from oil also dramatically increased. Therefore, the dramatic increase in the price of oil shifted the aggregate supply curve to the left (a decrease) , resulting in cost-push inflation.

The general case is, as the price of any productive input increases, the aggregate supply curve will shift to the left. This decrease in aggregate supply also results in reduced output, hence unemployment. This is consistent with the economic experience of the early 1980s during the Reagan Administration when the economy experienced high rates of both inflation and unemployment.

Pure Inflation

Pure inflation results from an increase in aggregate demand and a simultaneous decrease in aggregate supply. For output to remain unaffected by these shift in aggregate demand and aggregate supply, then the increase in aggregate demand must be exactly offset by an equal decrease in aggregate supply.

The following aggregate supply/aggregate demand diagram illustrates the theory of pure inflation:



Notice in this diagram, that aggregate supply shifted to the left, or decreased by exactly the same amount that the aggregate demand curve shifted to the right or increased. The result is that output remains exactly the same, but the price level increased. Intuitively, this makes sense, with the loss of aggregate supply we would expect an increase in prices, and with an increase in aggregate demand we would also expect an increase in prices. As aggregate supply and aggregate demand move in opposite directions, it is not perfectly clear what happens to output. In this case, with equal changes in aggregate demand and supply output should remain exactly the same.

Quantity Theory of Money

The Monetarist School of economic thought points to another possible explanation for inflation. These economists do not reject the idea that inflationary pressures can occur because of an oil embargo or increases in consumer demand. However, these economists argue that inflation cannot occur simply as a result of these events. They are quick to point out that a change in a single price in the price index market basket can give the appearances of inflation, when all that happened was a change in the relative price of one commodity with respect to all others.

More of this theory will be discussed in the final weeks of the semester, however, one point is necessary here. Inflation, in the monetarist view, can only occur if the money supply is increased which permits all prices to increase. If the money supply is not increased there can be changes in relative prices, for example, oil prices can go up, but there has to be offsetting decreases in the prices of other commodities. An increase in all prices or in the price of a particular good, therefore, is a failure of the Fed to appropriately manage the money supply.

Effects of Inflation

The effects of inflation impact different people in different ways. Creditors and those living on a fixed income will generally suffer. However, debtors and those whose incomes can be adjusted to reflect the higher prices will not, and perhaps this group may even benefit from higher rates of inflation.

If inflation is fully anticipated and people can adjust their nominal income or their purchasing behavior to account for inflation then there will likely be no adverse effects, however, if people cannot adjust their nominal income or consumption patterns people will likely experience adverse effects. This is the same as if people experience unanticipated inflation. Normally, if you cannot adjust income, are a creditor with a fixed rate of interest or are living on a fixed income you will pay higher prices. The result is that those individuals will see their standard of living eroded by inflation.

Debtors, whose loans specify a fixed rate of interest, typically benefit from inflation because they can pay loans-off in the future with money that is worth less. It is this paying of loans with money that purchases less that harms creditors. It should come as no surprise that the double digit inflation of fifteen years ago caused subsequent loan contracts to often specify variable interest rates to protect creditors from the erosive effects of unanticipated inflation.

Savers may also find themselves in the same position as creditors. If savings are placed in long-term savings certificates that have a fixed rate of interest, inflation can erode the earnings on those savings substantially. Savers that anticipate inflation will seek assets that vary with the price level, rather than risk the loss associated with inflation.

Inflation will effect savings behavior in another way. If a person fully anticipates inflation, rather than to save money now, consumers may acquire significant debt at fixed interest rates to take advantage of the potential inflationary leverage caused by fixed rates. Rather than to save now, consumers spend now. Therefore, inflation typically creates expectations among people of increasing prices, and if people increase their purchases aggregate demand will increase. An increase in aggregate demand will cause demand-pull inflation. Therefore, inflationary expectations can create a spiraling of increased aggregate-demand and inflationary expectations that can feed off one another. At the other extreme, recessionary expectations may cause people to save,

that results in reduced aggregate demand, and another spiral effect can result (but downwards).

To account for expectations in a less harsh way in economic behavior, the theory of rational or adaptive expectations has been formulated. It is more likely that people will not take extreme views of economic problems. People will anticipate and react to relatively "sure things" and generally in the near term and wait to see what happens. As economic conditions change, consumers and producers change their expectations to account for these changes; in another words, they adapt their expectations to current and near term information about future economic events.

The adaptive expectations model is supported by a substantial amount of economic evidence. It appears that the overwhelming majority of the players in the macroeconomy are adaptive in their expectations.

Unemployment Differentials

David A. Dilts, Mike Rubison, Bob Paul, “Unemployment: which person's burden - man or woman, black or white?" *Ethnic and Racial Studies.* Vol. 12, No. 1 (January 1989) pp. 100-114.

. . . The race and sex of the work force are significant determinants of the relative burdens of unemployment. Blacks are experiencing a decreasing burden of unemployment over the period examined while white females exhibit a positive time trend (increasing unemployment over the period). The dispersion of unemployment for blacks varies directly with the business cycle, which suggests greater labor force participation sensitivity by this group. . . . The dispersions of white female unemployment vary countercyclically with the business cycle, which is consistent with the inherited wisdom concerning unemployment and macroeconomics.

. . . These results, together with the unemployment equation results, indicate that the unemployment rate for white males is not sensitive to the fluctuations in the business cycle nor do these data exhibit any significant time trend. These are rather startling results. This evidence suggests that while males bear substantially the same relative unemployment rates over all ranges of the business cycle. . . .

Chapter 7

Classical and Keynesian Models

Introduction

The Classical theory of employment (macroeconomics) traces its origins to the nineteenth century and to such economists as John Stuart Mill and David Ricardo. The Classical theory dominated modern economic thought until the middle of the Great Depression when its predictions simply were at odds with reality. However, the work of the classical school laid the foundations for current economic theory and a great intellectual debt is owed to these economists.

During the beginnings of the 1930s economists in both Europe and the United States recognized that current theory was inadequate to explain how a depression of such magnitude and duration could occur. After all, the miracle of free market capitalism was suppose to always result in a return to prosperity after short periods of correction (recession). For a long term disequilibrium to be observed was both disconcerting and fascinating. It became very obvious by 1935 that the market mechanisms were not going to self-adjust and bring the economy out of a very deep depression.

John Maynard Keynes, an English mathematician and economist, is the father of modern macroeconomics. His book, *The General Theory*, (1936) was to change how economists would examine macroeconomic activity for the next six decades (until present). Keynes' work laid aside the notion that a free enterprise market system can self-correct. He also provided the paradigm that explained how recessions can spiral downwards into depression without active government intervention to correct the observed deficiencies in aggregate demand. Some of Keynes' ideas were original, however, he borrowed heavily from the Swedish School, in particular, Gunar Myrdal, in his explanations of the fact that there is no viable mechanism in our system of markets that provide for correction of recessionary spirals.

Many economists, on both sides of the Atlantic, were working on the problem of why the classical theory had failed so miserably in explaining the prolonged, deep downturn and in offering policy prescriptions to cure the Great Depression. In some ways it resembled an intellectual scavenger hunt. As soon as Keynes had worked out the theory, he literally rushed to print before someone beat him to the punch, so to speak. The result is that *The General Theory* is not particularly well written and has been subject to criticism for the rushed writing, however, its contributions to understanding the operation of the macroeconomy are unmistakable.

The Classical Theory

The classical theory of employment (macroeconomics) rests upon two fundamental principles, these are: (1) underspending is unlikely to occur, and (2) if underspending should occur, the wage-price flexibility of free markets will prevent recession by adjusting output upwards as wages and prices declined.

What is meant by underspending is that private expenditures will be insufficient to support the current level of output. The classicists believed that spending in amounts less than sufficient to purchase the full employment level of output is not likely. They also believed that even if underspending should occur, then price/wage flexibility will prevent output declines because prices and wages would adjust to keep the economy at the full employment level of output.

The classicists based their faith in the market system on a simple proposition called Say's Law. **Say's Law** in its crudest form states that "Supply creates its own demand." In other words, every level of output creates enough income to purchase exactly what was produced. However, as sensible as this proposition may seem there is a serious problem. There are leakages from the system. The most glaring omission in Say's Law, is that it does not account for savings. Savings give rise to gross private domestic investment and the interest rates are what links savings and investment. However, there is no assurance that savings and investment must always be in equilibrium. In fact, people save for far different reasons that investors' purchase capital.

Further, the classicists believed that both wages and prices were flexible. In other words, as the economy entered a recession both wages and prices would decline to bring output back up to pre-recession levels. However, there is empirical evidence that demonstrates that producers will cut-back on production rather than to lower prices, and that factor prices rarely decline in the face of recession. The classicists believed that a laissez faire economy would result in macroeconomic equilibria through the unfettered operation of the market system and that only the government could cause disequilibria in the macroeconomy.

One need only look to the automobile industry of the last ten years to understand that wage - price flexibility does not exist. Automobile producers have not lowered prices in decades. When excess inventories accumulate, the car dealers will offer rebates or inexpensive financing, but they have yet to offer price reductions. There has been some concession bargaining by the unions in this industry, but even where wages were held down, it is rare that a union accepts a nominal wage cut.

Modern neo-classical macroeconomics takes far less rigid views. Even though the neo-classicists have come to realize that the market system has its imperfections, they believe that government should be the economic stabilizer of last resort. Further, even though there is now recognition that the lauded wage-price flexibility is unlikely, by itself, to be able to correct major downturns in economic activity, the neo-classicists

stubbornly hold to the view that government must stay out of the economic stabilization business. The one exception they seem to allow, is the possibility of a major external shock to the system, otherwise they claim there is sufficient flexibility to prevent major depressions, with only very limited government responses (primarily through monetary, rather than fiscal policy). In other words, the differences between the Keynesians and the neo-classicists are very subtle (magnitude of government involvement) and focus primarily on the starting point of the analysis (Keynes with recession, neo-classicist with equilibrium).

Keynesian Model

Keynes recognized that full employment is not guaranteed, because interest motivates both households and businesses differently - just because households save does not guarantee businesses will invest. In other words, there is no guarantee that leakages will result in investment injections back into the system. Further, Keynes was unwilling to assume that self-interest in a market system guaranteed that there would be wage-price flexibility. In fact, the empirical evidence suggested that wages and prices exhibited a substantial amount of downward rigidity.

Under the Keynesian assumptions there is no magic in the market system. The mechanisms that the classicist thought would guarantee adjustments back toward full employment-equilibrium simply did not exist. Therefore, Keynes believed that government had to be pro-active in assuring that underspending did not spiral the economy into depression once a recession began.

Keynes' views were revolutionary for their time. However, it must be remembered that the Great Depression was an economic downturn unlike anything experienced during our lifetimes. Parents and grandparents, no doubt, have related some of the traumatic experiences they may have endured during the Depression to their children and grandchildren (perhaps you have heard some of these stories). However, such economic devastation is something that is nearly impossible to imagine unless one has lived through it. One-quarter of the labor force was unemployed at points during the Depression. The U.S. economy had almost no social safety net, no unemployment compensation, little in the way of welfare programs, no social security, no collective bargaining, and very small government. Our generations have gotten used to the idea that there is something between us and absolute poverty, there are programs to provide income during times of unemployment, generally for a sufficient period to find alternative employment. Even though these programs may have a personal significance, they were intended to prevent future demand-deficiency depressions.

The array of entitlement programs, particularly unemployment, welfare, and social security provides an automatic method to keep spending from spiraling into depression. Once recessionary pressures begin to build in the economy, the loss of employment does not eliminate a household's consumption as soon as savings are depleted. Unemployment compensation and then welfare will keep the lights on (and I

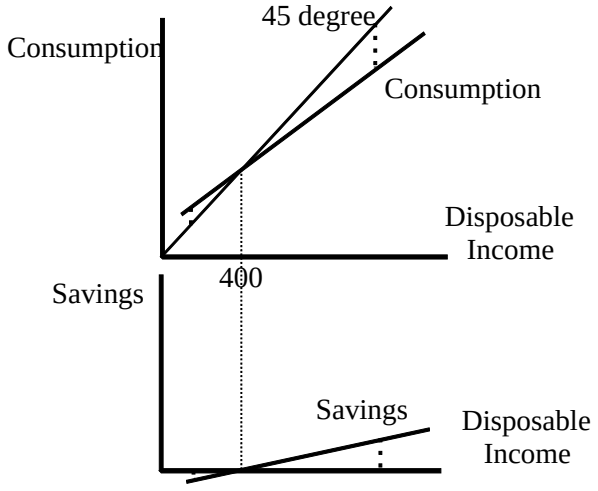
& M employees working), food on the table (to the relief of those working at Kroger's and Scotts), and clothes on the back of the those in need (keeping people working at Walmart through Hudson's). Further, the government has been proactive in stabilization of economic downturns since the beginning of World War II. Thereby providing us with the expectation that something will be done to get things back in order as soon as possible once a recession starts.

The government's ability to tax and to engage in deficit spending provides the flexibility in the market system to deal with underspending that was only presumed to exist by deflating the economy. Without the automatic stabilizers and the government flexibility to deal with serious underspending the economy could theoretically produce the same results that it did in the 1930s.

Aggregate supply and aggregate demand can now be expanded to include the savings and investment in the analysis to make for a more complete model. In so doing, we can also create a more powerful analytical tool.

The Consumption Schedule

In beginning the development of the Keynesian Cross model, we return to aggregate supply and aggregate demand. Along the vertical axis we are going to measure expenditures (consumption, government, or investment). Along the horizontal axis we are going to measure income (disposable income). At the intersection of these two axes (the origin) we have a forty-five degree line that extends upward and to the right. What this forty-five degree line illustrates is every point where expenditures and income are equal.

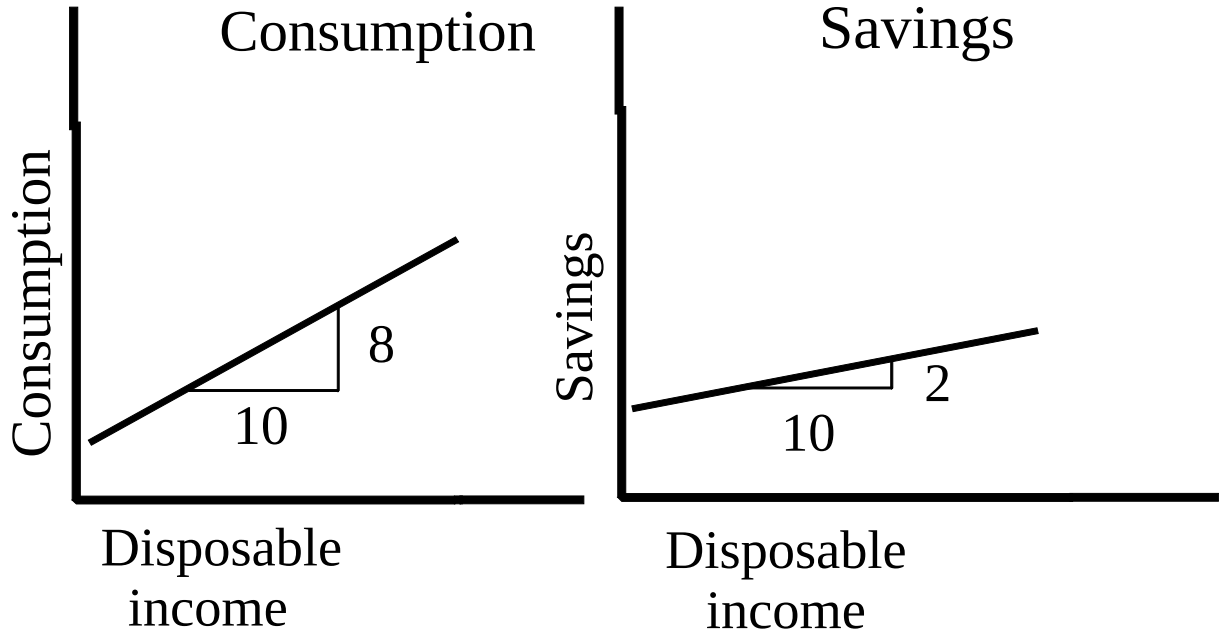


The consumption schedule intersects the 45 degree line at 400 in disposable income, this is also where the savings function intersects zero (in the graph below the consumption function). At this point, (400) all disposable income is consumed and nothing is saved. To the left of the intersection of the consumption function with the 45 degree line, the consumption function lies above the 45 degree line. The distance

between the 45 degree line and the consumption schedule is dissavings, shown in the savings schedule graph by the savings function falling below zero. Dissavings means people are spending out their savings or are borrowing (negative savings). To the right of the intersection of the consumption function with the 45 degree line, the consumption schedule is below the 45 degree line. The distance that the consumption function is below the 45 degree line is called savings, shown in the bottom graph by the savings function rising above zero.

This analysis shows how savings is a leakage from the system. Perhaps more importantly the analysis also shows that there is a predictable relation between consumption and savings. What is not consumed is saved, and vice versa. However, there is more to this than savings plus consumption must equal income.

The Marginal Propensity to Consume (MPC) is the proportion of any increase in disposable income that is spent on consumption (if an entire increase in income is spent MPC is 1, if none is spent then MPC is zero). The Marginal Propensity to Save (MPS) is the proportion of any increase in disposable income that is saved. The relation between MPC and MPS is that MPS + MPC =1, in other words, any change in income will be either consumed or saved. This relation is demonstrated graphically in the following diagram:



The slope (rise divided by the run) of the consumption function is the MPC and the slope of the savings function is the MPS. The slope of the consumption function is .8 or (8/10) and the slope of the savings function .2 or (2/10). Total change in income will be either spent or saved. If ten dollars of additional income is obtained then $2 ($10 times .2) will be saved and $8 ($10 times .8) will be spent on consumption.

The marginal propensities to save and to consume deal with changes in one's income. However, average propensities to consume or save deal with what happens to total income. The Average Propensity to Consume (APC) is total consumption divided by total income, Average Propensity to Save (APS) is total savings divided by total income. Again, (just like the marginal propensities) if income can be either saved or consumed (and nothing else) then the following relation holds, the average propensity to consume plus the average propensity to save must equal one (APC + APS = 1). For example, if total income is $1000 and the average propensity to consume is .95 and the average propensity to save is .05, then the economy will experience $950 is consumption (.95 times $1000) and $50 in savings ($1000 times .05).

The non-income determinants of consumption and saving cause the consumption and savings functions to shift. The non-income determinants of consumption and saving are: (1) wealth, (2) prices, (3) expectations concerning future prices, incomes and availability of commodities, (4) consumer debts, and (5) taxes.

In general, it has been empirically observed that the greater the amount of wealth possessed by a household the more of their current income will be spent on consumption, ceteris paribus. All other things equal, the more wealth possessed by a household the less their incentive to accumulate more. Conversely, the less wealth possessed by a household the greater the incentive to save. An Italian economist, Franco Modigliani, observed that this general rule varied somewhat by the stage in life a person was in. The young (twenties) tend to save for homes and children, in the late twenties through the forties, savings were less evident as children were raised, and with the empty nest, came savings for retirement. This is called the Life Cycle Hypothesis.

An increase in the price level has the effect of causing the consumption function to shift downward. As prices increase, the real balances effect (from the previous chapter) becomes a binding constraint. As the value of wealth decreases, so too does the command over goods and services, so consumption must fall (and savings increase). If the price level decreases, then we would expect consumption to increase (and savings to fall).

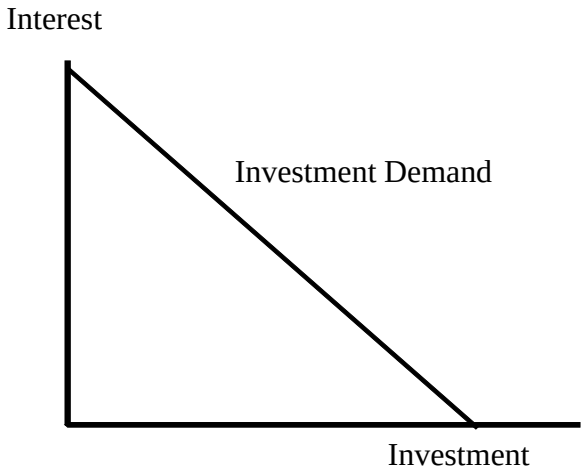
The expectations of households concerning future prices, incomes and availability of commodities will also impact consumption and savings. As households expect price to increase, real incomes to decline or commodities to be less available, current consumption will increase (and current savings decline). If, on the other hand, households expect incomes to increase, prices to fall, or commodities to become more generally available, current consumption will decline (and savings will increase).

Consumer indebtedness will also effect consumption and savings. If consumers are heavily indebted, save a third of their income goes on debt maintenance then current consumption will decline to pay off debts (dis-savings). However, if indebtedness is relatively low, consumers will consume more of their current income, perhaps even engage in dis-savings (borrowing) to consume more currently.

Taxation operates on both the savings and consumption schedules in the same way. Because taxes are generally paid partly from savings and partly from current income, an increase in taxes will cause both consumption and savings to decline. On the other hand, if taxes are decreased, then both the savings and consumption functions will increase (shift upwards).

Investment

Investment demand is a function of the interest rate. The following diagram shows an investment demand curve. The investment demand curve is downward sloping, which suggests that as the interest rate increases investment decreases. The reason for this is relatively simple. If the expected net return on an investment is six percent, it is not profitable to invest when the interest is equal to or more than six percent. A firm must be able to borrow the money to purchase capital at an interest rate that is less than the expected net rate of return for the investment project to be undertaken Therefore, there is an inverse relation between expected return and the interest rate; and the interaction of the interest rate with the expected rate of return determine the amount of investment.



The determinants of investment demand are those things that will cause the investment demand curve to shift. The determinants of investment demand are: (1) acquisition, maintenance & operating costs of capital, (2) business taxes, (3) technology, (4) stock of capital on hand, and (5) expectations concerning profits in future.

The investment demand depends on whether the expected net rate of return is higher than the interest rate. Therefore, anything that increases the expected net return will shift the investment demand curve to the right, anything that cause the expected return to fall will shift the investment demand curve to the left (decrease). As the acquisition, maintenance and operating costs of capital increase, the net expected return will decrease, ceterus paribus, thereby shifting the demand curve to the left. If the acquisition, maintenance and operating costs decline, we would expected a higher

rate of return on this investment and therefore the demand curve shifts to the right (increase).

Business taxes are a cost of operation. If business taxes increase, the expected net (after tax) return will decline, this shifts the investment demand curve to the left. If business taxes decrease, the expected net return on the investment will increase, thereby increasing the investment demand curve.

Changes in technology will also shift the investment demand curve. More efficient technology will generally increase expected net returns and shift the investment demand to the right (increase). By decreasing production costs or improving product quality through technological improvements competitive advantages may be reaped and this is one of the most important determinants of investment since World War II.

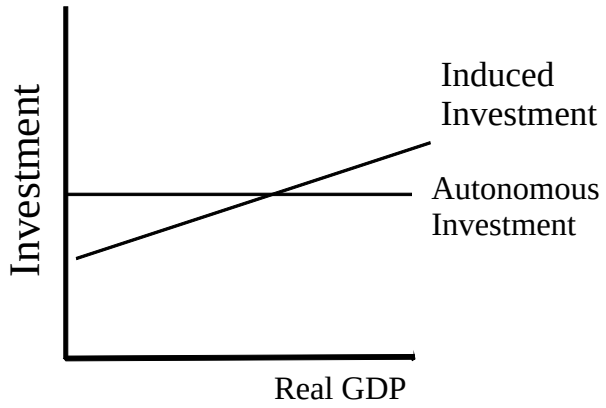
The stock of capital goods on hand will also impact investment demand. To the extent that producers have a large stock of capital goods on hand, investment demand will be dampened. On the other hand, if producers have little or no inventory of capital goods, then investment demand may increase to restore depleted stocks of capital.

Business investment decisions are heavily influenced by expectations. Expectations concerning the productive life of capital, its projected obsolescence, expectations concerning sales and profits in the future will also impact investment decisions. For example, expectations that technological breakthroughs may make current computer equipment less competitive may dampen current investment demand. Further, if competitors are tooling-up to enter your industry, you may be hesitant to invest in more capital if the profits margins will be cut by the entrance of competitors.

Autonomous v. Induced Investment

Autonomous investment is that investment that occurs which is not related to the level Gross Domestic Product. Investment that is based on population growth, expected technological progress, changes in the tax structure or legal environment, or on fads is generally not a function of the level of total output of the economy and is called autonomous investment. In examining the following diagram, the autonomous investment function is a horizontal line that intercepts the investment axis at the level of autonomous investment.

Induced investment is functionally related to the level of Gross Domestic Product. The following diagram has an investment function that slopes upward (increases as GDP increases). Induced investment is that investment that is "induced" because of increased business activity. In short, induced investment means that investment that is caused by increased levels of GDP.



Throughout American economic history the level investment has been very volatile. In fact, much of the variation in the business cycle can be attributed to the instability of investment in the United States. There are several reasons for this instability, including: (1) variations in the durability of capital, (2) irregularity of innovation, (3) variability of profits, and (4) the expectations of investors.

The durability of most capital goods means that they have an expected productive life of at least several years, if not decades. Because of the durability and expense of capital goods, their purchase can be easily postponed. For example, a bank may re-decorate and patch-up an old building, rather than build a new building, depending on their business expectations and current financial position.

Perhaps the most important contributors to the instability of investment in the post- World War II period is the irregularity of innovations. With the increase in basic knowledge, comes the ability to develop new products and production processes. During World War II there was heavy public investment in basic research in medicine and the pure sciences. What was intended from these public expenditures was for military use, but many of these discoveries had important civilian implications for new products and better production methods. Again, in the late 1950s and early 1960s an explosion of basic research occur that led to commercial advantages. The Russians launched Sputnik and gave the Western World a wake-up call that they were behind in some important technical areas, the government again spent money on education and basic research.

For the private sector to invest there must be some expectation of profits flowing from that investment. Much of the decline in private investment during the Great Depression was because private investors did not expect to be able to make a profit in the economic environment of the time. In the late 1940s, automobile producers knew that profits would be nearly guaranteed because no new private passenger cars were built in the war years. There was very significant investment in plant and equipment in the auto industry in those years (mostly to convert from war to peace-time production).

The expectations of business concerning profits, prices, technology, legal environment and most everything effecting their business are simply forecasts. Because the best informed forecasts are still guess-work, there is substantial variability in business conditions expectations. Because these expectations vary substantially across businesses and over time, there should be significant variability in investment decisions.

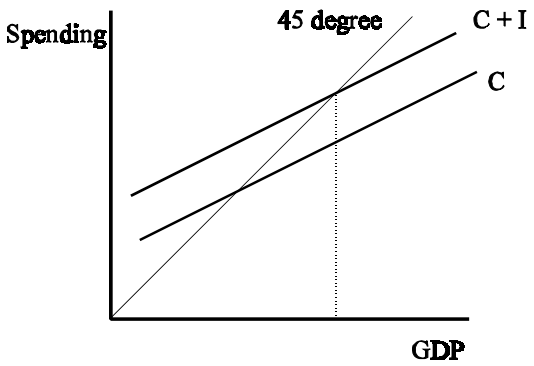
Equilibrium and Disequilibrium

Equilibrium GDP is that output that will create total spending just sufficient to buy that output (where aggregate expenditure schedule intersects 45 degree line). Further, once achieved, an equilibrium in a macroeconomy has no propensity to change, unless there is a shock to the system, or some variable changes to cause a disequilibrium. Disequilibrium where spending is insufficient (recessionary gap) or too high for level of output (inflationary gap).

The neo-classicists view the primary macroeconomic as one of maintaining equilibriums. Their analysis of the system begins with equilibrium, because unless there is some external intervening problem, they believe this is the state of nature for the macroeconomy. Keynesians, on the other hand, begin their analysis with disequilibrium because this is the natural state for a macroeconomy. The constant changes associated with policies, technological change, and autonomous influences will impact the economy periodically and cause it to move out of equilibrium. In fact, this is the major analytical difference between the neo-classical and Keynesian economists.

Keynes' Expenditures - Output Approach

From Chapter 2, remember that one of the ways that GDP can be calculated is using the identity Y = C + I + G + X ; where Y = GDP, C = Consumption, I = Investment, G= Government expenditures, and X = Net exports (exports minus imports). This provides for us the formula by which we can complete the model we began in the previous chapter. Consider the following diagram:



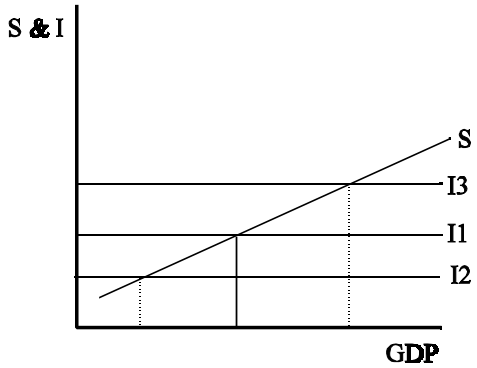
Remember that the 45 degree line is each point where spending is exactly equal to GDP. The above figure shows a simple economy with no public or foreign sectors. We begin the analysis by adding investment to consumption, and obtaining Y = C + I. The equilibrium level of GDP is indicated above where C + I is equal to the 45 degree line. Investment in this model is autonomous and the amount of investment is the vertical distance between the C and the C + I lines.

Keynes' Leakages - Injections Approach

The same result obtained in the expenditures - output approach above can be obtained using another method. Remember that APC + APS = 1, and MPC + MPS = 1, this suggests that leakages from the system are also predictable. The leakages - injections approach relies on the equality of investment and savings at equilibrium in a macroeconomic system (I = S).

The reason that the leakages - injection approach works is that planned investment must be equal savings. The amount of savings is what is available for gross private domestic investment. When investors use the available savings, the leakages (savings) from the system are injected back into the system through investment. However, this must be planned investment.

Unplanned investment is the cause of disequilibrium. Inventories can increase beyond that planned, and inventories are investment (stock of unsold output). When inventories accumulate there is output that is not purchased, hence reductions in spending which is recessionary; or, on the other hand, if intended inventories are depleted which this inflationary because of the excess spending in the system. Consider the following diagram, where savings is equal to I1, investment. If there is unplanned investment, the savings line is below the investment line, at the lowest level of GDP, the vertical line label UPI (Unplanned Investment), if inventories are depleted beyond the planned level, then the savings line is above I1, as illustrated with the highest level of GDP, and that vertical line is labeled Dep. Inv. for Depleted Inventory.



The original equilibrium is where I1 is equal to S. The if the unplanned inventory or unplanned depletion of inventory become planned investment the analysis changes. If we experience a decrease in planned investment we move down to I2, with a reduction in GDP (Recession), just like an increase in unplanned investment, and if an increase in investment is observed it will be observed at I3, which is expansionary, and this is similar to unplanned depletion of inventories (which could also be inflationary).

Re-spending

The interdependence of most developed economies, results in an observed re-spending effect if there is an injection of spending in the economy. This re-spending effect is called the multiplier, and we will provide a more detailed analysis of the multiplier effects in the following chapter, however, the re-spending effect represented by the multiplier will be introduced here to provide a full understanding of the model.

If there is an increase in expenditures, there will be a re-spending effect. In other words, if $10 is injected into the system, then it is income to someone. That first person will spend a portion of the income and save a portion. If MPC is .90 then the first individual will save $1 and spend $9.00. The second person receives $9.00 in income and will spend $8.10 and save $0.90. This process continues until there is no money left to be spent. Instead of summing all of the income, expenditures, and/or savings there is a short-hand method of determining the total effect -- this is called the Multiplier, which is 1/1-MPC or 1/MPS. The significance any increase in expenditures is that it will increase GDP by a multiple of the original increase in spending.

The re-spending effect and the leakage - injection approach to GDP provides for curious paradox. This paradox is called the paradox of thrift. To accumulate capital, it is often the policy of less developed countries to encourage savings, to reduce the country's dependence on international capital markets. **What often happens is that as a society tries to save more it may actually save the same amount, this is called the paradox of thrift.** The reason that savings may remain the same is that unless investment moves up as a result of the increased savings, all that happens is that GDP declines. The higher rate of savings with a smaller GDP results in the same amount of savings if GDP declines proportionally with the increase in savings rates. If investment is autonomous then there is no reason to believe that investment will increase simply because the savings rate increased. In fact, because of the re-spending effects of the leakages, generally savings will remain the same as before the rate went up.

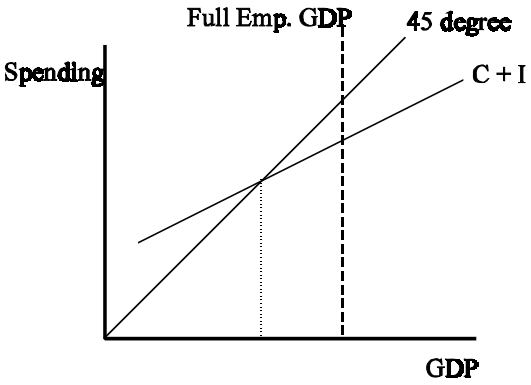
Full Employment

Simply because C + I + G intersects the 45 degree line does not assure utopia. The level of GDP associated with the intersection of the C + I + G line with the 45 degree line may be a disequilibrium level of GDP, and not the full employment level of GDP. The full employment level of GDP may be to the right or to the left of the

aggregate expenditures line. Where this occurs you have respectively, (1) a recessionary gap or (2) an inflationary gap. In either case, there is macroeconomic disequilibrium that will generally require appropriate corrective action (as will be described in detail in the following chapter on fiscal policy)

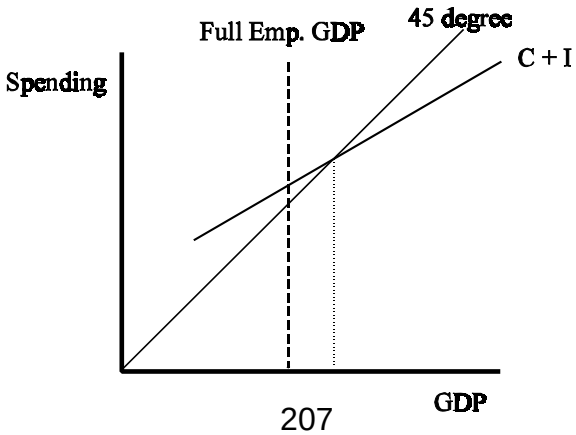
Both forms of disequilibrium can be illustrated using the expenditures - output approach. Consider the following two diagrams:

Recessionary Gap



In the above diagram the dashed line labeled Full Employment GDP. Is the level of GDP that is associated with potential GDP or full employment. The distance between the C + I line and the 45 degree line along the dashed indicator line is the recessionary gap. The dotted line shows the current macroeconomic equilibrium. Okun's Law (Chapter 3) provides some insight into what this means, remember that every 2.5% of lost potential GDP is associated with 1% unemployment above the full employment level. Therefore, this recession represents lost output and unemployment is fixed proportions of 1% to 2.5%.

Inflationary Gap



Again the full employment (non-inflationary) level of GDP is indicated by the dashed line labeled full employment GDP. The distance between the C + I line and the 45 degree line along the dashed indicator line is the inflationary gap. The dotted indicator line shows the current macroeconomic equilibrium. In this case, there is too much spending in the economy or some other (similar) problem that has resulted in an inflated price level. A reduction in GDP is necessary to restore price level stability, and to eliminate excess output.

These same problems can be shown, somewhat less elegantly, using the aggregate supply - aggregate demand model, but with the loss of as precise representation of the multiplier. The various C + I and 45 degree line intersections, if multiplied by the appropriate price level will yield one point on the aggregate demand curve. Shifts in aggregate demand can be shown with holding the price level constant and showing increases or decreases in C + I in the Keynesian Cross model. Both models can be used to analyze essentially the same macroeconomic events. However, from this point on will concentrate on our efforts on mastering the Keynesian Cross.

Discretionary Fiscal Policy

The Employment Act of 1946 formalized the federal government's responsibility for promoting economic stability. The economic history of the first half of the twentieth century was a relatively stormy series of financial panics prior to World War I, a relatively stagnant decade after World War I, and the Depression of the 1930s. After World War II, a new problem arose called inflation. It should therefore come as no surprise that the Congress wished to assure that there was a pro-active role for the government to smooth-out these swings in the business cycle.

The government has several roles to fulfill in society. Its fiscal powers are necessary to providing essential public goods. Without the federal government national defense, the judiciary, and several other critical functions could not be provided for society. There is also the ebb and flow of politics. The Great Society of Lyndon B. Johnson represents the public opinion of the 1960s, today's political agenda seems to be substantially different. The result is that as political opinion changes so will the government's pattern of taxation and expenditures.

The government's taxing and spending authority to stabilize the economy is called discretionary fiscal policy. Taxation and spending by the federal government has been used, with some frequency, to smooth out the business cycle. In times of underspending, the short-fall is made up by government spending or reductions in taxes. In times of inflation, cuts in spending or increases in taxes have been used to cool-off the economy. However, in recent year the discretionary fiscal policies of the federal government have become extremely controversial. The first step in understanding this controversy, is to understand the role of fiscal policy in economic stabilization.

Milton Friedman and others, have argued that there is no role for discretionary fiscal policy. Friedman's position is that much of the business cycle is the result of governmental interference and that the long lags in fiscal policy becoming operationalized makes it only a potential force for mischief, and not hope for stability. In other words, Friedman believes that the classical economists, while over simplifying the argument, were basically correct about keeping government out of the economy.

Simplifying Assumptions

Assumptions are abstractions from reality. The utility of these abstractions is to eliminate many of the complications that have the potential to confuse the analyses and to simplify the presentation of the concepts in which we are interested. It must be remembered that the assumptions underlying any model determine how good an approximation of reality that model is. In other words, a good model is one that is a close approximation of the real world.

To analyze the macroeconomy using the Keynesian Cross some simplifying assumptions are necessary. We will assume that all investment and net exports are determined by factors outside of GDP (exogenously determined), it is also assumed that government expenditures do initially impact private decisions and all taxes are lump-sum personal taxes (with some exogenous taxes collected, i.e., customs duties). It is also assumed that there are no monetary effects associated with fiscal policy, that the initial price level is fixed, and that any fiscal policy actions impact only demand side.

The Goals of Government Expenditures

The primary and general goal of discretionary fiscal policy is to stabilize the economy. Often other goals, involving public goods and services as well as political are included in the discretionary aspects of fiscal policy. However, for present purposes we are concerned only with government expenditures used to stabilize the economy (taxes will be examined elsewhere in this chapter).

To remedy a recession the government must spend an amount that will exactly make-up the short-fall in spending associated with that recession. The government can also mitigate inflation by reducing government expenditures. However, the amount of increased expenditures necessary to bring the economy back to full employment is subject to a multiplier effect (the same is true of decreases in government expenditures). Therefore, the government must have substantial information about the economy to make fiscal policy work effectively. To determine the proper value of the multiplier the fiscal policy makers must know either the Marginal Propensity to Save or to Consume. Further, the policy makers will need to know the current level of output and what potential GDP is, (potential GDP is that output associated with full employment). In a practical sense, in the near term the government may have reasonably accurate information upon which to base forecasts to conduct fiscal policy. For present purposes, we will assume the government has all the necessary information at hand to conduct fiscal policy.

The Simple Multiplier

When the government increases expenditures, the effect on the economy is more than the initial increase in government expenditures. In fact, this is also true of investment and consumption expenditures, not just government expenditures. When there is an increase in expenditures, through an increase in government expenditures, those expenditures become income for someone. They will save a portion of the expenditures and spend the rest, which then become income to someone else. The result of this chair-reaction re-spending is that there is a direct relation between the total amount of re-spending and the marginal propensity to save. This is the re-spending effect discussed in Chapter 6.

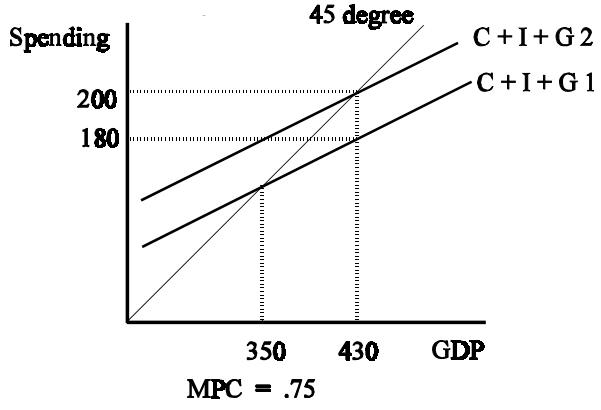
The multiplier is the reciprocal of the marginal propensity to save:

The multiplier = 1/MPS

Because MPS + MPC = 1, there is an equivalent expression: 1/MPS = 1/1-MPC. The multiplier is the short-cut method of determining the total impact of an increase or decrease in total spending in the economy. For example, if the government spends $10 more and the marginal propensity to consume is .5, then the multiplier is 2 and the total increase in spending resulting from the increase of $10 in government expenditures is $20.

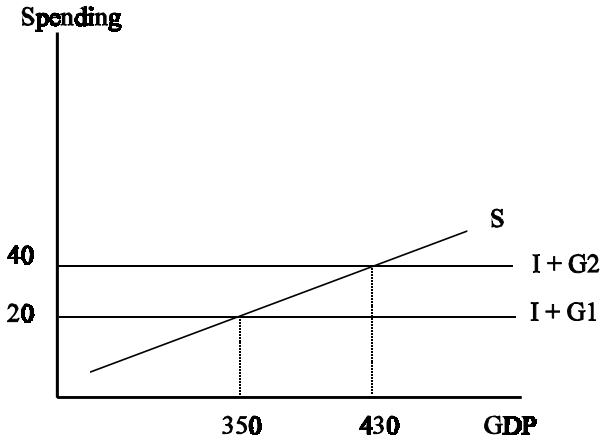
This is called the simple multiplier because the only leakage in the re-spending system is savings. In reality there are more leakages. People will use a portion of their income to buy foreign goods (imports), and will have to pay income taxes. These are also leakages and would be added to the denominator in the multiplier equation. The Council of Economic Advisors tracks the multiplier that contains each of these other leakages, called the complex multiplier. The complex multiplier has remained relatively stable over the past couple of decades is estimated to be about 2.0.

The following diagram presents a case of recession that will be eliminated by increasing government expenditures by just enough to eliminate the recession, but not to create inflation. Assuming that our current level of GDP is $350 billion and we know that full employment GDP is $430 we which to eliminate this recession using increases in government expenditures. We also know that MPC is .75 and therefore MPS is .25.



With an MPC of .75 we know the multiplier is 4 (1/.25). We also know that we must obtain another $80 billion in GDP to bring the economy to full employment. The distance between the forty-five degree line and the C+I=G1 line at $430 is $20 billion which is our recessionary gap in expenditures. Therefore to close this gap we must spend $20 billion and the multiplier effect turns this $20 billion increase in government expenditures into $80 billion more in GDP. Another way to calculate this is, that we are $80 billion short of full employment GDP, we know the multiplier is 4, so we divide $80 by the multiplier 4 and find the government must spend an additional $20 billion.

The leakages approach yields the same results.

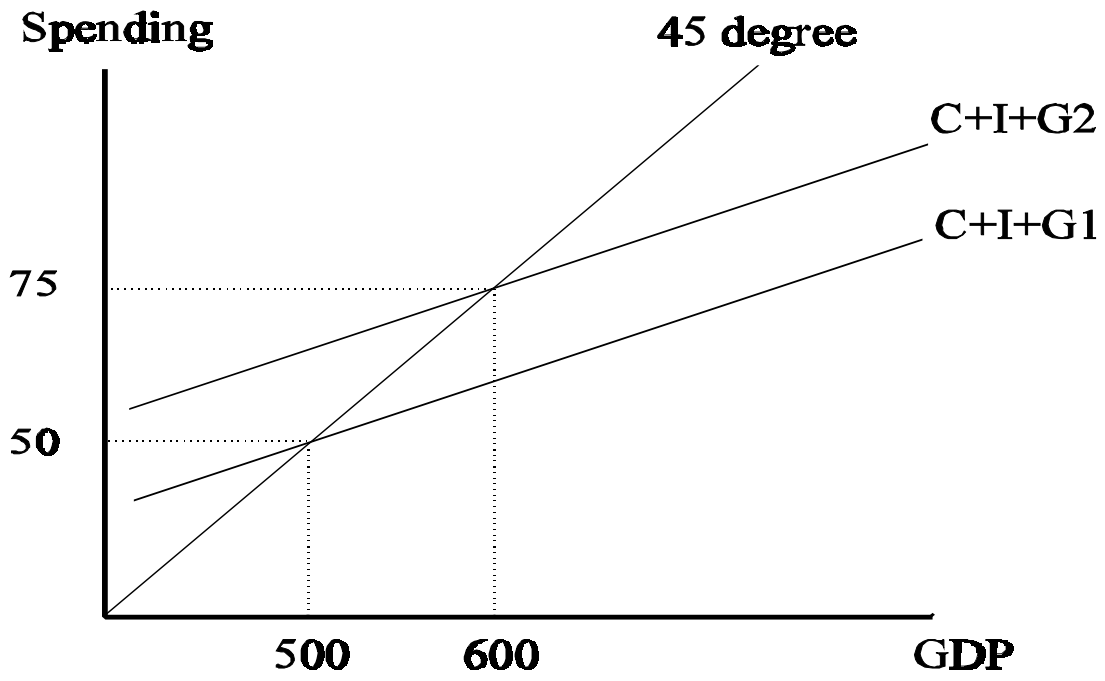


An increase in $20 of government expenditures moves the investment plus government expenditures line for I+G1 to I+G2 by a total of $20 billion dollars on the expenditures axis, but because of the re-spending effects, this increase results in $80 billion more in GDP, from $350 billion to $430 billion.

Taxation in Fiscal Policy

The government can close a recessionary gap by cutting taxes, just as effectively as it can by increasing government expenditures. Assuming that it is a lump-sum tax the government will use (lump-sum meaning it is the same amount of tax regardless of the level of GDP). The lump sum tax must be multiplied by the MPC to obtain the reduction in consumption, however, such taxes are also paid proportionately from savings. So the effect is not the same as is observed with government expenditures. The tax is multiplied by the MPC and then by the simple multiplier to obtain the total impact on GDP. In other words, the taxation multiplier is always the simple multiplier minus one or:

taxation multiplier = (1/MPS) - 1



If full employment GDP is $600 billion and we are presently at $500 billion with an MPC of .8, then if we are going to increase GDP by $100 billion we must cut taxes by $25 billion. The simple multiplier with an MPC of .8 is 1/.2 = 5; but the taxation multiplier is the simple multiplier minus one, hence 4. The decrease in taxation necessary to increase GDP by $100 billion is the $100 billion divided by 4 or $25 billion..

The major difference between increasing expenditures or decreasing taxes is that the multiplier effect for taxation is less. In other words, to get the same effect on GDP you must decrease taxes by more than you would have had to increase expenditures.

Balanced Budget Multiplier

An alternative policy is to increase taxes by exactly the amount you increase expenditures. This balanced budget approach can be used to expand the economy. Remember that the simple multiplier results in 1/MPS times the increase in expenditures, but the taxation multiplier is one less than the simple multiplier. In other words, if you increases taxes by the same amount as expenditures, GNP will increase by the amount of the initial increase in government expenditures. That is because only the initial expenditure increases GDP and the remaining multiplier effect is offset by taxation. Therefore, the balanced budget multiplier is always one.

For example, if full employment GDP is $700 billion, and we are presently at $650 billion, with an MPC of .75, then the simple multiplier is 4, (1/.25) and the taxation

multiplier is 3, [(1/.25)-1], therefore the government must spend $50 billion and increase taxes by $50 to increase GDP by $50.

Tax Structure

Taxation is always a controversial issue. Perhaps the most controversial of all tax issues concerns the structure of taxation. Tax structure refers to the burden of the tax. Progressive taxation is where the effective tax rate increases with ability to pay. Regressive taxation is where the effective tax rate increases as ability to pay decreases. A proportional tax structure is where a fixed proportion of ability to pay is taken in taxes.

In general consumption is more greatly effected by taxation when the tax is progressive, and savings are impacted more when the tax is regressive. Therefore, if the distribution of the tax across income groups will have a variable impact on the consumption and savings.

At present, the federal income tax structure is nearly proportional, most ad valorem taxes, tobacco etc., are regressive. State income tax structures also vary substantially. States like Kansas, California and New Jersey have mildly progressive income taxes. States like Indiana and South Carolina use gross income tax schemes that tend to be very regressive. Therefore, the current tax structures are not neutral with respect to their re-distributional effects across income groups. In total, the taxes collected across the federal, state and local level are at best proportional and are probably slightly regressive. Probably the most regressive of these taxes is the gasoline tax.

Automatic Stabilizers

During the New Deal period several social welfare programs were enacted. The purpose of these programs was to provide the economy with a system of automatic stabilizers to help smooth business cycles without further legislative action. Among these programs were:

(1) progressive income taxes,

(2) unemployment compensation, and

(3) government entitlement programs.

Since the end of the Carter administration these automatic stabilizers have become controversial. President Clinton moved in his first term in office to eliminate some of these programs, but it was really the Republican congress and Governors like Tommy Thompson in Wisconsin who eliminated much of then welfare programs. Since 2002 much of this “welfare reform” has also come under fire for not having produced the results that were advertised. In 2002 the movie “Bowling for Columbine” by Michael Moore, brought many of these issues to an international audience.

The idea behind a progressive income tax was basic fairness. Those with the greatest wealth and income have the greatest ability to pay and generally receive more from government. As recessions occur, it is that segment of the population with the greatest wealth that will have resources upon which to draw to pay taxes, the poor will generally be impacted the most by high level of unemployment and recessions generally leave them with very little ability to pay.

Unemployment compensation is paid for in every state of the union by a payroll tax. The payroll tax is generally less than one percent of the first $10,800 of payrolls. Most states also impose an experience rating premium, that is those companies that have laid people off in the last year will pay a higher rate based on their experience. The preponderance of this tax is paid during periods of expansion and is placed in a trust fund. Unemployment benefits are then paid from this trust fund as the economy enters a recession. The effect is that money is taken out of the system during expansion and injected during recession, which dampens the top of the cycle (peaks) and eases the bottom of the cycle (trough).

Most social welfare programs have essentially the same effect, except that the expansions tend not to be dampened as much because the funding comes from general budget authority rather than a payroll tax. The significant increases in the proportion of poor people during recessions, however, do not add as much to the downward spiral of underspending that would have otherwise been observed in the absence of these entitlement programs.

Problems with Fiscal Policy

There are several serious problems with fiscal policy as a method of stabilizing the macroeconomy. Among these problems are (1) fiscal lags, (2) politics, (3) the crowding-out effect, and (4) the foreign sector. Each of these will be addressed, in turn, in the following paragraphs.

Fiscal Lag

There are numerous lags involved with the implementation of fiscal policy. It is not uncommon for fiscal policy to take 2 or 3 years to have a noticeable effect, after Congress begins to enact corrective fiscal measures. These fiscal lags fall into three basic categories.

There is a recognition lag. The recognition lag is the amount of time for policy makers to realize there is an economic problem and begin to react. Administrative lags are how long it takes to have legislation enacted and implemented. Operational lags are how long it takes for the fiscal actions to effect economic activities.

Because of the typical two to three years for fiscal policy to have its intended effects, they may cause as many problems as they cure. For example, it is not

uncommon for the Congress to cut taxes because of a perceived recession that subsequently ends within months of the enactment of the legislation. When the effects of the fiscal policies actually effect the economy, it may be in a rapid expansion and the tax cut or increase in government expenditures add to inflationary problems.

Politics, Crowding-out, the Foreign Sector and Fiscal Policy

Often politics overwhelms sound economic reasoning in formulating fiscal policies. Public choice economists claim that politicians maximize their own utility by legislative action, and are little concerned with the utility of their constituents. Perhaps worse, is the fact that most bills involve log-rolling and negotiations. Special interest often receive benefits simply to because they pay many of the election costs, and the interests of these lobbyists may be inconsistent with the best interests of the nation as a whole. The end result is that politics confounds the formulation of policy designed to deal with technical ills in the economy.

The neo-classicist have long argued that government deficits (often associated with fiscal policy) results in increased interest rates that crowds-out private investment. there is little empirical evidence that demonstrates the exact magnitude of this crowding-out effect, but there is almost certainly some small element of this.

The neo-classicist also argue that there is another problem with government borrowing to fund deficit financing of fiscal policies. This problem is called Ricardian Equivalence. David Ricardo hypothesized that the deficit financing of government debt had the same effect on GDP as increased taxes. To the extent that capital markets are not open (foreign investors) the argument is plausible, however, in open economies there is little empirical evidence to support this view.

There are also problems that result from having an open economy. The most technical of these problems is the net export effect. An increase in the interest rate domestically (associated with a recession, or with an attempt to control inflation) will attract foreign capital, but this increases the demand for dollars which increases their value with respect to foreign currencies. As the value of the dollar increases it makes U.S. goods more expensive overseas and foreign goods less expensive domestically. This results in a reduction of net exports, hence a reduction in GDP.

There have also been shocks to the U.S. economy that have their origins outside of the United States and are difficult if not impossible to address with fiscal policy. The Arab Oil Embargo is a case in point. The United States and Holland supported the Israeli in their war with the Arabs in the early 1970s. The problem was we also had treaty obligations to some of the Arab states. Because of our support, the Arabs embargo oil shipments to the United States and Holland, which had the result of increasing domestic oil prices and decreased aggregate supply, hence, driving up the price level. This all occurred because of American Foreign Policy, but little could be done with fiscal policy to offset the problems for aggregate supply caused by the embargo.

Chapter 8

Money and Banking

In primitive, tribal societies the development and use of money occurs only after that society reaches a size and complexity where barter is no longer a viable method of transacting business. Barter, the trading of one good or service for another, requires a coincidence of wants. When one individual has something another wants, and vice verse, trade can be arranged be there is a coincidence of wants.

Larger, more complex social orders generally require the division of labor and specialization, which in turn, increases the number of per capita market transactions. When individuals live in a higher interdependent society, most necessities of life are obtained through market transactions. In a modern industrialized country it is not uncommon for an individual to make more than a dozen transactions per day. This volume of business makes barter nearly impossible. The result is that societies will develop money to facilitate the division of labor and specialization that provide for higher standards of living.

The purpose of this chapter is to introduce the reader to money and to the banking system. This chapter will provide the basic definitions essential to understanding our complex monetary and banking systems. The following chapters will extend the analyses to demonstrate how money is created and how the monetary system is used to stabilize the fluctuations in the business cycle.

Functions of Money

There are three functions of money, these are:

(1) a medium of exchange,

(2) a measure of value, and

(3) a store of value.

Each of these functions will be examined, in turn, in the following paragraphs.

Money serves as a medium of exchange. It is generally accepted as "legal tender" or something of general and specified value, such that, people have faith that they can accept it for payment, because they can use it in exchange without loss of value. Because barter requires a coincidence of wants, trade occurs only when two people have different commodities that the other is willing to accept in trade for their own wares. A barter economy makes exchange difficult, it may take several trades in the market before you could obtain the bread you want for the apples you have.

Money solves the barter problem. If you have apples and want bread, you simply sell the apples for money and exchange the money for bread. If barter persists it may take a dozen or more transactions to turn apples into bread. In other words, money is the grease that lubricates modern, sophisticated economic systems.

Money is also a measure of value. Without money as a standard by which to gauge worth, value would be set by actual trades. The value of a horse in eighteenth century Afghanistan could be stated in monetary units in the more modern areas of the country. However, the nomads that wandered the northern plains of that country could tell you in terms of goats, carpets, skins, and weapons what the range of values were for horses. However, there were as many prices of horses as there were combinations of goods and services that could be accepted in exchange for the animal. Money permits the value of each commodity to be stated in simple terms of a single and universally understood unit of value.

Money is also a store of value. Money can be saved with little risk, with virtually no chance of spoilage, and little or no cost. Money is far easier to store than are perishable foodstuffs, or bulky commodities such as coal, wool or flour. To store money (save) and later exchange it for commodities is far more convenient than having to store commodities for future use, or to have to continually go through barter exchanges.

Together, these functions vest in money a critical role in any complex modern economy. Our prices are stated in terms of money, our transactions are facilitated by money, and we can store the things we which to consume in the future by simply saving money. In fact, money may not make the world go 'round, but it certainly permits the economic world to go 'round much more smoothly.

The Supply of Money

The supply of money has a very interesting history in both U.S. economic history and world economic history. Several historians note that one of the contributing factors to the fall of the Roman Empire was that there was significant deflation in the third and fourth centuries. The reason for this was that money, in those days, was primarily coinage minted of gold, silver, and copper. As gold and silver was traded for commodities from the orient there was a flow of coinage out of the west. In addition, "barbarians" were constantly raiding Roman territory and it was the gold and silver that they carried back with them (for trade). Further, as the population grew at a faster rate than the availability of precious metals, the money supply fell relative to the need for it to make the economy function efficiently. This rapid deflation, added to a extremely maldistributed income, and loss of productive resources resulting in a rapidly declining economy after the second century A.D. The Roman economy collapsed, with the collapse of the economy the military and government were also doomed. Given the times, once the Roman government and military were ruined, it was short-work to eliminate the empire and social structure.

In 1792, the U.S. Congress enacted the first coinage act. The Congress authorized the striking of gold and silver coins. The Congress set the ratio of the value of gold to silver in the coinage at 15 units of silver equaled one unit of gold. The problem with this was that gold was worth more than silver as bullion than as coinage. This arbitrary setting of the coinage value of these metals resulted in the gold coins disappearing from circulation (being melted down as bullion) and only silver coins circulating. At the same time, most coinage that circulated in the eighteenth century western hemisphere (including the United States) was of Spanish origin. In fact, the standard unit adopted for U.S. coinage was the dollar, however, the Spanish minted coins that were also called dollars (from a Dutch word, tolar). The Spanish one dollar coins contained more silver, than did the U.S. dollar and the Spanish coins were being melted down and sold, at a profit, at the U.S. mint. Herein is the problem with using gold or silver as minted coins or as backing for currency. Money has value in exchange that is unrelated to the value of precious metals. Their relative values fluctuate and result in money disappearing if the value of the metal is more than the unit of currency in which the metal is contained.

One of the classical economists noted this volatility in the monetary history of most countries. As the value of the gold or silver made the currency worth more as bullion, that currency disappeared and was quickly replaced by monetary devices of lessor value. **Gresham's Law** is that money of lesser value will chase money of greater value out of the market.

A modern example of this is available from U.S. coinage. In 1964, the value of silver became nearly 4 times (and later that decade nearly 22 times) its worth in coinage. Therefore, the last general circulation coins that were minted in the United States that contained any silver was 1964. Today, the mint issues one dollar coins that contain one ounce of silver (rather than .67 ounces), but that silver is worth $5.30 per ounce as bullion. Therefore, you do not see actual silver dollars in circulation, and will not until the value of silver drops below $1.00 per ounce. This observation is Gresham's law in operation.

Since the American Civil War there have been various forms of money used in this country other than coinage. The government issued paper money, particularly after the Greenback Act of 1861 (there were numerous examples of U.S. paper money before that year, including bank notes, state notes, and colonial notes). The Greenback Act provided for the denominations of bills with which you are familiar, but it also provided for 5¢ 10¢, 25¢, and 50¢ bills (fractional currency).

Today, there are numerous definitions of money. The most commonly used monetary items are included in the M1 through M3 definitions of money; these definitions are: (1) M1 is currency + checkable deposits, (2) M2 is M1 + noncheckable savings account, time deposits of less $100,000, Money Market Deposit Accounts, and Money Market Mutual Funds, and (3) M3 is M2 + large time deposit (larger than $100,000). The largest component of the M1 money supply is checkable deposits

(checking accounts, credit union share drafts, etc.), currency is only the second largest component of M1.

Near Money

Near money are the items that fulfill portions of the requirements of the functions of money. Near money can be simply a store of value, such a stocks and bonds that can be easily converted to cash. Credit cards are often accepted in transactions, and the line of credit they represent can serve as a medium of exchange. Gold, silver, and precious stones have historically served as close substitutes for money because these commodities have inherent value and can generally be converted to cash in almost any area of the world. Much of the wealth smuggled out of Europe at the end of World War II by escaping Nazis was smuggled out in the form of gem stones, gold, and silver bullion.

The widespread use of near money is relatively rare in the world's economic history. However, in modern times, there is a potential for problems. Indiana's history presents an interesting example. The State of Indiana issued currency in the 1850s, in part to help finance the canals that were being built across the State. In 1855 and 1856, the railroads put the canals out of business, even before they were completed, virtually bankrupting the State, hence the 1857 Constitution, rather the year Indiana entered the Union. State currency or even private bank currency is not controlled by a central bank and is worth only what faith people have in it or the intrinsic value of the monetary unit. If the full faith and credit of a bankrupt State or bank is all that backs the currency, it is worthless.

What Gives Money Value?

The value of the U.S. dollar (or any other currency) can be expressed as the simple reciprocal of the price level:

$$D = 1/P$$

Where D is the value of the dollar and P is the price level. In other words, the value of the dollar is no more or less than what it will buy in the various markets. This is true of any currency (money in general). However, there are reasons why money has value. The value of money is determined by three factors, these factors are: (1) its general acceptability for payment, (2) because the government claims it is legal tender (hence must be accepted for payment), and (3) its relative scarcity (as a commodity).

Money can be used to buy goods and services because people have faith in its general acceptability. It is not that the coin or paper has intrinsic value that makes money of value in exchange, it is simply because people know that they can accept it in payment and immediately exchange it for like value in other commodities, because virtually everyone trusts its value in exchange.

Money also has value in international currency markets, not just domestic ones. The international currency markets provide a very good example of why trust provides money with value. The world's currencies are generally divided into two categories, hard currency and soft currency. A hard currency is one that can be exchanged for commodities in any nation in the world. A soft currency is one whose value is generally limited to nation that issued it, and often to some limited extent in the world currency markets (often with significant limitations or even discounts). The U.S. dollar, French franc, German deutsche mark, Canadian dollar, Japanese Yen, British pound, and Italian lire are recognized as hard currencies (generally the Swiss franc is also included in the hard currencies). These seven nations are the G-7 nations and are the world's creditor nations. The reason that these countries are the creditor nations is that they are the largest free market economies, have democratic and stable governments, and long histories of rather stable financial markets. These nations' currencies are termed "hard" currencies because they are relatively stable in value and can be readily exchanged for the goods and services of these largest most advanced economies. In other words, the economic systems and governments that generate these currencies are the markets from which everyone else imports a wide array of necessary commodities.

On the other hand, the Mexican peso, Kenyan dollar, and Greek drachma (among 165 others) are currencies of less developed nations that have very little of value, relative to any of the G-7 nations in the world's markets, do not have histories of stable financial markets, governments, and they are typically in debt to the G-7 nations. Because of their limited value in exchange, and rather volatile value these currencies are called "soft" currencies. The difference between a hard and a soft currency is trust in its present and future value in exchange for commodities. Hard currencies are generally trusted, hence accepted, soft currencies are not.

There is also an element of legality in the value of money. For example, the United States is a large, economically powerful country. Its government is also a large, powerful government that has always paid its bills. People have faith and trust in the U.S. government making good on its financial obligations, therefore people have taken notice when the United States government says that Federal Reserve Notes are legal tender.

Also contributing to the value of money is its scarcity. Because money is a scarce and useful commodity it also has value the same as any other commodity. It is interesting to note that the U.S. $100 bill is the most widely circulated currency outside of the United States, and more of these bills circulate outside of the U.S. than within the U.S. This suggests something of the commodity value of U.S. dollars, as well as the general international trust in the U.S. dollar.

By spring 1971, the exchange rate problems had become acute. This was true for Japan and especially for West Germany, who had large trade surpluses with the United States and held more dollars than they wanted. Under these conditions, the U.S. dollar was rapidly losing value against the German deutsche mark. From January to April of 1971, in keeping with the Bretton Woods agreements, the German Bundesbank had to acquire more than $5 billion of international reserves in order to defend the value of the dollar. To protect the value of the dollar and its exchange rate with the German mark, however, the German central bank was losing control over its domestic monetary policy. By May 5, 1971, the Bundesbank abandoned its efforts to protect the dollar and permitted the deutsche mark to seek its own value in the world's currency markets. The scenario was the same for all countries that had trade surpluses with the United States. The excess supply of dollars was causing those countries to lose control over their money supplies. Given that the United States was rapidly losing its gold reserves, on August 155, 1971, by Richard Nixon's order, it was announced that the United States officially abandoned the Bretton Woods system and refused to exchange gold for U.S. dollars held by foreigners. For the first time in modern monetary history, the U.S. dollar was permitted to seek its value in open markets. The move to a flexible exchange rate system where the exchange rates are determined by the basic market forces was the official demise of the Bretton Woods system.

Mashaalah Rahnama-Moghadam, Hedayeh Samavati, and David A. Dilts, *Doing Business in Less Developed Countries: Financial Opportunities and Risks.* Westport, Conn: Quorum Books, 1995, p. 74.

The Demand for Money

The demand for money consists of two components of total money demand, these are: (1) transactions demand, and (2) asset demand. Transactions demand for money is the demand that consumers and business have for cash (or checks) to conduct business. Transaction demand is related to a preference to have wealth or resource in a form that can be used for purchases (liquidity). There is also an asset demand for money. In times of volatility in the stock and bond markets, investors may prefer to have their assets in cash so as not risk losses in other assets. Together, the asset and transaction demand for money comprise the total demand for money.

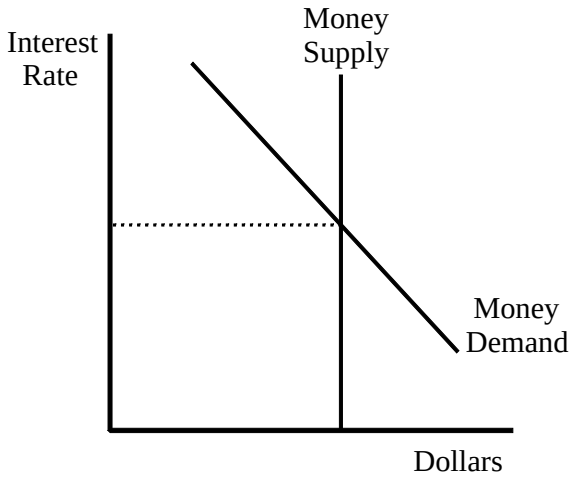
Money is much the same as any other commodity, it has a demand curve and a price. The price of money is interest, primarily because money is also a claim on capital in the financial markets. The demand curve for money is a downward sloping function that is a schedule of interest rates to the quantity of money.

The Money Market

The money market is a particularly interest market. In reality there are several markets in which money is exchanged as a commodity. In examining only M1, the currencies of various countries are exchanged for one another for the purpose of doing business across national boundaries. The price of one nation's currency is generally expressed in terms of another countries currency. For example, 105 Yen is the value of a dollar, in the case of a Deutsche mark, 1.26 DM is worth one dollar.

There is also the credit market. The credit market is where consumers and businesses go to borrow money. A consumer purchasing a house will typically need a mortgage and will borrow to buy a house. Businesses will need to borrow to purchase capital equipment (investing) to produce commodities to sell in product markets. Both types of borrowing influence the credit markets, because money is a relatively scarce commodity. One of the largest borrowers in the U.S. economy is the U.S. Treasury. Typically the government borrows by selling Treasury Bonds.

The following diagram is for a general money market (credit market):



The money supply curve is vertical because the supply of money is exogenously determined by the Federal Reserve. The Federal Reserve System regulates the money supply through monetary policy and can increase or decrease the money supply by the various actions it has available to it in regulating the banking system and in selling or buying Treasury Bonds. The money demand curve slopes downward and to the right. The intersection of the money demand and money supply curves represents equilibrium in the money market and determines the interest rate (price of money).

Bonds are financial obligations. Both private companies and governments issue bonds and receive cash. The bonds typically state that the owner of the bond will receive a specific payment in dollars periodically for holding the bond, and at the end of

the bond's life it will be redeemed for its face value. This is the primary market, where bonds are sold directly by the government or company. In the case of the Treasury the bonds are generally sold at auction.

This method of paying interest creates a "secondary" market for bonds. Bonds may be resold for either a discount or a premium. As the market value of the bond increases, it drives down the rate of return on the bond, conversely, if the market value of the bond decreases the rate of return increases. For example, consider a $1000 bond that the government agrees to pay $60 per year in interest over its life. If the bond remains at the $1000 face value the interest rate is 6%. However, if bonds are viewed as a safer investment than other possible investments, or there is excess demand for bonds, the market price may increase. If the market price of this $1000 bond increases to $1200 then the rate of return falls to only 5% (60/1200 = .05). On the other hand, if the bond is viewed as more risky, or there is an excess supply of bonds the market price may fall, say to $800, then the rate of return increases to 7.5% (60/800 = .075).

Notice how bonds become a good investment. Bonds are good investments when the interest rate is falling. As the interest rate falls, the market value of the bond increases, (remember that the payment made by the original borrower is a fixed payment each period). In other words, falling interest rates mean larger market values for the bonds, and greater profits for investors in bonds.

An Overview of the U.S. Financial System

The U.S. financial system is a complex collection of banks, thrifts, savings & loans, credit unions, bond and stock markets, and numerous markets for other financial instruments such as mutual funds, options, and commodities. The complete analysis of these markets is not a single course, its an entire curriculum called Finance. What is important for understanding the basics of the effects of money on the macroeconomy is the banking system and the closely associated regulatory agencies, such as the Federal Reserve System and Federal Deposit Insurance Corporation (F.D.I.C.).

Federal Reserve System (FED) is comprised of member banks. These member banks are generally large, nationally chartered banks that do significant amounts of commercial banking. The FED is owned by these member banks. However, under the Federal Reserve Act, the Board of Governors and Chairman are nominated by the President of United States and confirmed by the Senate. The structure of the system is: (1) Board of Governors - that governs the FED and is responsible for the operations of the Fed, (2) Open Market Committee - buys and sells bonds (called open market operations, (3) Federal Advisory Council - provides advise concerning appropriate banks regulations and monetary policies, and (4) The FED has 12 regional banks that serve as check clearing houses, conduct research, and supervises banks within the region. Fort Wayne is in the Chicago region, however, Evansville is in the St. Louis region.

The functions of FED are basically associated with bank regulation and the conduct on monetary policy. The functions of the FED include:

1. Set reserves requirements,
2. Check clearing services,
3. Fiscal agents for U.S. government,
4. Supervision of banks, and
5. Control money supply through Open Market Operations (buying and selling of bonds).

The supervision of banks and check clearing services are routine FED functions that are focused on making the banking system safer and more efficient. Because the FED is the agency through which Treasury obligations are bought and sold the FED is the fiscal agent for the federal government. The setting of reserve requirements for the banking system and open market operations are the tools of monetary policy and are the subjects of the following chapter.

The Federal Deposit Insurance Corporation is a quasi-governmental corporation whose purpose is to insure the deposits of member banks. Credit unions, thrifts, and savings & loans had separate independent agencies designed to provide the same insurance. However, after the savings & loans crisis, these other agencies were consolidated under the control of F.D.I.C. The reason for these programs was the experience of the banking industry during the Great Depression when many depositors lost their life savings when the banks failed. Many banks failed, simply because of "runs." Runs are where depositors demand their funds, simply because they have lost faith in the financial ability of the banks to meet their obligations (sometimes the loss of faith was warranted, often it was nothing more than panic). Therefore, to foster depositor faith in the banking system, F.D.I.C. was created that provided a guarantee that depositors would not loss their savings even if the bank did fail.

There is a problem with such insurance arrangements. This problem is called moral hazard. Moral hazard is the effect that having insurance reduces the insured's incentive to avoid the hazard against which they are insured. The savings and loan crisis was at least in part the result of moral hazard. The managers of the failed saving and loans often would extend loans or make investments that were high risk, but were less concerned because if it resulted in failure, the government would pay-back the depositors. This is a classic example of moral hazards, but there were also other problems involving fraud, bad loans in Mexico, and shaky business practices, against which it was not intended that F.D.I.C. would risk substantial exposure.

Paper money is produced at the United States Bureau of Printing and Engraving in Washington, D.C. Each day, the Bureau of Printing and Engraving produces about

$22 million in new currency. Once the Bureau of Printing and Engraving produces the money it is then shipped to the twelve regional Federal Reserve banks for distribution to the member banks. The stock of currency is created and maintained by a simple printing and distribution process. However, the stock of paper money is only a small part of the M1 money supply. The majority of the M1 money supply is checkable deposits.

Counterfeiting is of U.S. currency is a significant problem. The U.S. Bureau of Printing and Engraving has developed a new fifty dollar bill that will make counterfeiting more difficult. Periodically for the next several years the new design will be extended to all denominations of U.S. currency. A few years ago, a strip was added to U.S. currency that when held to the light shows the denomination of the bill, so that counterfeiters cannot use paper from one dollar bills to create higher denomination bills. The government agency responsible for enforcing the counterfeiting laws in the United States is the U.S. Secret Service, the same agency that provides security for the President.

Assets and Liabilities of the Banking System

Assets are items of worth held by the banking system, **liabilities** are claims of non-owners of the bank against the banks' assets. **Net worth** is the claims of the owners of the bank against the banks' assets. Over the centuries a system of double entry accounting has evolved that presents images of businesses. The double entry system accounts for assets, liabilities, and net worth.

Accounts have developed a **balance sheet** approach to present the double entry results of the accounting process. On the left hand side are entered all of the bank's assets. On the right hand side of the ledger are entered all of the claims against those assets (claims by owners are net worth and claims by non-owners are liabilities). The assets side of the ledger, must equal the net worth and liabilities side. This rather simple method, is an elegant way to assure that claims and assets balance.

The balance sheet method will permit us a method to track how banks create money through the multiple expansion process.

Rational for Fractional Reserve Requirements

The fractional reserve approach to monetary stability dates from the middle-ages in Europe. Goldsmiths received gold to make jewelry, religious objects, and to hold for future use. In return the goldsmiths would issue receipts for the gold they received. In essence, these goldsmith receipts were the first European paper money issued and they were backed by stocks of gold. The stocks of gold acted as a reserve to assure payment if the paper claims were presented for payment. In other words, there was a 100% reserve of gold that assured the bearer of the receipt that the paper receipt would be honored. The reserves of gold held by the goldsmiths created faith in the receipts as

mediums of exchange, even though there was no governmental involvement in the issuing of this money.

However, the goldsmiths in Europe were not the first to issue paper money. Genghis Khan first issued paper money in the thirteenth century. Genghis did not hold reserves to back his money, it was backed by nothing except the Khan's authority (which was absolute). Therefore in the case of the Great Khan, it was the ability to punish the untrusting individuals that gave money its value. In Europe, two-hundred years later, it was trust in reserves that gave money its value.

The U.S. did not have a central banking system, as we know it, from the 1840s through 1914. There were two early "national" banks whose purpose was to serve as the fiscal agent of the U.S. government and to provide limited regulation for the U.S. monetary system. Both failed and were eliminated. In the early part of this century several financial panics pointed to the need for a central banking system and for strong financial regulations.

During the first half of this country's history both states and private companies issued paper money. Mostly this paper money was similar to the gold receipts issued by the European goldsmiths, except the money was not backed by gold, typically the money was a claim against the assets of the state or company, in other words, the money issued represented debt. It is little wonder that most of this currency became worthless, except as collectors' items. Prior to 1792, Spanish silver coins were widely circulated in the U.S. because they were all that was available for use as money (for more details see the previous chapter).

The first widespread issuance of U.S. paper money was during the Civil War (The Greenback Act), which included fractional currency (paper dimes & nickels!). Earlier attempts to issue U.S. notes were less than successful, simply because people trusted coinage because of the silver and gold therein contained, and paper money was a novelty (but not a very valuable one).

Today, the Federal Reserve requires banks to keep a portion of its deposits as reserves, to help assure the solvency of the bank in case of a financial panic, like those experienced in the first decade of this century and again in the 1930s. The fact that these reserves are kept also helps to assure the public of the continuing viability of their banking system, hence the safety of their deposits. In turn, this public faith should prevent future runs on the banking system that have historically caused so much economic grief due to bank failures.

The Required Reserve Ratio

The Required Reserve Ratio (RRR) is set by the FED's Board of Governors within limits set by statute. The minimum legally allowable RRR is three percent, where the current RRR has been set by the Board of Governors. The RRR determines by how

much the banking system can expand the money supply. The RRR is the amount of reserves that a bank must keep, as a percentage of their total liabilities (deposits).

Banks are permitted some freedom to determine how their reserves are kept. A bank can keep reserves as vault cash or deposits with the regional Federal Reserve bank. Should a bank be short of the amount required to meet the reserves necessary, then a bank can borrow their reserves for short periods from either the FED or other member banks. The FED regulates the borrowing of reserves, and sets an interest rate for these short term loans if they are borrowed from the FED. The rate charged on borrowed reserves from the FED is called the discount rate. The rate of interest charged on reserves borrowed from other member banks is called the Federal Funds Rate (currently about 5.5%).

The banking system has three forms of reserves, these are actual, required, and excess reserves. Actual reserves are the amounts the banks have received in deposits that are currently held by the bank. The required reserves are the amounts the Board of Governors requires the banks to keep (as vault cash, deposits with the FED, or borrowed). The excess reserve is amount of actual reserves that exceeds the required reserves. It is the excess reserves of the banking system that may be used by the member banks to expand the checkable deposits component of the U.S. money supply.

Multiple Expansion of Checkable Deposits

The largest component of the M1 money supply is checkable deposits. Rather than printing Federal Reserve Notes, the majority of the money supply is created through a system of deposits, loans, and redeposits. Money is created by a bank receiving a deposit, and then loaning that non-required reserve portion of the deposit (excess reserve), which, in turn, is deposited in another checking account, and loans are subsequently made against those deposits, after the required reserve is deducted and placed in the bank's vault or deposited with the FED.

For example, if the RRR is .10, then a bank must retain 10% of each deposit as its required reserve and it can loan the 90% (excess reserves) of the deposit. The multiple expansion of money, assuming a required reserve ratio of .10, can, therefore, be illustrated with the use of a simple balance sheet (T-account):

Deposit		Loans
	|	
$10.00	|	9.00
9.00	|	8.10
8.10	|	7.29
	. |	.
	. |	.
_____	|	_____
$ 100.00	|	$90.00
	|	10.00 (required reserves)
	|	$100.00

The total new money is the initial deposit of $10 and an additional $90 of multiple expansion for a total of $100.00 in new money. The T-account used to illustrate this multiple expansion of money is really a crude balance sheet for the banking system with the liabilities on the left side and the assets on the right side of the ledger. Notice, however, that the T-account balances, and that there is $100.00 on each side of the ledger.

There is a far easier way to determine how much the money supply can be expanded through the multiple deposit - loan, re-deposit - loan mechanism. This short-cut method is called the money multiplier (Mm). The money multiplier is the reciprocal of the required reserve ratio:

Mm= 1/RRR

The money multiplier is the short-hand method of calculating the total entries in the banking systems' T-accounts and shows how much an initial injection of money into the system can generate in total money supply through checkable deposits. One of the tools of the FED to expand or contract the money supply is to make or withdraw deposits from its member banks. This element of monetary policy will be discussed in greater detail in the following chapter. The following chapter examines monetary policy and how the FED operates to maintain control over the money supply.

The potential creation of money is therefore inversely related to the required reserve ratio. For example, with a required reserve ratio of .05 the money multiplier is 20. This means that a $1.00 increase in deposits can potentially create $20 in new checkable deposits as it is loan and re-deposited through the system. On the other hand, with a required reserve ratio of .20 the money multiplier is 5 and only $5 of new money can be created from an initial deposit of $1.00.

With the current required reserve ratio of .03, the money multiplier is 33.33. Currently, an initial deposit of $1.00 can potentially create $33.33 in new money through increased checking deposits. The reason that the word potential is used to describe this process, is that there is no guarantee that the banking system will be able to loan all of its available excess reserves. The amount that will be loaned still depends on the demand for money and investment in plant and equipment.

The monetary history of several nations illustrates how well the multiple expansion of money has been understood. The United States has had recurrent bouts of inflation during the post-World War II period. As the FED struggled with understanding how the system worked in this country, the Swiss understood since the turn of the century. Switzerland is a relatively small economy, and the money supply in this small nation was very competently managed. The result is that the Swiss have experienced unusually stable price levels ever since 1945.

The recurrent bouts of inflation in the post-World War II economic history of the United States, is not consistent with the economic history of this country prior to World War II. Most of American history experienced significant deflation. Deflation is rarely discussed today, but is, in many ways, a far more destructive problem than inflation. The reason this problem persisted for so many decades in this country was that there was no stable central banking system to manage the money supply and that the value of the U.S. dollar was tied to an increasingly rare commodity - gold.

Need for Regulation and Inflation

One of the serious implications of the money multiplier is that the banking system has the potential for significant harm to economic stability. In Chapter 3 we examined the various theories of inflation. One of those theories is called the quantity theory of money, where MV = PQ. Because V and Q grow very slowly, they are generally regarded as nearly constant. The implication is that what happens to the money supply should be nearly directly reflected in the price level.

During expansions in the business cycle, investment demand is generally high and banks can often loan all of their excess reserves. If we reduced the required reserve ratio to .01 then banks could expand the money supply $100 for each $1.00 in additional deposits made in the system. If the required reserve ratio was only .001, then $1000 of new money can be created for every dollar of new deposits. Without any required reserve ratio, the money supply could be theoretically be expanded infinitely for each dollar of new deposits. These high multiple potential expansions could create serious inflationary problems for the economy, and therefore the required reserve ratio of the central bank is an essential portion of any nation's economic stabilization policies.

During this period of a political swing to the right of public opinion, the idea of de-regulation has gained some new support. However, there is no serious, and informed move toward de-regulating the money supply. Without monetary controls imposed by a

central bank, there will most certainly be serious economic problems associated with the loss of some modicum of sensible control of the money supply.

This need for regulation has been long recognized by economists. Since at least the 1890s classical economists described the role of money in the economy, and the need to control the money supply if price stability was to achieved. Most prominent among the classical economists writing at the beginning of the twentieth century concerning monetary economics was Irving Fisher, who developed the modern quantity theory of money presented earlier.

The following box presents an excerpt of Irving Fisher's "The Purchasing Power of Money" which was originally published in 1911. This was the first published work in which the quantity theory of money was proposed as an explanation for variations in the price level.

> We come back to the conclusion that the velocity of circulation either of money or deposits is independent of the quantity of money or of deposits. No reason has been, or, so far as is apparent, can be assigned, to show why the velocity of circulation of money, or deposits, should be different, when the quantity of money or deposits, is great, from what it is when the quantity is small.
>
> There still remains one seeming way of escape from the conclusion that the sole effect of an increase in the quantity of money in circulation will be to increase prices. In may be claimed -- in fact it has been claimed -- that such an increase results in an increased volume of trade. We now proceed to show that (except during transition periods) the volume of trade, like the velocity of the circulation of money, is independent of the quantity of money. An inflation of the currency cannot increase the product of farms and factories, nor the speed of freight trains or ships. The stream of business depends on natural resources and technical conditions, not on the quantity of money. The whole machinery of production, transportation, and sale is a matter of physical capacities and technique, none of which depend on the quantity of money . . . . We conclude, therefore, that a change in the quantity of money will not appreciably affect the quantities of goods sold for money.
>
> Since, then, a doubling in the quantity of money: (1) will normally double deposits subject to check in the same ratio, and (2) will not appreciably affect either the velocity of circulation of money or of deposits or the volume of trade, it follows necessarily and mathematically that the level of prices must double . . . .
>
> Irving Fisher, *The Purchasing Power of Money.* New York, Macmillan, 1911, pp. 154-57.

Monetary Policy

The monetary policies of a government focus on the control of the money supply. These policies directly control inflation or deflation, but also can influence real economic

activity. The focal point of control over real economic activity through the management of monetary aggregates is the interest rate. The demand for investment is dependent upon the relation between expected rates of return from that investment, and the interest rate that must be paid to borrow the money to buy capital.

Monetary policy in the United States is conducted by the Federal Reserve, either through the Board of Governors or the Open Market Committee. The monetary policies of the United States has focused primarily on the control of various monetary aggregates, i.e., the money supply, which in turn influences interest rates and aggregate economic activity. The fundamental objective of monetary policy is to assist the economy in attaining a full employment, non-inflationary macroeconomic equilibrium.

Tools of Monetary Policy

The Federal Reserve has an arsenal of weapons to use to control the money supply. The FED can buy and sell U.S. Treasury bonds, called open market operations, it can control the required reserve ratio, within statutory limits, and it can manipulate the discount rate (the interest rate charged by the FED for member banks to borrow reserves). This array of tools provides the FED with several options in taking corrective actions to help stabilize the economy. Each of these tools will be examined in the following paragraphs.

Open Market Operations

Open Market Operations (OMO) involves the selling and buying of U.S. Treasury obligations in the open market. OMO directly influences the money supply through exchanging money for bonds held by the public (generally commercial banks and mutual funds). Expansionary monetary policy involves the buying of bonds. When the FED buys bonds, it replaces bonds held by the public with money. When someone sells a bond, they receive money in exchange, which increases the money supply. Contractionary monetary policy involves the FED selling bonds to the general public. When the FED sells bonds it removes money from the hands of the public and replaces that money with U.S. Treasury bonds.

The FED sells and buys both long-term (thirty year) Treasury bonds, and short-term (primarily two, five and ten year) Treasury bonds. In theory the FED can focus its influence on either long-term interest rates or short term-interest rates. However, what most security analysts argue is that the FED's bond buying and selling behavior is not a leadership position. In recent years, the FED buys and sell bonds after the money market establishes a direction for interest rates. In times, of high inflation or steep recession, however, the evidence suggests that the FED's OMO leads the market, rather than follows. In reality, this is what we should expect to observe in the responsible exercise of monetary policies.

The Required Reserve Ratio

As discussed in the previous chapter, it is the required reserve ratio that determines the size of the money multiplier. The money multiplier determines how much money can be created by the member banks through the deposit - loan process. Therefore, the FED can directly control how much the banking system can expand the money supply through the manipulation of the required reserve ratio.

The FED can raise or lower the required reserve ratio, within statutory limits. Increasing the required reserve ratio, reduces the money multiplier, hence reduces the amount by which multiple expansions of the money supply can occur. By decreasing the required reserve ratio, the FED increases the money multiplier, and permits more multiple expansion of the money supply through the deposit - loan process described in the earlier in the chapter.

Most of the new deposits that result in the multiple expansion of money occur because the FED bought bonds from the public. When the FED buys bonds, this is injecting new money into the system that is, in turn, deposited -- which set the money multiplier (multiple expansion) into motion.

The Discount Rate

The Discount Rate is the rate at which the FED will loan reserves to member banks for short periods of time. To tighten monetary policy, the FED will raise the discount rate. The raising of the discount rate will discourage the borrowing of required reserves by member banks, hence encourages using their reserves as required reserves, rather than excess reserves (which they loan and start the multiple expansion of money). By lowering the discount rate, the FED encourages the borrowing of required reserves, which may result in more excess reserves hence potentially more loans, and a greater expansion of the money supply through the loan - deposit process.

The popular financial press makes much of the Federal Reserves FOMC's manipulation of the Discount Rate. In reality, the Discount Rate is more of a signal as to what to expect with respect of Open Market Operations, and the Fed Funds targets, than real manipulation of the money supply. The current required reserve ration is a mere 3%, and few of these reserves are borrowed. When the reserves are borrowed, member banks typically view the FED as the lender of last resort, and borrowing and lending of reserves is typically between the member banks themselves. In other words, changes in the Discount Rate is the mans by which the FED "sets" expectations concerning the money supply, more than anything else.

FED Targets

The FED must have benchmarks to determine the need for and effectiveness of monetary policies. The quantity theory of money suggests that the money supply itself is the appropriate policy target for the FED. As noted by Irving Fisher, the velocity of

money is how often the money supply turns-over, and is unrelated to economic activity. Further, Fisher argued that money does not directly influence the real output of the economy. Therefore, in any policies aimed at controlling inflation or deflation the FED's monetary targets should simply be the money supply.

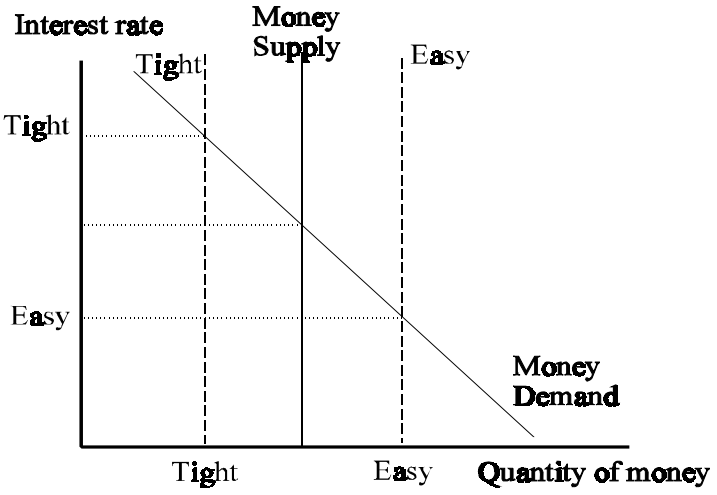
However, the economy is not as simple as the quantity theory of money would suggest. Many consumer purchases and most investment is interest rate sensitive. Therefore, to the extend that the FED's policies do impact interest rates, the FED can also correct downturns in the business cycle. If investment is too low to maintain full-employment level of GDP, the FED can reduce the required reserve ratio or buy bonds thereby increasing the supply of money and lowering the interest rate. The lower interest rate may encourage consumption expenditures and investment, thereby mitigating recession.

There are dilemmas for the FED in selecting targets for their monetary policies. Interest rates and the current business cycle may present a dilemma. Expansionary monetary policy may result in higher interest rates, by increasing the rate of inflation, which will be reflected in the interest rates. As the interest rate increases and people's inflationary expectations develop, these may serve to dampen the expansionary effects of the FED's monetary policies. At the same time, there is no necessary coordination of fiscal and monetary policies. At the time an expansion monetary may be necessary to reverse a recession, contractionary fiscal policies may begin to affect the economy. Therefore, the FED must keep an eye on the Congress and account for any fiscal policies that may be contradictory to the appropriate monetary polices. The presents a delicate balancing act for the FED. Not only must the FED correct problems in the economy, it may well have to correct Congressional fiscal mistakes, or at least, account for this errors when implementing monetary policies.

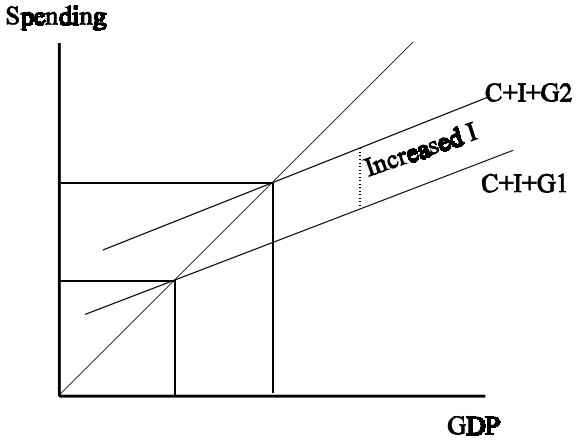
Tight and Easy Money

Discretionary monetary policy, therefore, fits into one of two categories, (1) easy money, and (2) tight money policies. Easy money policies involves the lowering of interest rates, and expanding the money supply. The purposes of easy money policies are typically to mitigate recession and stimulate economic growth – stimulating the economy. Tight money policies involve the increasing interest rates, and contracting the money supply. The purposes of tight money policies are generally to mitigate inflation and slow the rates of economic growth (typically associated with inflation) – reining-in the economy. While at times controversial, monetary policy has typically been one of the most effective means available to policy-makers to stabilize the economy.

The following diagram of the money market illustrates both tight and easy money policies.



Assuming that the money supply remains constant, we can analyze the changes in the money supply imposed by the FED. As the FED engages in tight money policies the supply curve is shifted to the left (dashed line labeled tight), this increases the interest rate and lowers the amount of money available in the economy. On the other hand, easy money policy is a shift to the right of the money supply curve (dashed line labeled easy). With easy money policies, the quantity of money increases and the interest rate falls. The effectiveness of such policies in influencing GDP result from changes in autonomous investment. In the case of an easy money policy, as the interest falls, investment will increase which results in an increase in the C+I+G line as illustrated below:



The decrease in the interest rate is associated with an increase in investment (the vertical distance between C+I+G1 and C+I+G2) which results in an increased GDP and levels of spending.

The acceptance of discretionary monetary policies are often associated with Keynesian views of a pro-active role for government in economic stabilization. Even though most neo-classicists argue that monetary policy is necessary to the proper functioning of a market economy. However, there is another view. The most extreme of the neo-classicists argue there is simply no role for either discretionary fiscal or monetary policies, except in dealing with extreme variations in economic activity.

Friedman's Monetary Rules Argument

The leading economist of the neo-classical school (Chicago School of Thought or Monetarist) is the Nobel Prize winning economist, Milton Friedman. Friedman won his Nobel Prize for, among other contributions, his work on the monetary history of the United States. Friedman argues, with some persuasion, that Irving Fisher's work establishes the appropriate standard for monetary policy. Based on the presumption that discretionary fiscal policy can be abolished, Friedman would have all monetary policies based on a simple rule that follows directly from the quantity theory of money.

Assuming that discretionary fiscal policy has been eliminated, and that the economy is operating at a full-employment, non-inflationary equilibrium, monetary policy should be nothing more or less than estimating the growth rate of economy (change in Q) and matching the growth rate of the money supply to the growth rate of the economy. Such monetary policy leaves nothing to the discretion of policy makers. The FED's sole role is to make sure that the money supply simply facilitates economic growth by expanding at the same pace as the real economic activity. If the FED underestimates growth, there could be small deflations that could be eliminated but subsequent adjustments to the money supply and overestimations of the growth rate causing inflation could be dealt with in the same type of subsequent adjustments.

If nothing else, Friedman's suggestion would eliminate any government induced variations in economic activity. Real Business Cycle Theory is another paradigm that has arisen out of the ashes of the classical school, and these economists would not find much to argue with Friedman about, as far as the analysis goes. These economists, primarily Thomas Sargeant from the University of Minnesota, argue that recessions and inflations result from either major structural changes in the economy or external shocks, such as the Arab Oil Embargo. When these types of events occur, the Real Business Cycle Theorists would have the government play a pro-active role, but focused specifically on the shock or structural problem. In this sense, there is a role for discretionary fiscal and monetary policies, but very narrowly focused on very specific events.

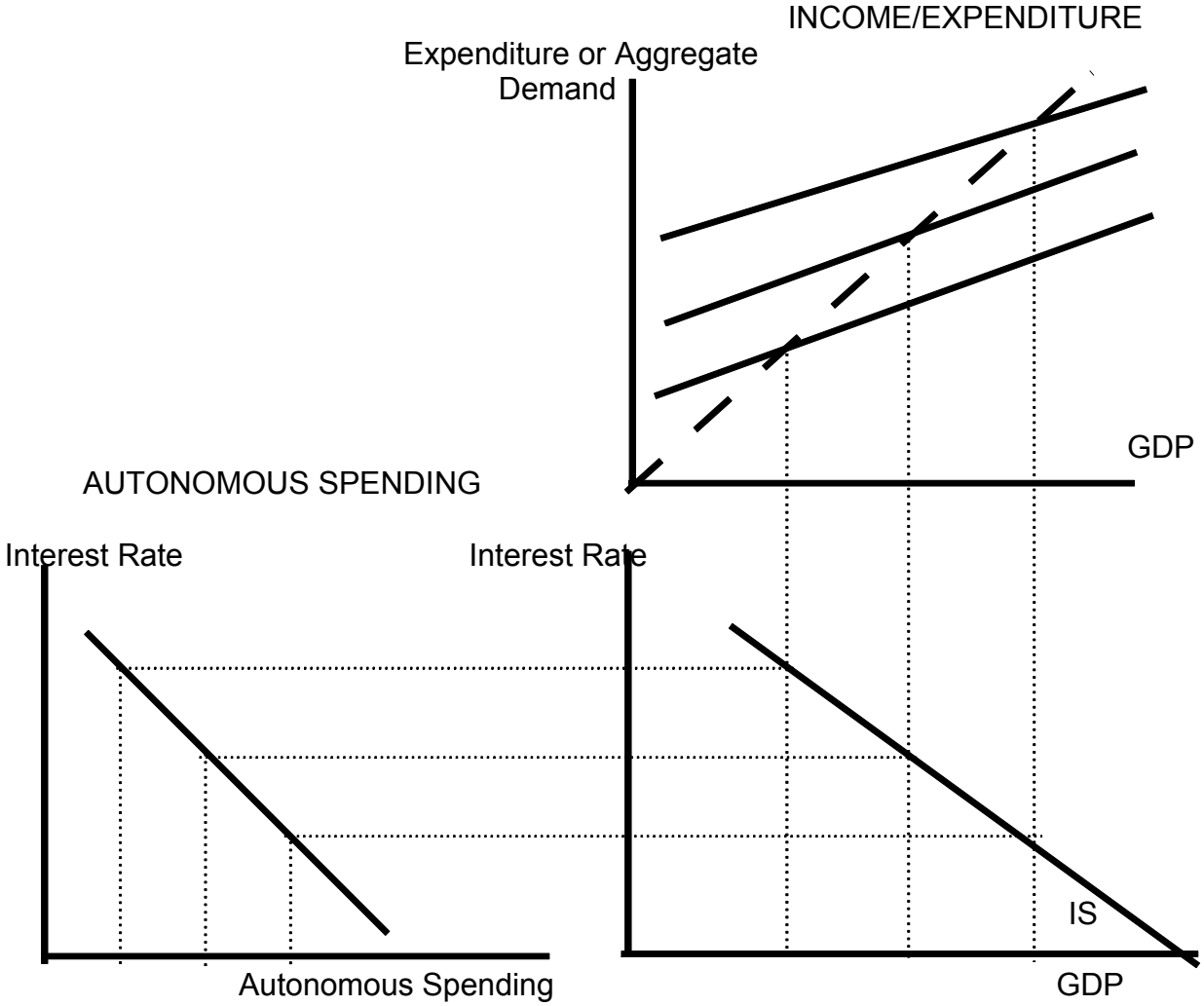
CHAPTER 9

Interest Rates and Output: Hick's IS/LM Model

The final issue with which to build a complete picture of the macroeconomy is the development of a model to explain the relationship of interest rates to the overall output of the economy. Sir John Hicks developed a model, which directly equates the interest rate with the output of the economy. This model is called the IS/LM model and provides valuable insights into the operation of the U.S. economy – this chapter offers a quick and simple view of these relations.

IS Curve

The IS curve shows the level of real GDP for each level of real interest rate. The derivation of the IS curve is a rather straightforward matter, observe the following diagram.

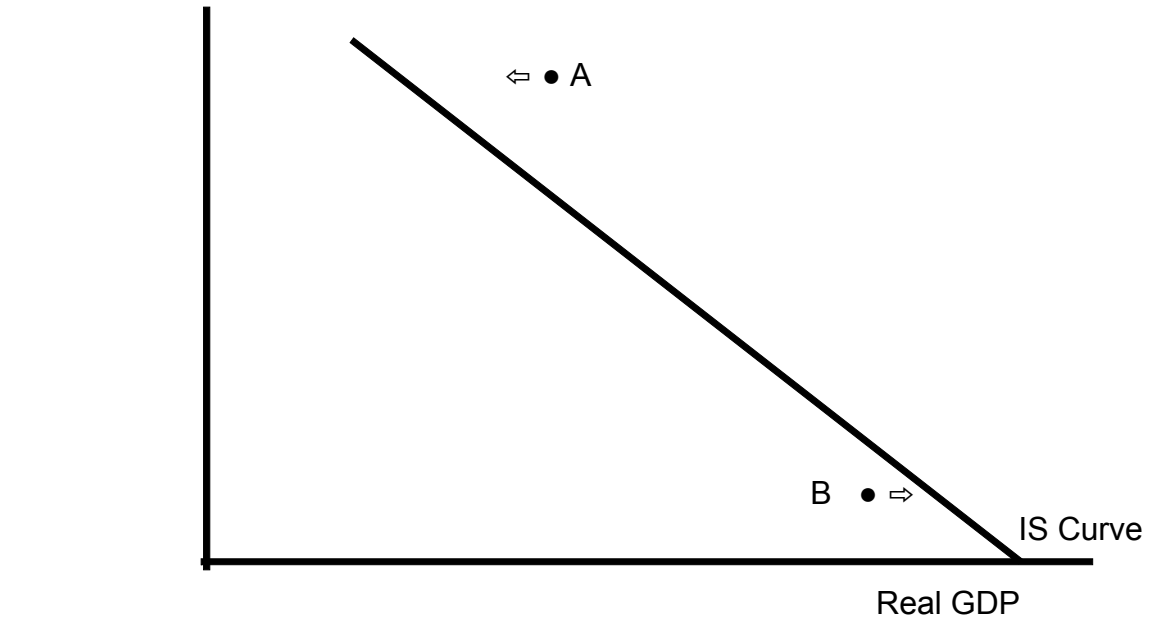


The Income-Expenditure diagram determines for each level of aggregate demand the associated level of GDP. There is a portion of this GDP, which is determined within the system (autonomous spending), and for each level of autonomous spending there is a specific interest rate. The indicator line from the Income-Expenditure diagram provides levels of GDP, which are associated with specific interest rates, which in turn are associated with specific level of autonomous spending. The resulting IS curve is a schedule of levels of GDP associated with each interest rate.

The intercept of the IS Curve is the level of GDP that would obtain at a zero real interest rate. The slope of IS Curve is the multiplier (1/1 - MPC) times marginal propensity to Invest (resulting from a change in real interest rates) and the marginal propensity to export (resulting from a change in real interest rates).

The IS curve can be shifted by fiscal policy. An increase in government purchases pushes the IS curve to the right, and a decrease will shift it left. Conversely, an increase in taxes pushes the IS curve left, while a decrease in taxes will push the curve to the right. However, almost anything that changes the non-interest-dependent components of autonomous spending will move the IS curve. For example, foreigners speculating on the value of the dollar may result in a shift in the IS curve to the extent it impacts purchases of imports. Changes in Co or Io will also move the IS curve.

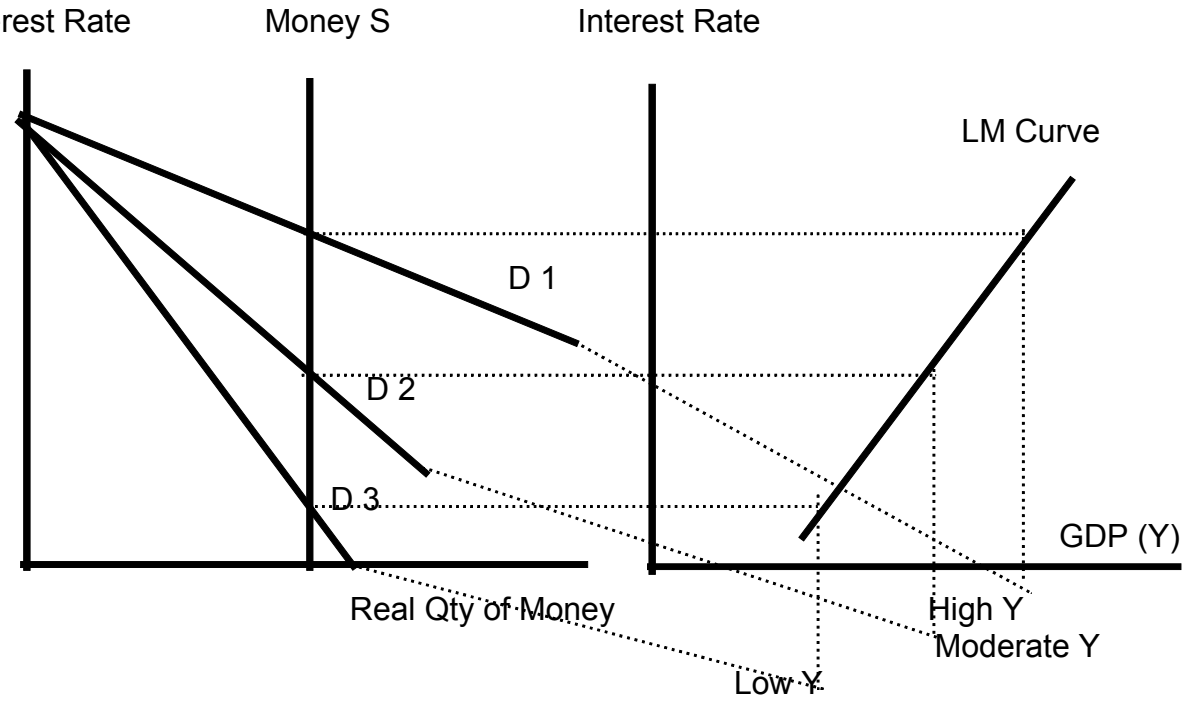
Anytime the economy moves away from the IS curve there are forces within the system which push the economy back onto the IS curve. Observe the following diagram:



If the economy is at point A there is a relatively high level of real interest rates which results in planned expenditure being less than production, hence inventories are accumulating, and production will fall, hence pushing the economy toward the IS curve. On the other hand, at point B the relatively low real interest rate results in planned expenditure being greater than production, hence inventories are being sold into the market place and product will rise to bring us back to the IS curve.

LM Curve

The LM Curve is derived in a fashion similar to that of the IS curve. Consider the following diagram:



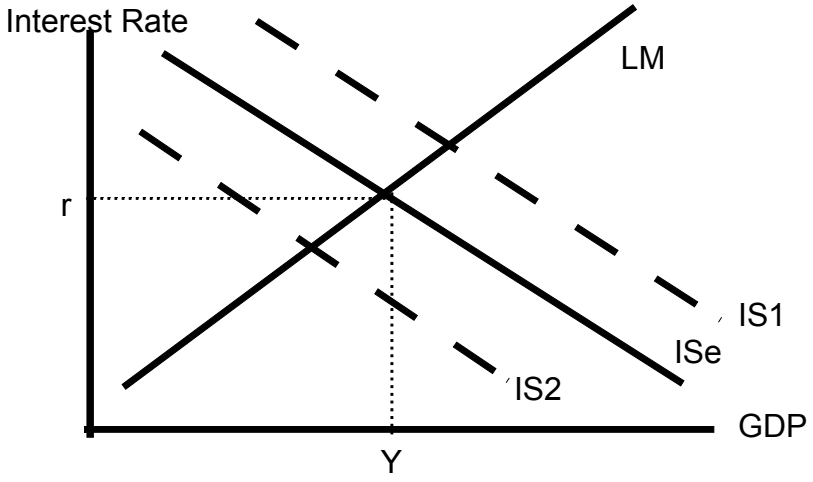
As can be readily observed from this diagram the LM curve is the schedule of interest rates associated with levels of income (GDP). The interest rate, in this case, being determined in the money market.

With a fixed money supply each level of demand for money creates a different interest rate. If the money market is to remain in equilibrium, then as incomes rise so too, then must the interest rate, if the supply of money is fixed. The shifting of the LM curve is obtained through inflation or monetary policy. If the price level is fixed, then a decrease in the money supply will shift the LM curve to the left, and an increase in the money supply will push the LM curve to the right. Conversely, if the money supply

remains fixed and there is inflation, then the real money supply declines, and the LM curve shifts left, and vice versa.

Equilibrium in IS-LM

Just as in the Keynesian model, the intersection of the IS and LM curve results in there being an equilibrium in the macroeconomy. The following diagram illustrates an economy in equilibrium at where LM is equal to ISe:



Where the IS and LM curves intersect is where there is an equilibrium in this economy. With this tool in hand the affects of the interest rate on GDP can be directly observed. As the IS curve shifts to the right along the LM curve notice that there is an increase in GDP, but with a higher interest rate (IS1) and just the opposite occurs as the IS curve shifts back towards the origin (IS2). From above it is clear the sorts of things that shift the IS curve, fiscal policy or changes in Co or Io.

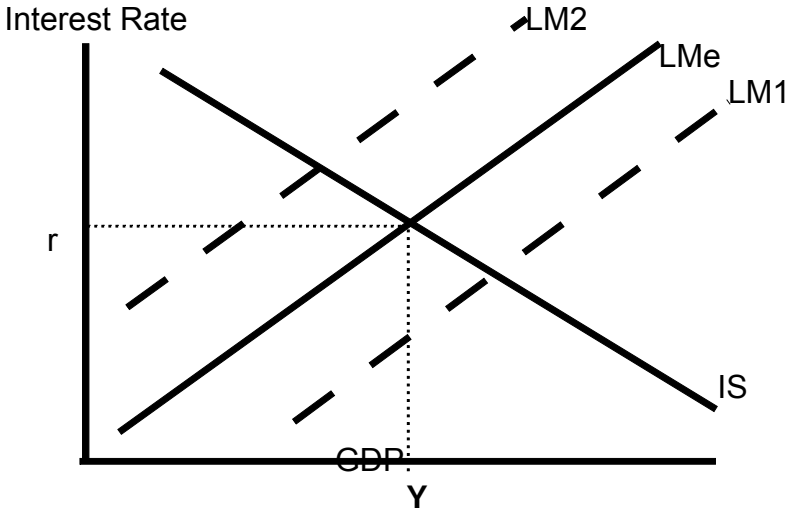
Fiscal policy is associated with changes in the position of the IS curve. If the government decreases taxes, and there is no change in monetary policy associated with this fiscal change we would expect to observe a shift to the right of the IS curve, hence an increase in GDP, but with an increase in interest rates. For interest rates to remain the same with this increase in GDP, the Fed would have to engage in easy monetary policies and shift the LM curve to the right, which would also have the effect of increasing GDP. The same analysis would result in the case of an increase in government expenditures.

In the case of an increase in taxes, the GDP would fall, but so too would interest rates. If the Fed were to increase the interest rates back to previous levels it would need to engage in tight monetary policies to shift the LM curve back to the left. In other words, the interest rate is the driving mechanism behind the equilibrium in the macroeconomy as suggested by the monetarists and Keynesians alike. It is simply that neither the Keynesian cross nor the quantity theory of money made it easy to examine

these relations in any significant detail. It is therefore clear that the results of fiscal policy are dependent on what happens with the money supply.

Expansionary and Contractionary Monetary Policies

The LM curve, too, can be moved about by changes in policy. If the money supply is increased or decreased that will have obvious implications for the LM curve and hence the interest rate and equilibrium level of GDP. Consider the following diagram:



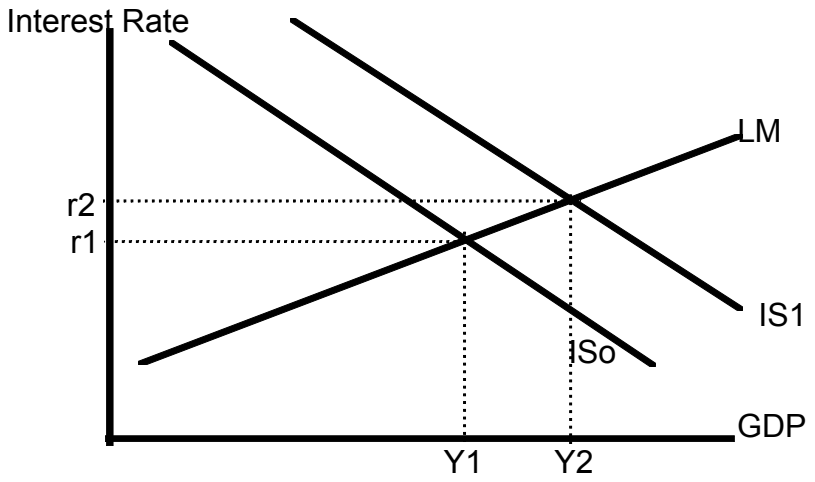
As the Fed engages in easy monetary policies the LM Curve shifts to the right (LM1), and the interest rate falls, as GDP increases. This is the prediction of quantity theory of money and is consistent with what is presumed to be the case if there is not monetary neutrality in the Keynesian model. In the Keynesian model an increase in government expenditures, may very well be paid for by an increase in the money supply, hence the Richardian equivalence theorem's taxation analogy is not operable, and there are monetary implications of the increase in government expenditures. If the Fed engages in tight monetary policy then we would expect to observe a shift to LM2, the LM curve shifts left. In the case of LM2 the decrease in the money supply results in a higher interest rate, and a lower GDP. Again, these are results consistent with the predictions of the quantity theory of money and consistent with what we would expect without monetary neutrality in the case of the Keynesian model. In the Keynesian viewpoint, again with monetary neutrality, if the government cuts expenditures, and removes money from the system to pay for the curtailed expenditures, it is the same as tight monetary policy.

In the Keynesian approach, we assume away any impact of money in the system as we engage in fiscal policies. This is not a very realistic assumption. The Fed will observe what transpires in the Halls of Congress. If politically motivate tax cuts or

expenditure increases threaten price level stability you may rest well assured that the Fed will take appropriate action to blunt the affects of any misguided fiscal policies.

Foreign Shocks

The U.S. economy is not a closed economy, and the IS-LM Model permits us to examine foreign shocks to the U.S. economy. There are three of these foreign shocks worthy of examination here; these are (1) increase in demand for our exports, (2) increases in foreign interest rates, and (3) currency speculators expectations of an increase in the exchange rate of our currency with respect to some foreign currency. Each of these foreign shocks results in an outward expansion of the IS Curve as portrayed in the following diagram:



If there is an increase in the demand for our exports, it initiates a two step process, which will result in an increase in GDP domestically, and an increase in our interest rates. An increase in the demand for U.S. exports will has the necessary effect of pushing the IS curve up along the LM curve. The interest rate increases, and this signals the value of the dollar increases which will dampen further expansion of exports, and increase our imports thereby offsetting a small portion of the otherwise observable increases in the interest rate and in GDP.

Increases in foreign interest rates have essentially the same effect on the IS curve. As interest rates increase abroad their currencies become stronger relative to the dollar, and we should observe an increase in the demand for our exports triggered by the exchange rate favorable to foreign consumers of U.S. output, with essentially the same results as described above.

Speculators in currency markets may also generate the same result as an increase in foreign interest rates, if they believe that a weak dollar will result in their

currency gaining value. Hence, much of the foreign exchange and balance of payments phenomena can also be readily analyzed using the IS-LM Model.

Conclusion

In an important manner, this chapter puts together the Keynesian Cross operations with the Monetarist viewpoint. The prime motivator for the attainment of macroeconomic equilibrium is what happens with the interest rate. As one might easily suppose the interest rate is going to be an important, if not primary, determinant of investment, which, in turn, will be an important determinant of employment, hence household income.

On the consumer side of the equation, interest rates are important determinants of the demand for various commodities, particularly those that are interest rate sensitive, i.e., consumer durables such as appliance, automobiles, and perhaps most importantly houses. As the interest rate increases disposable income gets squeezed and discretionary spending dwindles. As this occurs producer inventories increase, and signals that supply needs to be reined-in, hence lay-offs, and lower consumer incomes.

In essence the interest rate is the key to understanding how all of this marvelous macroeconomic system adjusts and results in the imbalances, which we observe as business cycles. These business cycles are not so mysterious once we understand from whence they emanate and what causes them.

Chapter 10

Economic Stability and Trade Policies

Perhaps the most important macroeconomic problems of the last forty years are unemployment and price level instability. During the post-World War II period price level instability has primarily been inflation. There are several other matters that have also been the focus of economic policy, including poverty (income distribution), and the federal debt and budget deficit. The purpose of this chapter is to examine these policy issues.

The Misery Index

During the Reagan administration both unemployment and inflation topped ten percent. This record gave rise to an economic statistic called the misery index. The **misery index** is the summation of the civilian unemployment rate and the consumer price index. For example, with 10 percent unemployment and twelve percent inflation, the misery index would be 22.

The consumer price index is based on a market basket of goods that household typically purchase. Therefore, the CPI measures the impact of increasing prices on the standard of living of consumers. The unemployment rate also focuses on the welfare of families, when the household wage earning is out of work it has serious implications for that household's income. The misery index can be interpreted as a measure of the loss of well-being of households.

Since 1973 American households have not fared well. The U.S. Department of Commerce, Current Population Survey, tracks economic and demographic data concerning households. Between 1973 and 1993 the median real income of American households has not changed. The slight increases enjoyed in the 1970s were all given back during the 1980s. However, between 1973 and 1993 there has been a dramatic increase in the number of two wage earner households, and households where a full-time worker also has a part-time job.

Increasingly, economists are warning that the distribution of misery in the U.S. economy is becoming more extreme and that the social ills associated with this misery are increasing. Crime, drug abuse, social and economic alienation, and stress related illnesses have become epidemic. The fraudulent arguments that what was needed was a return to traditional family values, is used as a substitute for what is really transpiring, something must be done to reduce economic disparity, particularly as it negatively effects the family. As Lester Thurow has noted:

If the real GNP is up and real wages are down for two thirds of the work force, as an algebraic necessity wages must be up substantially for the remaining one third. That one third is composed of Americans who still have an edge in skills on workers in the rest of the world -- basically those with college educations. In the 1980s educational attainment and increases or decreases in earnings were highly correlated. American society is now divided into a skilled group with rising real wages and an unskilled group with falling real wages. The less education, the bigger the income reduction; the more education, the bigger the income gains.

These wage trends have produced a sharp rise in inequality. In the decade of the 1980s, the real income of the most affluent five percent rose from $120,253 to $148,438, while the income of the bottom 20 percent dropped from $9,990 to $9,431. While the top 20 percent was gaining, each of the bottom four quintiles lost income share; the lower quintile, the bigger the decline. At the end of the decade, the top 20 percent of the American population had the largest share of total income, and the bottom 60 percent, the lowest share of total income ever recorded.

Lester Thurow, *Head to Head: The Coming Economic Battle Among Japan, Europe, and America.* New York: William Morrow and Company, 1992, p. 164.

It is beyond dispute that since 1981 there has been a fundamental change in American society. As Lester Thurow notes, America is becoming two separate and unequal societies, one group with an increasing misery index, and another one with increasing affluence.

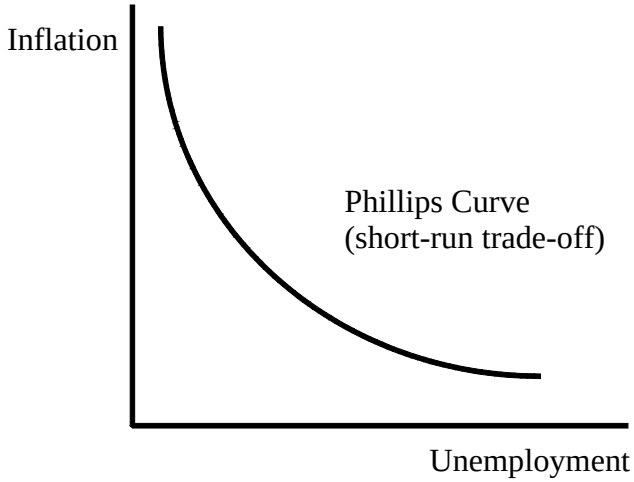
The Bush Administration's 2003 Tax Cut has also been heavily criticized as having provided significant tax relief for the wealthy in the form of reduced rates on dividends. At the same time, the deficits necessary to fund those dividend tax cuts will increase interest rates over the next few quarters, which impact mortgage rates and consumer loan interest rates. This is an empirical question and will be answered by cold, objective evidence within the year.

The Phillips Curve

Since the Kennedy administration much of American economic policy has been based on the idea that there is a trade-off between unemployment and inflation. It was not until the recession of 1981-85 that we experienced very large amounts of unemployment together with high rates of inflation. It was thought that there was always a cruel choice in any macroeconomic policy decision, you can have unemployment and low inflation, or you can have low rates of unemployment, but at the cost of high rates of inflation. This policy dilemma, results from acceptance of a statistical relation observed between unemployment and inflation named for A. W. Phillips who examined the relation in the United Kingdom and published his results in 1958. (Actually Irving Fisher had done earlier work on the subject in 1926 focused on the United States).

The Short-Run, Trade-off Phillips Curve

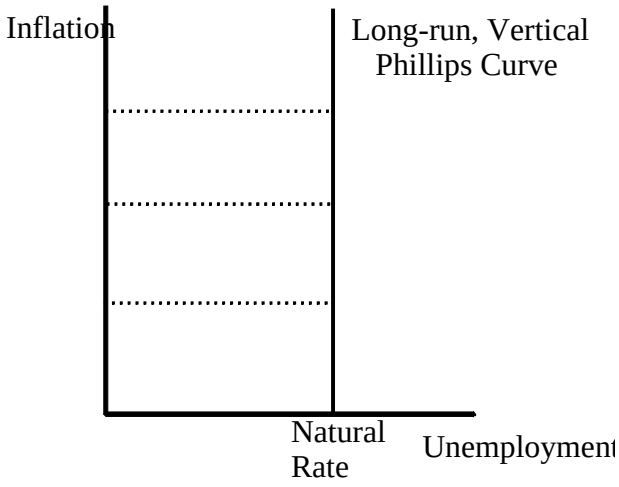
The following diagram presents the short-run trade-off view of the Phillips curve. Actually, A. W. Phillips' original research envisioned a linear, downward sloping curve that related nominal wages to unemployment. Over two years after A. W. Phillips' paper was published in *Economica*, Richard Lipsey replicated Phillips' study specifying a non-linear form of the equation and using the price level, rather than nominal wages in his model. It is Lipsey's form that is commonly accepted, in the literature, as the short-run, trade-off view of the Phillips curve.



The short-run, trade-off view of the Phillips curve is often used to support an activist role for government. However, the short-run, trade-off view of the Phillips Curve shows that as unemployment declines, inflation increases, and vice versa. It is this negative relation between unemployment and inflation, portrayed in the above diagram that gives rise to the idea of cruel policy choices between unemployment and inflation. However, there are alternative views of the Phillips Curve relation.

Natural Rate Hypothesis

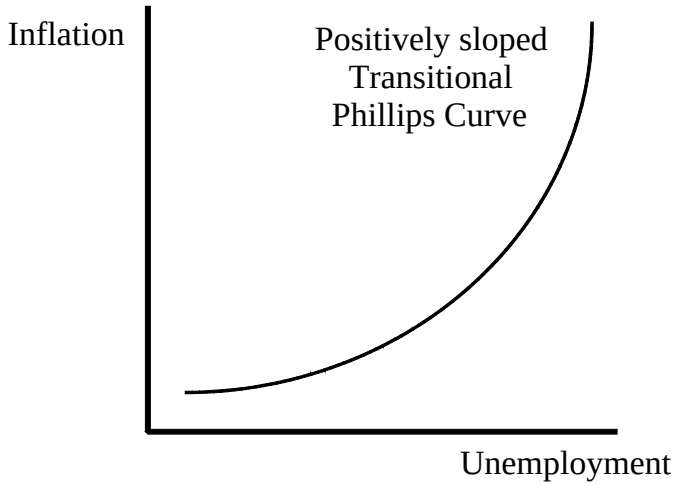
Classicists argue that there can only be a short-run, trade-off type Phillips Curve if inflation is not anticipated in the economy. Further, these economists argue that the only stable relation between unemployment and inflation that can exist is in the long-run. In the long run the Phillips Curve is alleged to be vertical at the natural rate of unemployment, as shown in the following diagram:



In this view of the Phillips Curve any rate of inflation is consistent with the natural rate of unemployment, hence the Natural Rate Hypothesis. It is based on the idea that people constantly adapt to current economic conditions and that their expectations are subject to "adaptive" revisions almost constantly. If this is the case, then businesses and consumers cannot be fooled into thinking that there is a reason for unemployment to cure inflation or vice versa, as is necessary for the short-run, trade-off of the Phillips Curve to exist.

If taken to the extreme, the adaptive expectations view can actually result in a positively sloped Phillips Curve relation. The possibility of a positive sloping Phillips Curve was first hypothesized by Milton Friedman. Friedman was of the opinion that there may be a transitional Phillips Curve, caused by people adapting both their expectations and institutions to new economic realities.

In fact, the experience of 1981-85 may well be a transitional period, just like that envisioned by Friedman. The beginning of the period was marked by OPEC driving up the price of exported oil, and several profound changes in both the American economy and social institutions. The Reagan appointments to the N.L.R.B., Justice Department (particularly the Anti-Trust Division), the Supreme Court (and Circuit Courts of Appeals, and District Courts) and significant changes in the tax code changed much of the legal environment significantly. Further, the very significant erosion of the traditional base industries in the United States (automobiles, transportation, steel, and other heavy manufacturing) together with massive increases in government spending on defense arguably created a transitory economy, consistent with the increases in both inflation and unemployment. The positively sloped Phillips Curve is show in the following picture:



The positively sloped transitional Phillips Curve is consistent with the observations of the early 1980s when both high rates of unemployment existed together with high rates of inflation (the positive slope) -- a condition called stagflation (economic stagnation accompanied by inflation).

Cruel choices may only exist in the case of the short-run, trade-off view of the Phillips Curve. However, there maybe a "Lady and Tiger Dilemma" for policy makers relying on the Phillips Curve to make policy decisions. If fiscal policy is relied upon, only the timing of the impact of those fiscal policies will result in any positive influence on the economy. Therefore, to act, through taxes or expenditures, may result in having a counter-productive effect by the time the policy impacts the economy (the tiger). On the other hand, if accurate two and three year into the future forecasts can be acted upon in time, recession or inflation could be mitigated by current action -- a real long-shot! (the lady).

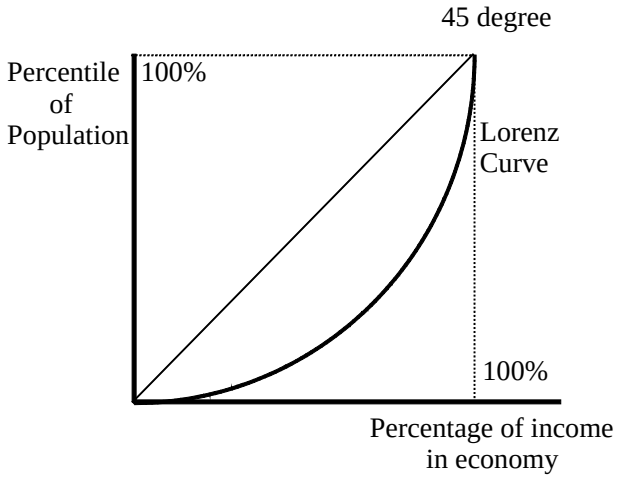
However, if the rational expectations theories are correct, then the long-shot is exactly what would be predicted. Rational expectations is a theory that businesses and consumers will be able to accurately forecast prices (and other relevant economic variables). If the accuracy of consumers and businesses' expectations permit them to behave as though they know what will happen, then it is argued that only a vertical Phillips Curve is possible, as long as political and economic institutions remain stable.

Market Policies

Market policies are focused on measures that will correct specific observed economic woes. These market policies have been focused on mitigating poverty, mitigating unemployment, and cooling-off inflation. For the most part, these market policies have met with only limited success when implemented.

One class of market policies have been focused on reducing poverty in the United States. These equity policies are designed to assure "a social safety net" at the

minimum, and at the liberal extreme, to redistribute income. In part, the distribution of income is measured by the Lorenz Curve, and more completely by the Gini coefficient. The following diagram presents the Lorenz Curve:



The Lorenz curve maps the distribution of income across the population. The 45 degree line shows what the distribution of income would be if income was uniformly distributed across the population. However, the Lorenz curve drops down below the 45 degree line showing that poorer people receive less than rich people. The further the Lorenz Curve is bowed toward the percentage of income axis the lower the income in the poorer percentiles of the population.

The Gini coefficient is the percentage of the triangle (mapped out by the 45 degree line, the indicator line from the top of the 45 degree line to the percentage of income axis, and the percentage of income axis) that is accounted for by the area between the Lorenz curve and the 45 degree line. If the Gini coefficient is near zero, income is close to uniformly distributed (and the 45 degree line); if is near 1 then income is distributed in favor of the richest percentiles of the population (and the Lorenz curve is close to the horizontal axis). If that distribution is consistent with the productivity or meritorious performance of the population, there may be an efficiency argument that can be used to justify the distribution. However, if the high income skewness of the distribution is not related to productivity, then the skewed distribution is inefficient and unfair, hence mal-distributed. In the United States the Gini coefficient exceeds .5, and while incomes in the lower three-quarters of the upper quintile are highly correlated with education (and presumably productivity) the overwhelming amount of the highest part of the distribution does not have any prima facie evidence to prove the justice or efficiency of such high incomes. Recently, (December 8, 1995) CNN reported that Chief Executive Officer salaries in the entertainment industries appeared to be out of line with similar officials in more productive industries, and that stock holders in several of these companies were beginning to revolt over these high levels of compensation. In particular, Viacom and Disney were experiencing stock holder queries concerning executive salaries. In general, most economists familiar with the income distribution in

the United States, would probably agree that income in this country is mal-distributed, because it does not reflect the market contributions of those at either the highest end, or in the lower end of the distributions.

Productivity has also the subject of specific policies. The Investment Tax Credit, WIN program, and various state and federal training programs have been focused on increasing productivity. For the most part, there has been very little evidence concerning most of these programs that give reason for optimism. The one exception was the work of Mike Seeborg and others that found substantial evidence that Job Corps provided skills that helped low income, minority teenagers find and keep reasonably well-paying jobs.

Many of the recent treaties concerning international trade have aspects that can be classified as market policies. To the extent that trade barriers to American exports have been reduced through NAFTA and GATT it was hoped that there may have been positive effects from these treaties. In fact, little if any, positive effects have been observed from these initiatives.

There have been recurrent attempts have to directly control inflation through price controls. These controls worked well during World War II, mainly because of appeals to patriotism during a war in which the United States was attacked by a foreign power. Further, during World War II the idea of sacrifice was reinforced by many families having relatives serving in the military, which made the idea of sacrifice more acceptable to most people. However, absent the popular support for these policies created by World War II for rationing and wage and price controls, these policies have been uniformly failures. President Carter tried voluntary guidelines that failed, and Richard Nixon had earlier tried short-lived wage and price controls that simply were a policy disaster.

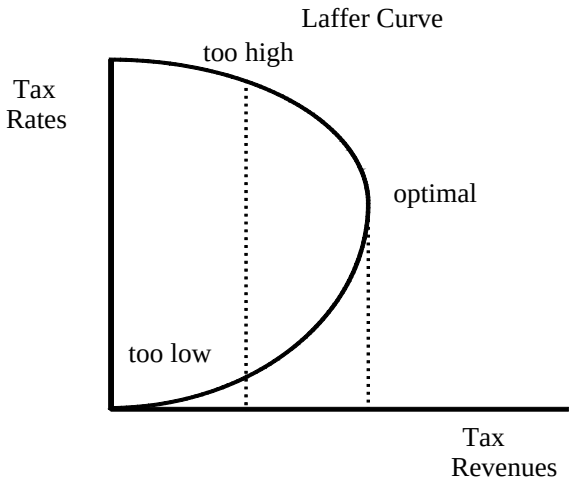
Debt and Deficit

The national debt is often argued to have an adverse effect on interest rates, which, in turn, crowds out private investment. The empirical evidence concerning this “crowding out” hypothesis suggests that increased public debt often results in higher interests rates, assuming that the debt was not acquired to mitigate recession.

The supply side economics of the Reagan Administration were based on the theory that stimulating the economy would prevent deficits as government spending for the military was substantially increased. This failed theory was based on something called the Laffer Curve.

The Laffer Curve (named for Arthur Laffer) is a relation between tax rates and tax receipts. Laffer's idea was rather simple and straightforward, he posited that there was optimal tax rate, above which and below which tax receipts fell. If the government was below the optimal tax rate, an increase in the rate would increase receipts and in the

rate was above the optimal rate, receipts could be increased by lowering tax rates. The Laffer Curve is shown below:



The Laffer Curve shows that the same tax receipts will be collected at the rates labeled both "too high" and "too low." What the supply-siders thought was that tax rates were too high and that a reduction in tax rates would permit them to slide down and to the right on the Laffer Curve and collect more tax revenue. In other words, they thought the tax rate was above the optimal. Therefore Reagan proposed and obtained from Congress a big tax rate reduction and found, unfortunately, that we were below the optimal and tax revenues fell. While tax revenue fell significantly, the Reagan Administration increased the defense budget by tens of billions of dollars per year. The reduction in revenues, combined with substantial increases in government spending made for record-breaking federal budget deficits and substantial additions to our national debt.

There were other tenets of the supply-side view of the world. These economists thought there was too much government regulation. They would have de-regulated most aspects of economic life in the United States. However, after Jimmy Carter de-regulated the trucking and airlines industries, there was considerable rhetoric and little action concerning the de-regulation other aspects of American economic life.

Politics and Economic Policy

Unfortunately, the realities of American economic policy is that politics is often main motivation for policy. Whatever anyone may think of Reagan's Presidency there is simply no doubt that he was probably the most astute observer of the political arena of any of his competitors. Reagan argued that taxes were too high and needed to be cut. This is probably the single most popular political theme any candidate can adopt. Remember McGovern? He said if he were elected President he would raise taxes, he did not have to worry about how, because he won only two states. The surest way to lose a bid for public office is to promise to raise taxes.

As it turned-out McGovern was right, there should have been a tax increase, at the time Reagan cut the taxes. Being right, does not have anything to do with being popular – hence elected. What we now face is a direct result of the unprecedented deficits run during the Reagan years. In fact, during those eight years this country acquired nearly $1.7 trillion of its national debt. No other President in U.S. history has generated this amount of debt in nominal dollars, until this current administration.

However, before President Reagan is judged too harshly, it must remembered that we were in the midst of a major recession during his first term in office, and the cold war was still at its zenith. Again, in Mr. Reagan's defense the first three years of his administration also witnessed exceedingly high rates of inflation, that are reflected in the nominal value of the deficits. Much of a President's record with respect to economic issues, is a simple matter of the luck of the draw. We remember the Great Depression as the contribution of Herbert Hoover, even though much of that crises had its genesis in the previous administration, and to some extent Prohibition and the Treaty of Versailles.

The following table shows the national debt for the period 1980 through 2001, notice, if you will, how the national debt accelerated during the Reagan administration, remember that the first three years were deepening recession. During his administration 1981-88, the Debt nearly tripled. It took until 1997 for the Debt to merely double from when President Reagan left office.

Table I: National Debt 1980 - 2001

YEAR	NATIONAL DEBT (billions of U.S. dollars)
1980	908.3
1981	994.3
1982	1136.8
1983	1371.2
1984	1564.1
1985	1817.0
1986	2120.1
1987	2345.6
1988	2600.6
1989	2868.0
1990	3206.6
1991	3598.5
1992	4002.1
1993	4351.4
1994	4643.7
1995	4921.0
1996	5181.9
1997	5369.7
1998	5478.7
1999	5606.1
2000	5629.0
2001	5803.1

Nearly $1692.3 of additional debt was accumulated during the years that President Reagan was in office. The first nine months of this period was under Carter's budget, but the first nine months of 1989 was under Reagan's and this data makes Reagan's record look better than it really was. At a six percent interest rate, the current yield on the 30 year Treasury Bond (as of December 8, 1995) the debt accumulated during these eight years adds $101.5 billion to the federal budget in interest payments.

There is a lesson here, that has nothing to do with political propensities, tax cuts that do not generate continuing economic growth, will add to the national debt, and the interest payments on that debt will add to even further budget deficits. It cannot be denied that Reagan was one of the most popular Presidents of this century. the very things that made him popular, tax cuts, and military build ups are responsible for much of our current controversy concerning the balanced budget.

Is the Debt Really a Problem?

The most valid criticism of the debt is its potential for disrupting credit markets, by artificially raising interest rates and crowding out private investment. Naturally, a debt as large as ours will have an upward influence on interest rates, but the evidence does not suggest that it is substantial.

Today, we find ourselves in roughly the same position this country was in 1805. President Jefferson borrowed about the same amount as our GDP from England and Holland to buy Louisiana from the French (we owe an amount almost the same as GDP). History has taught us that even when we added the debt acquired in the War of 1812, it did not bankrupt the government or its citizens. By the end of World War II, we again had a national debt of $271 billion and a GDP of $211.6 billion. The predictions that my generation would be paying 60 and 70 percent effective tax rates to pay off the debt never materialized. Frankly, I wish my debt was only equal to my annual income, and I suspect most people in their thirties and forties have the same wish. Surely the size of debt and current deficits are not a source of any grief. If it is then little is learned from history and little is known about economics.

The serious question is why did we acquire the debt and what must we give up if we are to pay it off. When Reagan took office, we were in the midst of a cold war. The increases in government expenditures for the military, caused our chief rivals to spend larger proportions of their GNP on the military and eventually caused the economic and political collapse of the Soviet bloc. Was the end of the Cold War worth the debt we acquired? Are the benefits of education worth a few million dollars in current debt? Is providing for the poor, the elderly, and children worth a few billion in debt? Are veterans' pensions for those who stood between us and our enemies worth a few billion in debt? What about the Interstate Highway System, subsidies for the company where you work, research for medical reasons, the pure sciences, the social sciences, and the tens of thousands of things on which the government spends our tax dollars? These are the priorities that any society must set. Probably the only realistic answer to whether the debt is a problem is what we do about it and what priorities we set. History will judge this society, whether we are judged as compassionate, or barbarians, or economically astute or fools is for future generations of historians. Let us all hope that we choose correctly.

Hedayeh Samavati, David A. Dilts, and Clarence R. Deitsch, "The Phillips Curve: Evidence of a 'Lady or Tiger Dilemma,'" *The Quarterly Review of Economics and Finance.* Vol. 34, No. 4 (Winter 1994) pp. 333-345.

During the period examined, January 1974 to April 1990, the evidence reported (here) suggests that there is a unidirectional causal relation from the inflation rate to the rate of unemployment. If, the Phillips Curve were vertical over this sixteen year period, one should have observed no causality between the unemployment rate and the rate of inflation (the natural rate hypothesis, i.e., any rate of inflation can be associated with the natural rate of unemployment). The empirical findings reported here, however, suggest a non-vertical Phillips Curve.

Finally, the results reported here suggest the proper specification of the empirical models used to test the Phillips Curve relation. Friedman argued that the proper specification of the regression equations used to estimate the Phillips Curve relation is of significance (both theoretically and empirically). "The truth of 1926 and the error of 1958" (as Friedman argued) is supported by the evidence presented in this paper. The statistical evidence presented here supports Friedman's claim that inflation is properly specified as the independent variable in "Phillips Curve" analyses. That is, rather that the specification proposed by A. W. Phillips (1958), the proper specification is that proposed by Irving Fisher (1926) as asserted by Friedman. This finding is of significance to those researchers using ordinary least squares to examine relations between inflation and unemployment. Irving Fisher's specification is consistent with Friedman's well known theoretical arguments concerning posited relations between inflation and unemployment, hence, his taste for inflation as the independent variable.

Maybe this box does not represent the final word in the Phillips curve controversy, but this research suggests that there is a short-run view of the Phillips curve and that the idea of rational expectations may not be as good as it looks at first blush. This study employed the Granger causality methods to inflation and unemployment data in the United States for the period identified to see if there was causality -- the evidence suggests that inflation causes unemployment.

Trade Policies

The United States is a member of the World Trade Organization. This organization traces its genesis back to the Kennedy Round or General Agreements on Trade and Tariffs. The purpose of the Organization (as with the GATT) is to assure open economies that will facilitate international trade. Subscribers to the charter of the WTO are to refrain from the subsidization of commodities in international trade, and other such unfair trade practices. These countries have also agreed that they will maintain low tariff rates so as to facilitate the importation and exportation of goods and services.

Particularly thorny problems have arisen concerning several unfair trade practices. In the earlier part of the Bush administration the Japanese were “dumping” steel, that is, they were selling steel in the U.S. for prices that did not cover the cost of production and transportation. This was being done, according to American officials, to acquire market share in the U.S. and run domestic producers out of the business. The WTO condemned the practice, and the U.S. imposed significant tariffs to bring Japanese producers back into line with their treaty obligations.

There are a significant number of countries in the world who are heavy indebted and are developing. Foreign debt burdens have been increasingly heavy burdens for these developing economies. In 2003 the U.S. and several other creditor nations forgave significant amounts of the foreign debt for the poorest countries in Africa south of the Sahara. It was hoped in so doing that these countries might regain a place in the economic landscape of the new global economy.

There are several free trade areas, which have developed across the planet. These free trade areas are based on treaties that go beyond the requirements of the WTO in fostering international trade. The complete elimination of tariffs, streamlining of customs requirements, and migration policies are often the methods by which these free trade associations operate. The North American Free Trade Area, includes the United States, Canada, and Mexico. Such organizations exist in Latin America and Africa. Perhaps the most comprehensive of these is the Europe Economic Community, which includes currency and other forms of political integration designed to make the continent a far easier place in which to do business.

The International Monetary Fund and World Bank are also international organizations whose aim it is to gather and distribute data to monitor the economic well-being of the world community. The IMF and World Bank also play important roles in assisting developing nations, and as lenders of last resort to the LDCs.

CHAPTER 11

Controversies Concerning International Trade

The increasing globalization of the world's economy requires that there be a discussion of the subject in any course such as this. The idea of comparative and absolute advantage were introduced in Chapter 1, from this discussion we shall extend the discussion to include the case for and against protectionism and a discussion of exchange rates.

Protectionism: Historical Concerns

The United States has a long-history of isolationism. Woodrow Wilson kept the United States out of World War I based on the argument that we ought not become entangled in European difficulties. As it turns out, technology made the argument obsolete, as German submarines brought the war to American passengers aboard allied passenger ships. World War I had the affect of converting many American isolationists from their belief the United States could hide behind two great oceans – Wilson among them.

The 1920s saw American commercial interests expand abroad. The Panama Canal, interests in Asia, Europe and in particular Latin America resulted in a foreign policy in this Country based on the idea that American commercial interests were the driving force behind our political relations with the rest of the world.

Comparative advantage as espoused by David Ricardo seemed to have placed this Country in a position where it could impose its commercial will on many Latin countries in the fruit trade (U.S. Fruit in Guatemala, and Nicaragua), oil (Amoco, Getty, and Gulf Oil in Mexico and Venezuela), and the coffee trade (Colombia and several American commodity companies).

The British also imposed their commercial will on several areas of the world. Rubber, native to Brazil, was a particularly difficult natural resource to exploit in its natural setting, therefore the British took trees from Brazil and moved the entire industry to South Asia where exploitation in terms of cheap labor and transportation made the industry viable. Henry Ford, on the other hand, attempted to turn the native Brazilian rubber resource into a viable industry in his Fordlandia experiment, which was a flop of near unprecedented proportions. He purchased an area in the Amazon about size of Rhode Island for some $2 million, and moved machinery and people in to produce rubber. What he had not planned on was the impossibility of such an enterprise several hundred miles south of the mouth of the Amazon River.

Political colonization, gave way in the twentieth century to commercial colonization. The experience of many developing nations, particularly at the hands of

the U.S. in Chile, Colombia, and Central American, and in Africa South of Sahara at the hands of Portugal, Belgium, France, and Great Britain were of such a barbarous nature that much of this region still bears the scares of these imperial experiments.

Historically, one can easily see why many countries are reluctant to engage in free trade. Many Less Developed Countries are extremely suspicious of the traditional commercial and colonial powers. As a result overcoming this historical record is difficult in Africa and Latin America.

Perhaps no place in the world are the sins of the British, French, and American commercial interest more evident than in the Middle East. The British standard of living and their modern commercial viability was built on the control of oil in the Middle Eastern countries of Iraq, Iran, Jordan, and Egypt as well as the Persian Gulf States. The United States also took on some of the exploitation of oil resources in the Persian Gulf, primarily in Saudi Arabia (an area the British believed to be trivial because the crude oil is high sulfur).

Protectionism is therefore often synonymous with nationalism. As the African, Middle Eastern, and Latin countries because independent, mostly after World War II they tended to protectionism. However, the traditional commercial powers, France, Germany, the United Kingdom, United States, and Japan also understood that a high standard of living was, in large measure based, in vibrant domestic industries which paid workers well, who in turn, could consume much of the domestic output. Therefore, free trade was of little concern to manufacturing concerns in the U.S.A., but more so in Europe and Asia. It is in this historical context that the tendency toward protectionism must be understood.

Protectionist Policies

Protectionist policies take on several forms. In India and much of the developing world, currency is a problem. India controls very tightly any trade in hard currencies. The reason of this is that hard currency is what gives most LDCs their ability to purchase capital equipment and natural resources. Oil in particular is bought and sold in dollars, or recently in some countries like Iran, the Euro is accepted for payment for oil.

In Chapter 1 much was made of Ricardo's ideas concerning comparative advantage, but where there is no comparative advantage, trade may still occur. Trade with a country in which the other country has an absolute advantage, may still occur, to the extent that you have control of adequate amounts of hard currencies. India, has little that Indonesia or Iran wants, perhaps some cheap manufactured goods, but for the most part India relies on trade of things like textiles with the U.S. and Europe to lay their hands on Euros and Dollars, which in turn, provides oil, and machinery. Therefore, it is

clear that there is a motivation for governmental control of any hard currency that may find its way into India.

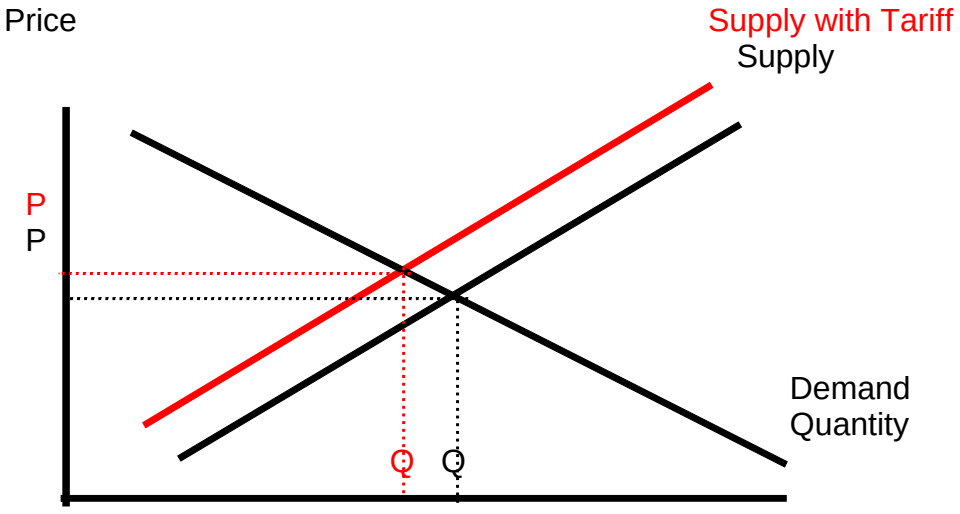
The more traditional ways in which protectionist policies occur is through embargoes and tariffs. Embargoes are generally the result of trade wars. Where one trading partner or the other engages in commercial practices or activities, which are either politically or morally repugnant, trading partners, will often stop commercial ties.

In 1979 for example, one the United States' largest trading partners was Iran. With the overthrow of the Shah and Islamic Government take over, politically the U.S. severed ties with Iran, and stopped all direct commercial relations. This is an embargo. The U.S. has had such an embargo against several countries, which continue currently, including Cuba and North Korea. These sorts of governmental actions, in the civilized world, are rare.

Perhaps the most common of all protectionist actions are tariffs. The granting of Most Favored Nation status in the United States means that tariffs are held to a minimum, and that the maximum tariff imposed on any commodity shipped into or out of the United States will be a maximum of 3%.

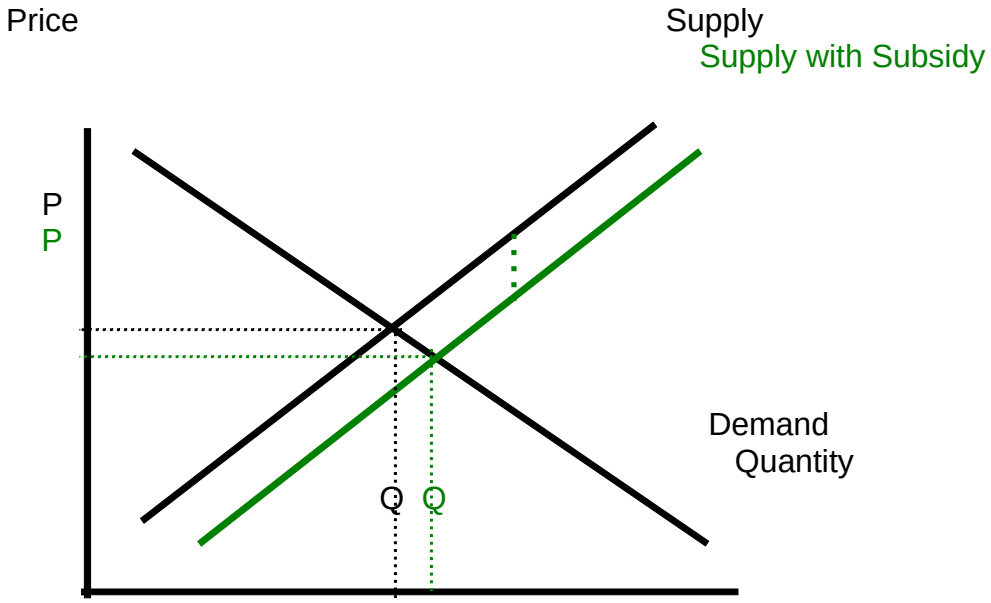
A tariff is an *ad valorem* tax. In early American history, the revenue upon which the U.S. government survived resulted from whiskey taxes, and tariffs – the later being the majority of all taxes collected. It was not until the 1930s that U.S. turned to income as a tax base.

In an otherwise competitive market a tariff has the effect of shifting the supply curve to the left. Observe the following diagram:



The result of a one dollar tariff, for the price of the commodity will depend on the elasticity of demand and the elasticity of supply. If there was a perfectly inelastic demand curve, then the tariff would all be reflected in the price of the commodity.

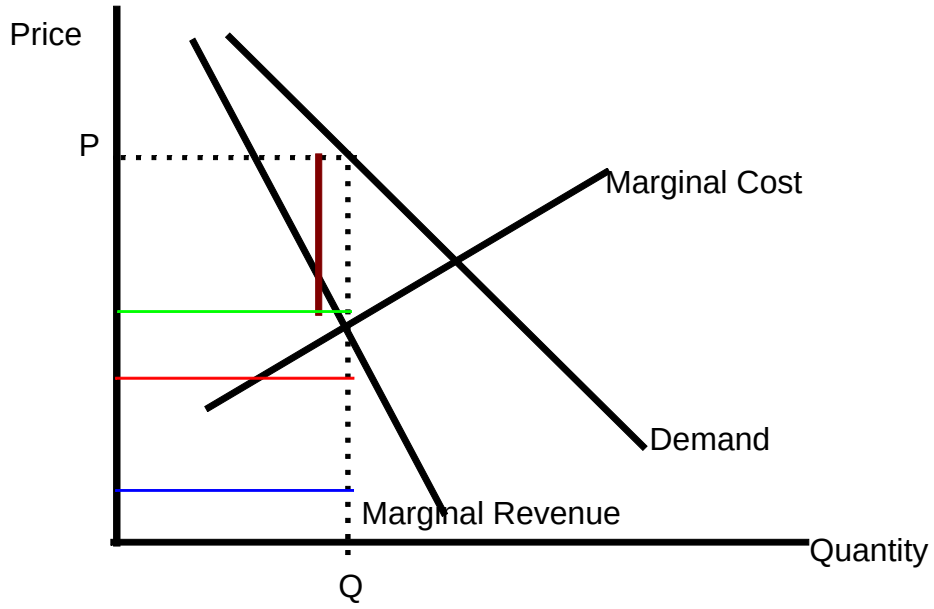
One reason that a tariff might be imposed is that the exporting country is subsidizing the production of a commodity for trade. Such subsidies are not looked upon as free trade and have the necessary affect of creating a price for the export that does not reflect any comparative efficiencies. Free trade is generally understood to mean that it occurs on the basis of comparative efficiencies of production, and not artificially reduced prices through subsidy. Again, assuming a competitive product market a subsidy in production is shown in the following diagram by the green supply curve.



In this case, the policy makers who impose a tariff on this commodity would do so in an amount equal to the vertical distance between the green demand curve and the black one, which is the amount of the subsidy.

Notice, however, that these analyses are conducted assuming a perfectly competitive product market. The result, if another market structure is assumed, maybe entirely different. If we assume, for example, an imperfect competitor, a monopolistic competitor or a monopolist the burden of the tariff and the amount of the commodity exchanged will be left unchanged in the case that the tariff is imposed at a level below the demand curve, and does not cause the monopolist to shut down (i.e., where the variable cost of production cannot be covered at that level of production). So it very much depends on the assumptions made concerning the market structure as to what the results of a tariff are in that market.

Consider the case of the following imperfect competitor where a tariff is imposed on her commodity:



If the blue line shows the amount of fixed cost with this total revenue, the red line the variable cost, and the green line the total cost, then you may place a tariff up to as much as the brown line per unit of the commodity sold without affecting either the price or the quantity sold in the marketplace.

The extent to which markets are competitive, in large measure, suggest the extent to which free trade impacts what consumers ultimately pay for the imports in this country. Where the market structures are not competitive the argument in support of free trade becomes strained, to the extend that imports become more costly to domestic consumers.

Legitimate Reasons for Protectionism

Free trade is perhaps a good thing to the extent that it is based on competitive markets. However, remember that in reality free markets do not exist, the assumptions are just way to restrictive. The markets we actually live in are various forms of imperfect competition. Therefore, the cost to consumer argument, while it sounds good, should be taken for what it is worth.

There have always been a few arguments against “free trade” which are worthy of some mention in any discussion of the subject. Infant industries, national security, and “fair” trade have long been recognized by even the most adamant admirers of David Ricardo to legitimate causes for protectionism.

Infant industries refers to the fact that certain domestic industries may find it difficult to get a foot-hold if they are forced to compete with foreign producers. So life is

tough, you might respond. However, there are certain economies of scale which requires a firm to be given an opportunity to progress to a point where it can become competitive rather than die from foreign competition before it become big enough to prosper, including reaching the scale necessary to be competitive. Protecting these infant industries makes sense from both the domestic point of view, and the possibility that the industry can take advantage of technology or other resources and may become the low cost producer if allowed to “live” long enough.

National security is also a powerful argument for trade restrictions. The United States sold Venezuela F-16 fighter planes. By purchasing these aircraft from a country with whom you may have worsening relations, the Venezuelan government has placed itself at the mercy of a potential adversary. No country wants to be in such a situation. In several cases countries, including the United States, have erected protective barriers around those industries they perceived to be essential to their national security.

World War II provides an interesting case in point. The U.S. sold the Japanese scrap iron and iron ore, which resulted in the Japanese building a steel industry that fueled military production. As the steel industry grew in Japan it began to locate the mills in areas where the resources existed to carry out production – Korea and Manchuria. Without our initial provision of critical resources, the Japanese would have found it difficult to build a military-industrial complex sufficient to carry out it wars in Manchuria, Indo-China, and eventually in the Pacific.

Fair trade is becoming a more complex problem. When comparative advantage arises from the exploitation of labor that raises an array of ethical and moral problems. Clothe from Bangladesh where a laborer may not make a living wage poses both ethical and moral problems, but take that a step further. What about textile workers in the United States who lose their jobs to the dollar a day crowd in South Asia? Not only is that an ethical problem, it is also an economic problem. As industrial jobs disappear from the United States in lieu of importing clothes, cars, and consumer electronics, what happens to the displaced workers?

Free trade is one thing, but when comparative advantage is based in labor markets, which do not pay living wages, have no protections for worker safety or health, make no provision for health care or retirement, then that is not a comparative advantage. What this describes is a system abroad that is corrupt and corrosive. Such corruption and devastation of the a foreign labor force cannot and should not be misunderstood as a comparative advantage upon which normal commercial relations can be tolerated. Cost minimization has its limits, and when it involves less than a living wage that is not a viable long-term solution to a comparative advantage relationship with trading partners.

There are other issues, which impact American commercial interests, and workers, which are of critical importance. In some of our trading partners health care is provided through social programs paid for at tax payer expense. Sweden, Denmark and other European economies have such social welfare programs. So too does

Japan, Germany, and China who are competing in large segments of American markets. American firms, General Motors, United States Steel, Boeing, and a host of others have to compete in these world markets, and they are placed at a competitive disadvantage, not through comparative advantage, but through direct subsidies of the foreign producers because they are relieved of serious labor expenses by the governments of those foreign countries. If we were to add the costs of health care, and charge a tariff for those expenses on imported goods, the cost of many of those items would become non-competitive.

The same thing is observed in other ways by foreign producers moving to the United States. Honda has opened a couple of plants in the U.S. and have work forces that significantly younger than their domestic competitors. While for GM the company claims it spends $1500 per employee on health care, and that Honda spends less than $500, GM cries foul. What is perhaps more interesting as the Honda employees start to approximate the average age of GM and Ford employees will Honda continue operations in this country or find greener pastures, so to speak.

Exchange Rates

No discussion of globalization would be complete without a discussion of exchange rates. There have been discussions offered already in Chapters 1 and 9 in this text. However, there are a couple of other issues worthy of brief mention.

The U.S. Dollar has been allowed to float on the open market against most other currencies since President Nixon took the U.S. off of the gold standard in 1971. By allowing the Dollar to seek its own value in the world's currency markets it is imagined that the Dollar will be fairly and efficiently valued. Sounds very good, but it is not so simple.

The U.S. has trading partners who have pegged their currency value against the dollar. Up until 2005 the Chinese unapologetically pegged the value of their currency to the Dollar. This meant that the relative value of the two currencies would remain exactly the same, and therefore the advantage that the Chinese received from an undervalued currency would continue to permit them to export to the United States. In 2005 the U.S. government applied considerable pressure, to little avail to get this practice to stop. Today the Chinese have put together a market-basket of currencies to which they peg their own, but it is still very much dependent on the value of the dollar. Again, this is neither free trade, nor fair trade.

Before anyone start to feel the victim here, we have done much to shoot ourselves in the foot. The high levels of public debt, both state and federal, have contributed some pressure on financial markets. Until the Reagan administration this had very little implications for trade. However, in the 1980s the law was changed and foreigners may now hold U.S. Government obligations. The result of this is that

Treasury Bonds and Bills are held as foreign cash reserves by central banks and governments of foreign countries. It is estimated that the Japanese and Chinese hold more of the U.S. debt than is held domestically. Such foreign holdings of U.S. debt applies to the value of the Dollar.

As monetary policy is brought to bear on domestic inflation, the Fed shrinks the money supply, which, in turn, drive up the interest rates, which does two important things. These are, makes the U.S. a more attractive place for investment, and increases the likelihood that the Dollar will gain in value – again, another reason for investing in Dollar-denominated assets.

As the expectations that the Dollar will be worth more, the motivation for purchasing Dollar-denominated assets increases. If the Dollar appreciates 10% per year against the Yen, Japanese investors will by the currency and put it in their mattresses and do better than most domestic investments. 5% on a Treasury Bond is just gravy in such cases.

There is also all the foreign policy and political aspects of people having faith in the U.S. Dollar. As the United States become embroiled in foreign conflicts, or has questionable political scandals, people will lose faith in the continued stability of American commercial and political relations, which undermines the value of the dollar. These matters are rarely short-lived. The problems arising out the 1973 War in the Middle-East haunted the value of the U.S. Dollar for nearly a generation. Today's problems are no less severe.