



Economics: An Introduction and Vocabulary

Economics is a social science which attempts to explain the behavior and interactions of economic actors in terms of the items of value they exchange. Depending on the field within economics, "actors" can mean individuals, households, firms, industries, governments or entire countries. The "items of value" can be tangible or intangible, monetary or nonmonetary. Most of economics addresses one or more of the following concerns:

1. How should scarce resources be allocated among competing wants? What mix of products should be made, how and for whom?
2. How can sufficient growth be attained so that the well being of society increases? How can productive capacity be increased?
3. How should productive capacity be utilized so that there will be full employment with stable prices?

Since any allocation of scarce resources must inevitably involve balancing the wants and needs of one group of people against those of another, economics is directly related to politics, ideology and values. A social convention or rule for the allocation of resources may rely on any one or a combination of four mechanisms: the market system; the authority of a social or governmental institution; the persuasion of ideology, indoctrination, or education; or an individual's moral code.¹ Economics concentrates primarily on the market or exchange mechanism. It leaves to other disciplines (political science, sociology, philosophy) the explanation of alternative mechanisms.

Professor Michael G. Rukstad prepared this note as the basis for class discussion.

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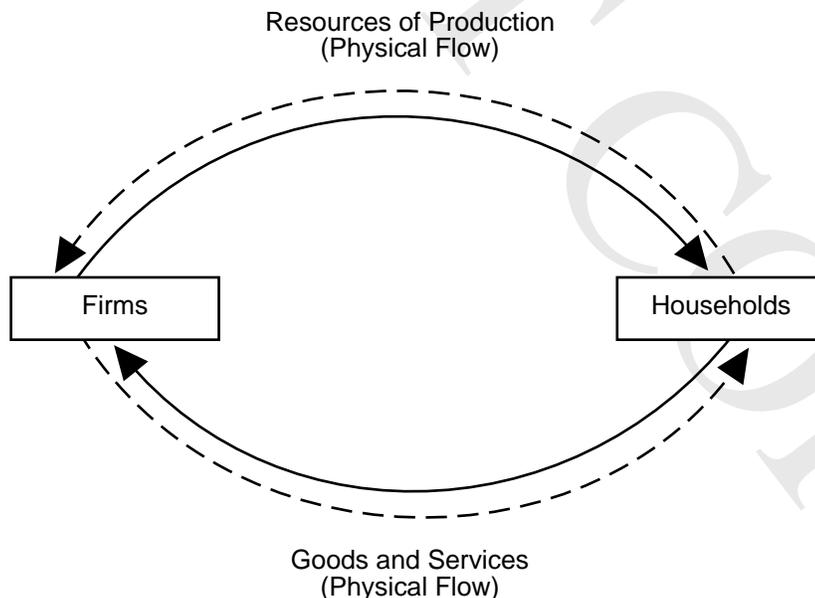
1. These four methods of social control—exchange, authority, persuasion, and moral codes—are set forth in Charles E. Lindblom, *Politics and Markets, The World's Political-Economic Systems* (New York: Basic Books, 1977).

I. The Economy as a Circular Flow

Even in a simple economy, countless transactions and exchanges occur. Individuals work and consume, firms produce and invest, governments and foreigners purchase goods and services. Millions of decisions are continually made by millions of actors. Money, goods, and other items of value constantly change hands at all levels of the economy. It is obviously impossible to track and study all the individual transactions. It is possible, however, to count and classify on an aggregate scale classes of transactions involving goods, services, resources and their monetary equivalents.

Each actor in an economy is both supplier of some goods or services and a demander of others. In general, households demand manufactured goods and services and supply resources. Firms, on the other hand, demand resources (labor, capital, land, and managerial skills), and supply goods and services. Households and firms must pay the market value for what they use. Similarly, they will only be willing to supply the market if they are compensated appropriately. In a modern nonbarter economy, this compensation is usually in the form of money. Thus, for every transfer of goods or services from seller to purchaser, money representing the market value of the product will flow in the opposite direction. An economy can be depicted as a circular flow composed of households and firms exchanging money for goods and services and for resources of production. (See **Figure A**.)

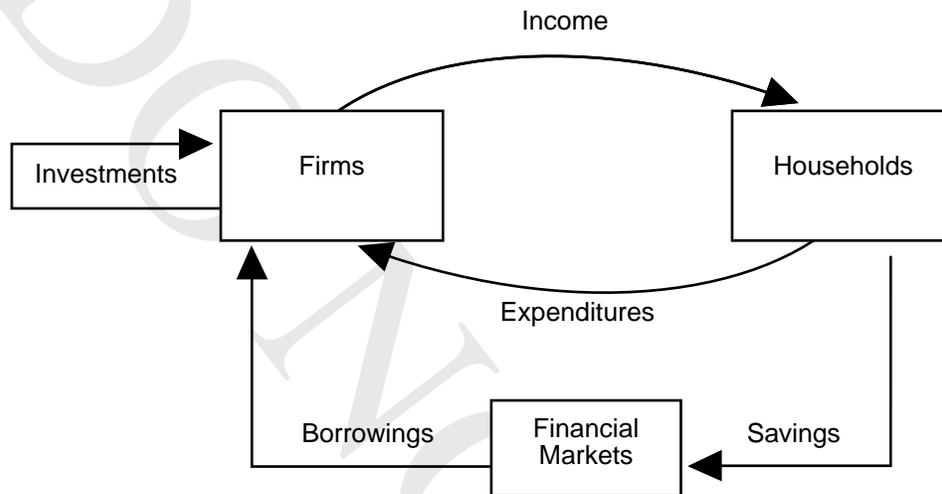
Figure A



We can simplify the diagram if we record only the money flows (the solid lines) and leave out the "real" flows of goods, services and resources (the dotted lines). We should always keep in mind, however, that there are two sides to every transaction. We should also recognize that not all income is spent. Some income is saved and recycled to investment through the financial markets, as in **Figure B**. The money flow of savings and borrowing from households to firms is

shown in this diagram. (Another side of this transaction is a "real" flow of financial assets from the firms to the households, but this line will be omitted for now, for the sake of simplicity.)

Figure B

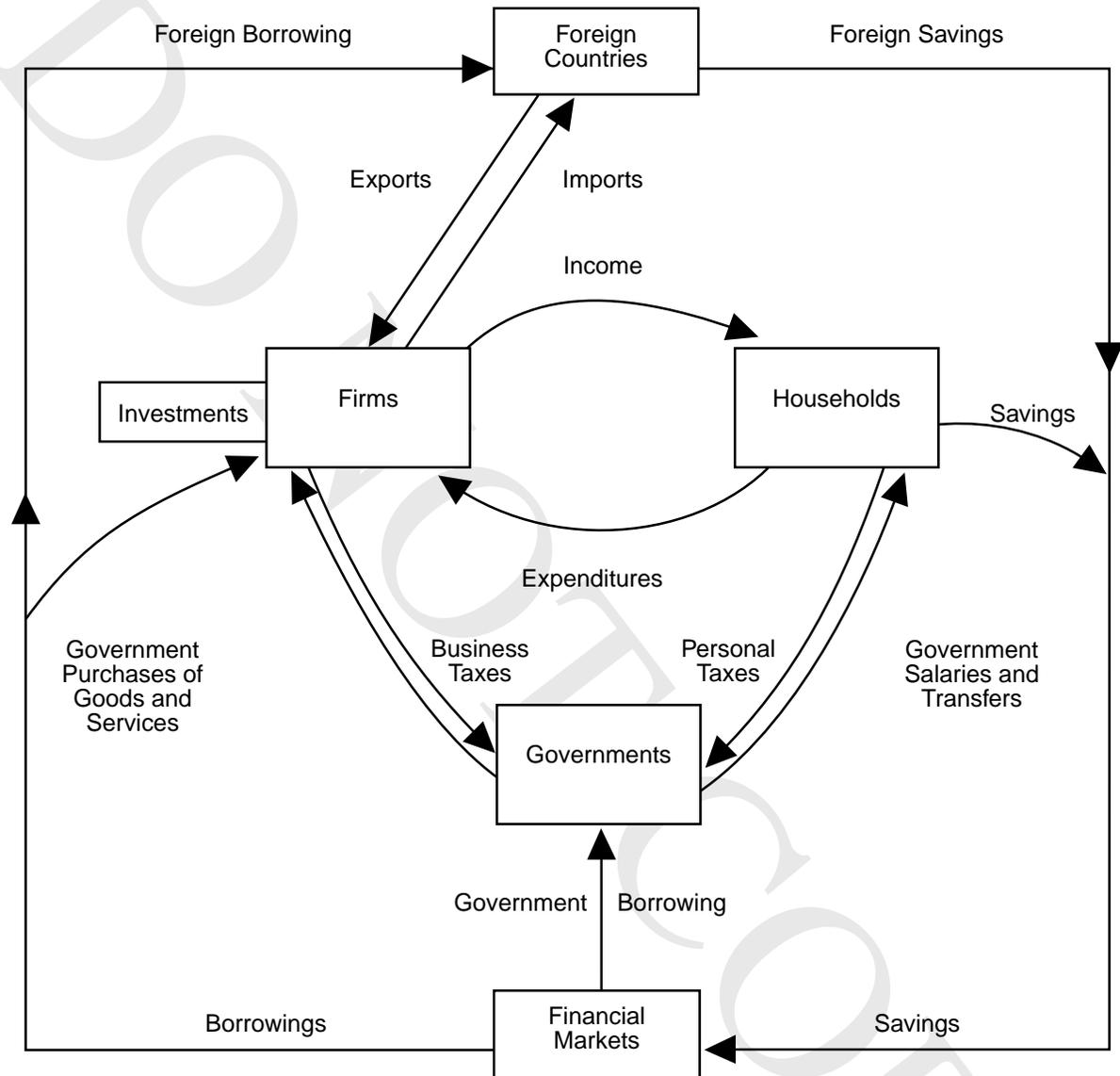


While the basic circular flow diagram provides a useful framework to help us to understand the economy, we have so far neglected two other major actors.

First, the government sector (national, state and local) is neither a household nor a producer. Yet it affects other actors by its taxation, expenditure and debt policies.

Second, we cannot consider an economy as isolated from the rest of the world since countries have a great impact on each other owing to transactions such as imports, exports, and foreign borrowing and lending. Therefore, we should incorporate both the foreign and government sectors into our flow diagram (see **Figure C**). Here, the government sector makes payments to households and firms, collects taxes, borrows savings and consumes both goods and labor. The foreign sector buys and sells goods and services and borrows and saves in our domestic financial markets.

Figure C



Notice that this diagram is concerned with *final* flows, which is to say, expenditures on *final* output. We ignore intermediate flows because including them would involve double counting and exaggeration of the total expenditures we are measuring. Two examples of an intermediate flow are the sale of wheat to the miller to make flour and the sale of flour to a baker to make bread. Only the sale of the bread to the consumer is a final flow or final expenditure. The cost of the flour, and thus the wheat, is included in the price of bread, and should not be double counted.

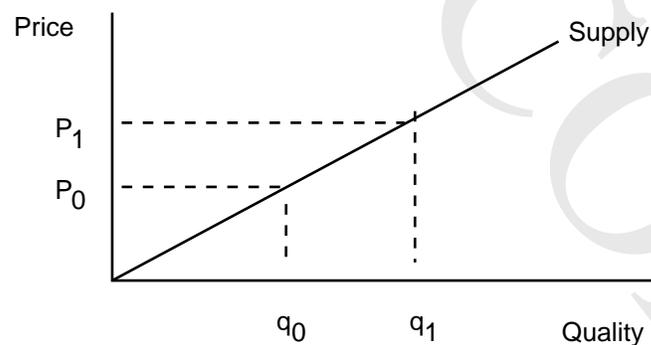
II. The Concepts of Supply and Demand

The cornerstones of modern economics are the concepts of supply and demand. The economist's response to our first question on page one of how scarce resources are allocated is that the allocation is determined by the market mechanism—by supply and demand. As we will see later, even the answers to the second and third questions about growth and utilization use these same concepts. In a market that consists of a number of buyers and sellers for some particular item, supply-demand analysis determines an "equilibrium" market price and quantity for that item, and describes the conditions under which that equilibrium will change. Accordingly, the next section of this note will focus on three topics: (a) determination of the market price and quantity, (b) changes in the market price and quantity, and (c) market failures and the role of government.

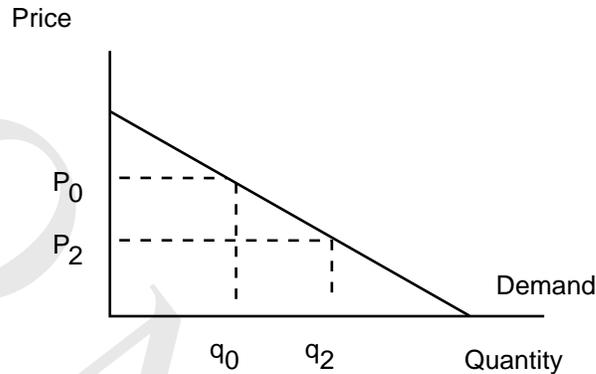
A. Determination of the Market Price and Quantity

In order to understand the determination of the market price and quantity, we will first examine supply, then demand, then put the concepts together to form a market. The "supply curve" (actually a straight line on a graph), is a schedule of prices and quantities such that for a given price (p) the producers would be willing and able to produce a given quantity (q_0). The supply curve slopes upward because higher prices (p_1) are needed in order to compensate a producer for the higher cost of obtaining additional resources needed to produce the larger output (q_1). (See **Figure D**.)

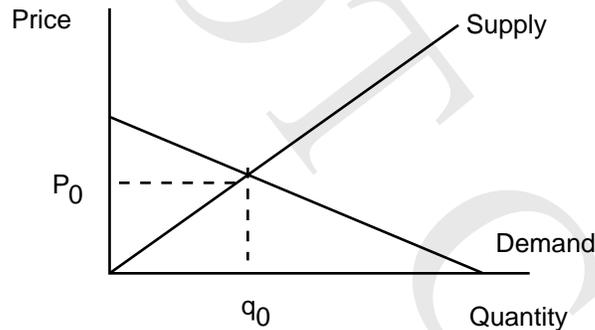
Figure D



Similarly, the demand curve is a schedule of prices and quantities such that for a given price buyers are willing and able to purchase that quantity of the item. It slopes downward because buyers as a group respond to lower prices by purchasing more. Specifically, the lower prices will induce some buyers to substitute this cheaper product for similar products which are more expensive. For other buyers, the lower price will mean that they can purchase more of everything (including possibly, more of this particular product) with the income saved by making the cheaper purchase. **Figure E** shows a typical demand curve. If the price falls to p_2 from the original p_0 , then the quantity demanded increases to q_2 .

Figure E

In **Figure F** we bring supply and demand together to form a market for that particular item.

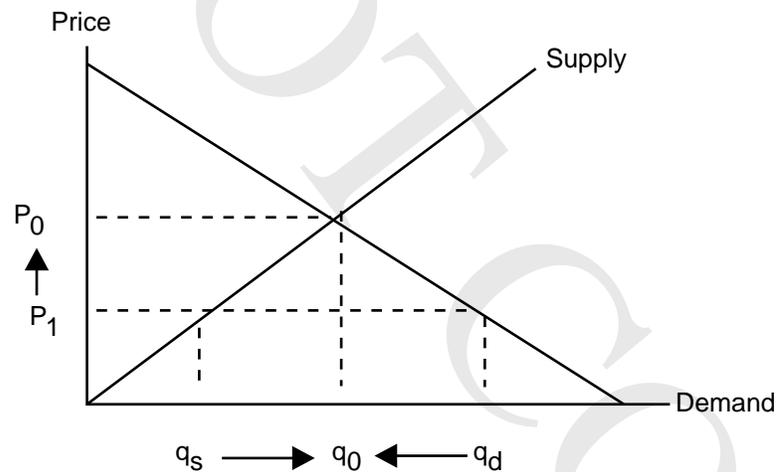
Figure F

There are three points to keep in mind regarding **Figure F**:

1. In a freely operating market (without external interference such as price controls or quantity rationing), the market price and quantity (p_0 and q_0) are determined simultaneously. One does not "determine" the other.
2. There is only one actual market price (p_0) and one actual quantity transacted (q_0). This means that some buyers and sellers were not able to make a transaction or additional transactions because they could not buy or sell at the going market price. Buyers who were willing and able to pay the market price of p_0 or more, as indicated by the portion of the demand curve to the left of q_0 , received the goods produced. Likewise, those suppliers who could produce goods at market price of p_0 or less, as indicated by the portion of the supply curve to the left of q_0 , were able to make the sale. This is what economists mean when they say that the market price mechanism allocates scarce resources among competing needs.

3. At any point on the graph other than "equilibrium" (p_0, q_0) both buyers and sellers (in the aggregate) would be dissatisfied and their natural tendency would be to move toward "equilibrium." For example, suppose the price was too low as in **Figure G**. At that price, consumers would demand q_d , which is more than q_s supplied by the producers. When purchasers demand more of a good than is available (i.e., when there is "excess demand") they will bid up the price.² As prices rise, suppliers will have an incentive to produce more of the good and, at the same time, some of the quantity demanded will fall (as indicated by the arrows). This process will continue until the market comes to rest at p_0, q_0 once again. The process works in reverse if there is "excess supply" caused by a price which is set too high. The price will start to fall until it reaches p_0 and q_0 . Because market forces always push prices and quantity toward one point, that point is called "equilibrium" to connote a combination of price and quantity such that there are no pressures for change. Thus, not only do the curves help explain the behavior of consumers and producers, they also show how prices and quantities for a good are determined and remain stable.

Figure G



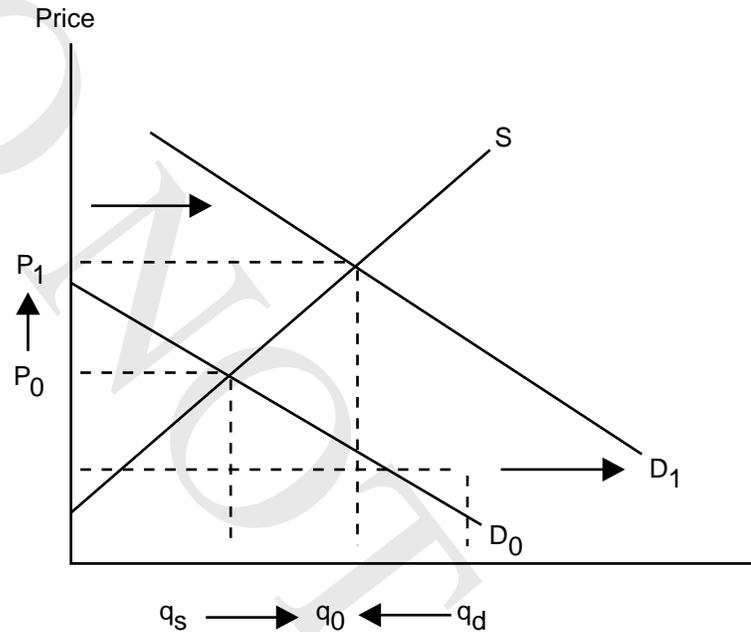
B. Changes in the Market Price and Quantity

Even though market prices and quantities are at equilibrium, new forces can cause either or both the supply and demand curves to shift. Such forces create a new equilibrium point toward which price and quantity will adjust. Consider, first, a shift in demand. The demand for a consumer product such as coffee will shift in response to changes in taste, income, size of the market, price of a substitute product, and other forces. If medical science were to discover that coffee improves one's sex life, the quantity of coffee demanded at all prices would increase. **Figure H** illustrates an increase in demand from D_0 to D_1 . The consequence is a movement of

2. This assumes there are no price controls. If price controls are set too low as in **Figure G** and prices cannot rise, there will be a permanent state of "excess demand." Since the market cannot allocate resources, some other method will arise or be devised. Most often the rule for allocating the scarce resource is "first come, first served." People wait in lines, such as the gas lines in the United States in the summer of 1979. At other times governments issue rationing coupons such as gasoline coupons during the Second World War in the United States.

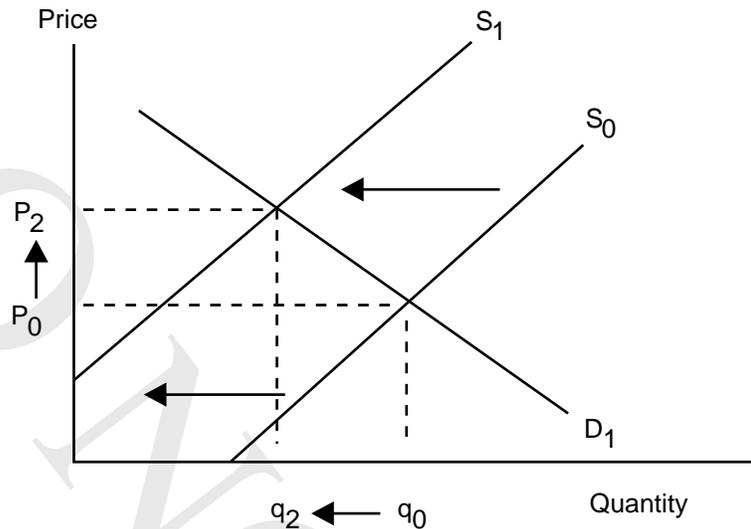
the entire demand curve to the right, as shown by the arrows. This is accompanied by a simultaneous shift in the price level upward.

Figure H



Imagine, on the other hand, a shift in supply. This might arise if there were a change in the cost of producing coffee, in the number or productivity of coffee producers, or in the technology of harvesting. If, for example, there was a significant coffee crop failure in Brazil, we would expect to see a fall in the quantity supplied at all coffee price levels given in the supply schedule. **Figure I** illustrates a decrease in supply from S_0 to S_1 .

Figure I



The result is an increase in the price to p_2 and a fall in the quantity transacted to q_2 . A two-day frost in Brazil in 1975 did just that—it triggered events leading to the rise in the world price of coffee by 610% in 21 months (see BGIE case: "Brazil in the Mid-1970s: Fast Growth or Slow," p. 7). Then as world coffee prices fell in 1976, Brazil tried to raise prices by buying up the crop of Angolan coffee (*ibid.*, p. 10). This type of interference, where successful, could be represented by the process depicted in **Figure H**.

One important question we would like to answer is, how much will the quantity demanded or the quantity supplied change when there is a given change in price? In other words, how *responsive* is demand or supply to a given change in price? Certainly responsiveness differs among goods. For example, the price of salt would have to rise significantly before people would cut back on their use of it. On the other hand, if the price of silk pajamas rises very much, people will generally do without.

The economic term for the responsiveness of the quantity demanded to a change in price is "elasticity." (Technically, we say "price elasticity" since we may identify other elasticities such as "income elasticity.") Elasticity is defined as the percentage change in quantity divided by the percentage change in price.³ The convention economists use is that if the quantity demanded

3. Formally, elasticity = $\frac{\Delta q/q}{\Delta p/p}$ where the symbol " Δ ," called "delta," means "a change in. . . ." If elasticity is greater than 1, the demand or supply curve is called "elastic," and if elasticity is less than 1, the curve is called "inelastic." There are two points one should keep in mind. First, one should note that elasticity does not mean the slope of the supply or demand curve. Slope is defined as $\Delta q/\Delta p$. Second, elasticity may change over time as people are more able to adjust to the change in prices.

In order to understand the equation for elasticity, we will examine a numerical example involving the demand for oil. In discussions of energy policy, we will be interested in the price elasticity of the demand for oil. In other words, we want to know the percentage decrease in the quantity demanded for a given percentage increase in the price. Assume we currently consume 100 barrels of oil ($q = 100$) and the price was \$20 per barrel ($p = 20$). Then imagine that the price increased \$2 to \$22 per barrel ($\Delta p = 2$). One can easily see that there was a 10% change in price ($\Delta p/p =$

changes significantly with a given change in price, the demand curve is called "elastic." If the quantity demanded changes very little (is unresponsive to price changes), the curve is "inelastic." The same concept can apply to the supply curve.

C. Market Failures and the Role of Government

The strength of a market system is that all resources and outputs will efficiently be allocated to their most productive, beneficial uses by the "laws of supply and demand." "Efficiency" to economists means that the economy will get the most output from given resources and this output can be used to improve the well being of at least some of the members of society, without making anyone worse off. On these grounds, there appears to be no role for government in the economy other than maintaining "the rules of the marketplace," since the market system is performing "optimally."

There are, however, circumstances known as "market failures" which justify government intervention in the economy. We can identify five reasons why markets may fail and the government may have to intervene:

1. inequity (unfairness)
2. failure of competition
3. underutilized resources
4. externalities
5. public goods

Under the first reason, inequity, government intervention is justified even if markets are efficient. Under the second and third reasons, on the other hand, markets may not be efficient owing to underutilized resources or a lack of competition. The last two reasons, externalities and public goods, pose special problems that a market system alone can never handle. Each of these five points is elaborated further in the following paragraphs.

1) Inequity The distribution of resources and outputs resulting from a perfectly functioning market system will be efficient, but it may not be equitable. If the market's distribution of benefits does not meet society's criterion of equity, government can intervene to redistribute income or wealth. But this raises additional problems. Since government's fiscal tools for redistribution (taxation, expenditures, and transfer payments) may distort incentives for effort and risktaking, market efficiency may be impaired as a by-product. Hence governments always face trade-offs between equity and efficiency which cannot be resolved by economics alone. Society must make its preferences known through the political process.

2) Failure of competition There are some circumstances which lead to "natural monopolies" and hence, by definition, to a lack of competition. For example, the economics of producing electricity may justify only one large power plant which exploits economies of scale to supply the entire community. To have many smaller, competing power plants would be inefficient (since all would be operating at less than efficient scale). In most countries, governments either regulate or own natural monopolies such as utilities and local telephone systems.

2/20 = .10). If the quantity of oil demanded falls by 5 barrels from 100 to 95 barrels as a result of the increase in price, then there was a 5% change in quantity ($\Delta Q/Q = 5/100 = .05$). Thus the elasticity or responsiveness of the demand for oil is $1/2 (=5\%/10\%)$ and this is called "inelastic."

3) Underutilized resources When a national economy exhibits high levels of unemployment, idle factories, huge balance of payments deficits or surpluses, and unanticipated inflation, it is difficult even for economists to argue that all resources are being efficiently utilized by a market system. The question which needs to be answered is what causes underutilization of resources. John Maynard Keynes believed that underutilized resources were due to a market failure. In the BGIE reading entitled "A Keynesian Cure for the Depression," he argued that (p. 2):

our predicament . . . comes from some failure in the immaterial devices of the mind, in the workings of the motives which should lead to the decisions and acts of will, necessary to put in movement the resources and technical means we already have.

Keynes' solution was to increase government expenditures to employ idle labor and unused capital resources and to maintain personal incomes. Other analysts argued that government was itself part of the problem. (See the BGIE case, "Lewis Douglas, 'There is One Way Out'.") These issues will be addressed in the BGIE module on the Great Depression, an event which was an extreme example of underutilized resources.

4) Externalities Externalities are actions of one actor which affect another, but not directly through the market system. The actions of a polluter, for example, affect others by the reduced quality of the air and water they must consume, but the price of the polluter's products does not reflect this cost of pollution. Since the polluter does not have to pay for the deleterious effects of his actions, he has no market incentive to halt such action. Thus governments often provide regulatory incentives not to pollute or introduce market incentives through taxes or subsidies.

5) Public goods Some items have a peculiar characteristic that when one person consumes the benefits, it does not detract others from also consuming the same benefits. Examples of public goods are national defense and public parks. Their benefits spill over to all including those "freeriders" who have not paid for them or would not choose to. Thus the market system fails to produce an optimal amount and quality of these goods, and government must often intervene.

III. Aggregate Supply and Aggregate Demand

The supply and demand analysis of the previous section describes a single market and the behavior of an individual actor (a household or firm) in that market. Generally, one would expect that market mechanisms will efficiently allocate resources and output throughout the economy, as was described previously. Only under special conditions would another actor (the government) intervene in the operation of a particular market. All of this analysis forms the basis of "microeconomics."

In BGIE we are more often concerned with analysis of entire economies and the behavior and impact of all actors (households, firms, government and foreign economies) on national economic performance. This is the purview of "macroeconomics." It will be useful if we develop macroeconomic analogues to the micro concepts of supply and demand and view the economy as one giant market for all goods and services. We will call these broader macro concepts "aggregate supply" and "aggregate demand."

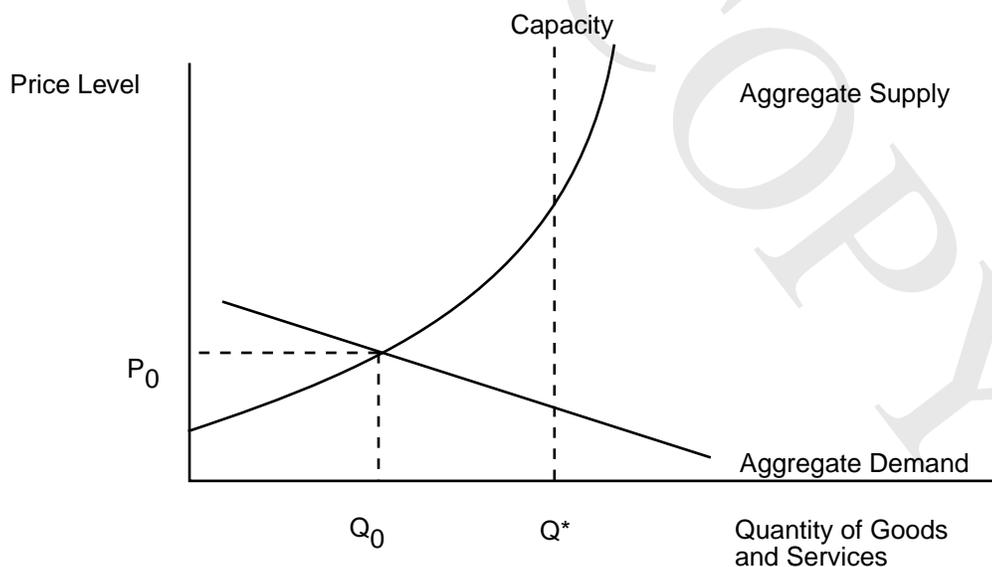
Aggregate demand is a schedule relating the total demand for *all* goods and services in an economy to the general price level in that economy. Just as in the case of a micro demand

curve, the aggregate demand curve slopes downward, as shown in **Figure J**. As the general price level rises, the amount of goods and services that can be purchased with the given stock of money and other financial assets declines. Moreover, a rising price level will make a nation's goods and services less competitive in the international markets; thus there will be less demand for those items by foreigners. The two reasons for the downward slope of the aggregate demand curve, therefore, are the effect of changes in the general price level on a nation's stock of assets and on its international competitiveness.

Aggregate supply is a schedule relating the total supply of *all* goods and services in an economy to the general price level. While there is broad agreement among economists about the slope of the aggregate demand curve, considerable controversy attends the shape of the aggregate supply curve. A consensus view is almost impossible to identify.

In any case, the aggregate supply curve tells us how an increase in aggregate demand is divided between an increased price level and increased real output. The range of economic opinion suggests that the aggregate supply curve may be flat, vertical, or upward-sloping. The key element in aggregate supply is how production costs and the price level change with changes in output. For our present purposes we will hypothesize that the aggregate supply curve is relatively flat when we are at low levels of output and becomes steeper as we get closer to the limits of the economy. In other words, there is less inflationary pressure when an economy expands out of deep recession than in the case near full employment. ("Full employment output" or "capacity" or "potential output" is an arbitrary construct. It does not mean that the economy is running full throttle with no possible increase in output. Output can increase, but only at a significant increase in price as bottlenecks begin to occur.) We can summarize this relationship by the aggregate supply curve in **Figure J**. Notice that the economy is presently operating at less than capacity Q^* . In order to move the economy to Q^* we need either a rightward shift in aggregate demand or in aggregate supply.

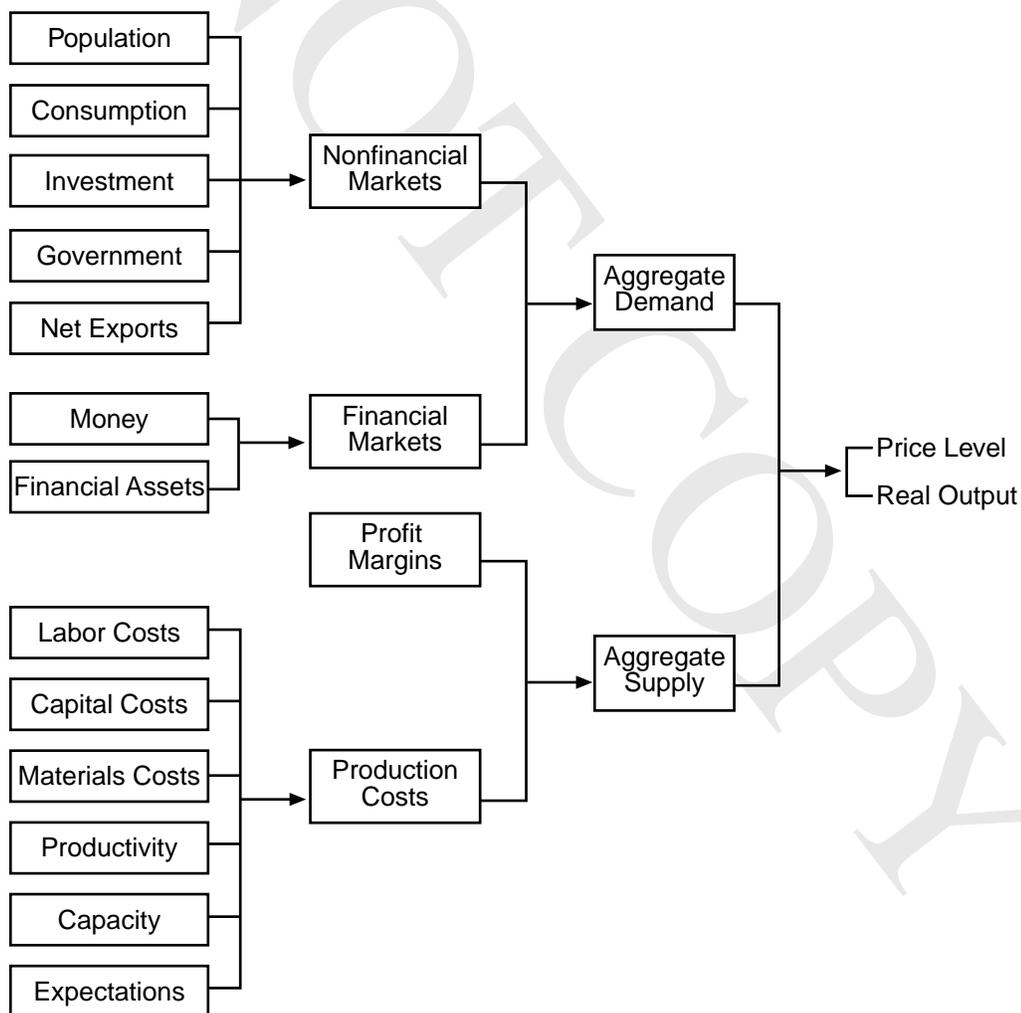
Figure J



Over the course of BGIE we will learn some of the factors that affect the slope and position of the aggregate supply and demand curves including the effect of government policy—in other words, what factors are responsible for full-employment output with stable prices. As a preview to that material, **Figure K** schematically organizes some of the components we will be studying. On the right we see that the interaction of aggregate demand and aggregate supply determines the price level and real output. This is the same information which is given by the graph in **Figure J**.

Aggregate demand is the result of the interaction of the nonfinancial (or "real") and financial markets. The nonfinancial markets are divided into four types of expenditure as we will describe in the next section. The financial markets include money and all other financial assets. This will be described in more detail in a later note on "Money and the Determination of Income." As noted earlier, aggregate supply is largely concerned with changes in production costs and profit margins.

Figure K



Production costs include numerous factors including those shown in the lower-left corner of **Figure K**. It is important to understand that these links are only suggestive of the dominant relationships. There are many links not indicated in **Figure K**, but which are important nonetheless. In particular, any changes in the price level or real output will "feed back" on all variables listed in the left column.

IV. Introduction to National Income Accounting

In discussing a nation's economy, one quickly comes to questions requiring numerical answers: How large is this country's economy relative to that of others? How has it changed over time? What has caused the changes? How well has the country done relative to others in satisfying the needs of its population? Just as we need financial statements for a company, we need some sort of accounting system for a country. Not only should this accounting system provide insight into a country's growth, performance and sectoral behavior but it should also provide data comparable to similar figures from other countries. Like generally accepted accounting principles, certain conventions are observed in the measurement and analysis of a country's national income.

The broadest measure of the total output of an economy is called the *Gross National Product (GNP)*, which is also sometimes called the *Gross National Expenditure (GNE)*. GNP is defined as *the market value of all final goods and services produced by nationals of a country within a given time period*.

A number of points should be kept in mind about this definition:

1. Conceptually it is equivalent to taking the quantities of each final good and service and multiplying them by their current market price: $GNP = P \times Q$, for all goods and services.
2. GNP includes only *final* goods and services—those which are not resold in any form. For example, bread purchased in a supermarket is a final output, but the wheat used to make it is not. The GNP convention avoids counting the price of wheat twice. Thus, GNP is the sum of the *value added in all transactions*. (Value added is the price of a product minus the cost of material inputs.)
3. GNP is "produced by nationals of a country" regardless of where they produce it. For example, a Pakistani citizen working in the oil fields of Saudi Arabia or a Swiss banker lending money from a London branch are each producing output and earning income for their home GNPs, assuming that the income is repatriated to the home country. A closely related concept is *Gross Domestic Product (GDP)* which is identical to GNP except that it is produced by domestic citizens of a country. Thus the Pakistani worker and Swiss banker would not be contributing to their *Gross Domestic Product* since they are not *domestic* residents. To repeat, they do contribute to *Gross National Product* because they are *nationals* of that country. In other words, GNP includes factor income from abroad but GDP does not.

Both of these broad concepts (GNP and GDP), as well as many others which are similar (such as Net National Product (NNP) or National Income (NI)), are attempts to measure the total output and thus the total income of a country. In economics, these numbers are supposed to provide measures of the well being of the country and its residents.

The next step in the analysis is to break down GNP into useful components so that we can analyze the factors responsible for its growth. Simon Kuznets, a Nobel laureate in economics from Harvard, was originally responsible for developing the National Income Accounts. He and others broke down national output into four basic categories:

Consumption (C)
Investment (I)
Government Spending (G)
Net Exports (X-M)

("X" represents exports and "M" imports, so that net exports is exports minus imports.)

These categories reflect the spending of the four actors in our circular flow diagram of **Figure 3**: households consume, businesses invest, and government and foreign sectors purchase goods and services. Therefore, we have the *national income accounting identity* given below, in which total output is divided into its four component parts:

$$\text{GNP} = C + I + G + (X-M)$$

Since this is the basic identity of the National Income Accounts, a brief definition of each component will help in understanding GNP, its composition, and its importance.

Consumption Consumer expenditures on final goods and services required for current use. Examples of consumption are purchases of food, clothing and cars; payment of rent; and payment for haircuts and cleaning services. Consumption would not be interest payments on consumer debt since it is not for current use or purchase of raw materials by businesses since it is not a final purchase.

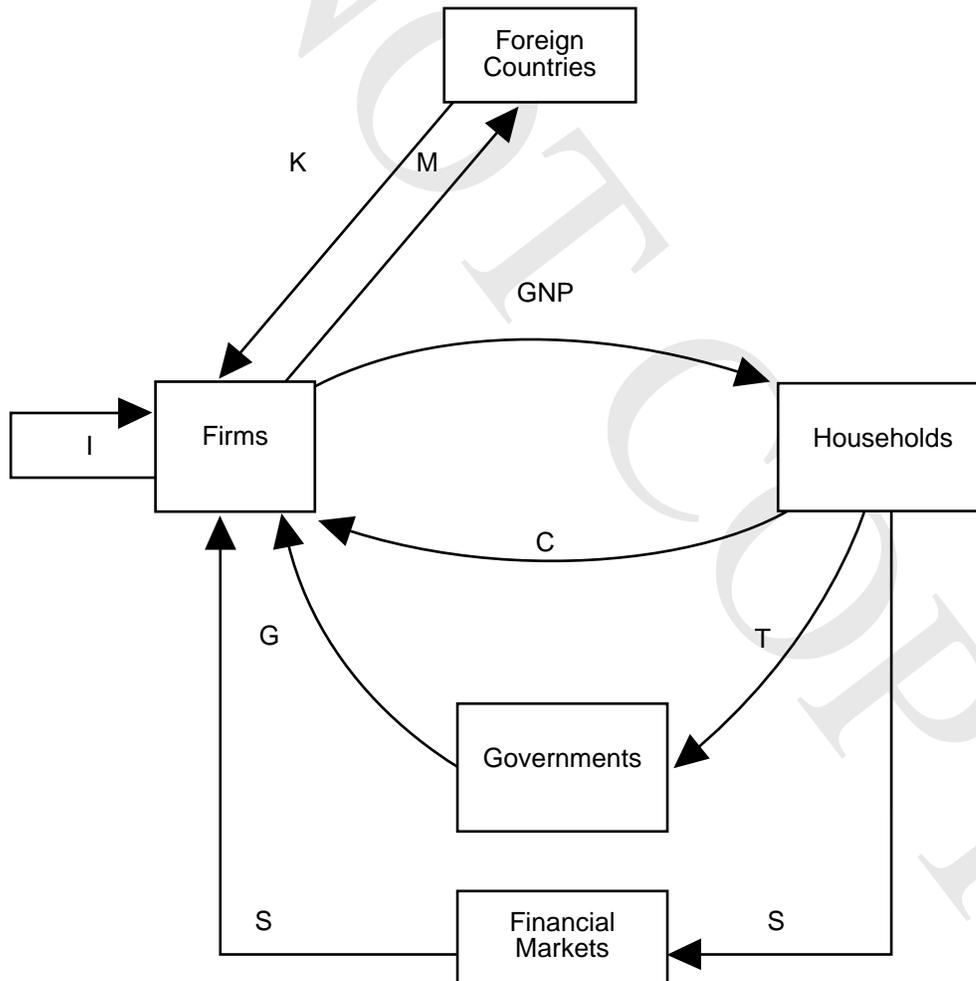
Investment Business expenditures made to increase future output of final products. Thus the gasoline engine in a car would not be included but a gas engine used as machinery in producing cars would be included. Examples of investment include: purchase of a new plant or equipment, construction of a building (whether for business or residence), and additions to inventory (whether intentional or not). Investment would not include purchases by "investors" of common stock, bonds or any other paper financial assets—only physical capital assets are included. (A financial asset is a claim on existing capital assets, not the physical asset itself.) Likewise, investment does not include the purchase of an existing plant or residence.

Government spending Government purchases of goods and services. Unlike most countries of the world, the U.S. National Income Accounts do not distinguish between government investment and government consumption. Examples of government spending are: defense expenditures, police officers' salaries, construction of a post office. However, government spending in the GNP accounts does not include Social Security payments or unemployment insurance, since these are transfers of existing income among taxpayers.

Net exports Exports increase national income because domestic industry uses capacity and resources to produce them, and because firms are paid for them. Similarly, imports represent income paid to producers in foreign countries and an expenditure of national income that could otherwise have paid for domestically produced goods and services. In calculating GNP, therefore, exports are added to other expenditures, but imports are deducted. (Exports and imports include both goods and services but do not include loans between countries or other exchanges of financial assets.)

This important accounting identity, $GNP = C + I + G + (X-M)$ can be related to the circular flow diagram presented earlier in **Figure C**. The flow diagram may be clarified further if we introduce a few assumptions. Assume that (a) only the households pay taxes, (b) the government has a balanced budget (i.e., no government saving or borrowing), and (c) there is a balance of payments (i.e., no foreign saving or borrowing). These assumptions, taken together, imply that all savings are available for investment. **Figure C** then will look like **Figure L**.

Figure L



This version of the circular flow diagram defines the flows in terms of the National Income Accounts. Notice that GNP in **Figure L** is equivalent to income in **Figure C**. This reiterates our previous point that income and output are two sides of the same coin. The resources which flow in the opposite direction of GNP (but are suppressed in the diagrams) are labor, land, capital and management skills. The income payments earned by these resources are wages, rents, interest, and profits, which equal total National Income (NI), as well as GNP in this simple diagram.

In order to visualize the GNP identity one need only write down the equation for firms, showing all inflows equal to all outflows. The inflows are C, G, I, and X. The outflows are GNP and M. Thus we have

$$C + I + G + X = \text{GNP} + M, \quad \text{or}$$

$$C + I + G + X - M = \text{GNP}$$

If we do the same with the household sector, we get another identity: The inflow into the household sector is GNP, the outflows are C, T, and S.

$$\text{GNP} = C + T + S$$

This says that households can dispose of the income they receive in only three ways; they can consume it, they can pay it in taxes, or they can save it. These results for both firms and households are completely general, even when we relax the assumptions we previously made. The more general case will be discussed in a later note on "Investment and Savings."