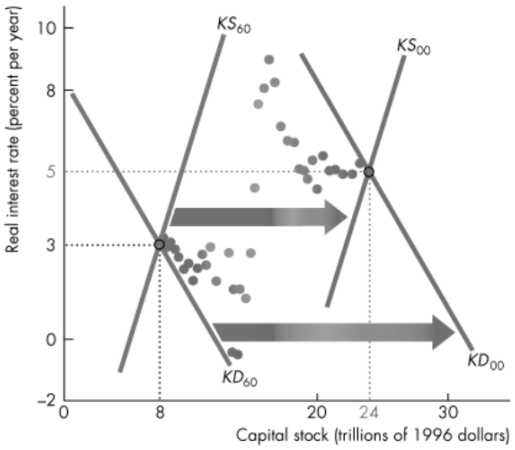
Economic systems continued

CAPITAL MARKETS

- Capital markets are the channels through which firms obtain financial resources to buy physical factors of production that economists call capital.
- The available financial resources come from savings.
- The real interest rate is the return on capital and is the "price" determined in the capital market.



(b) Changes in demand and supply in the capital market

Figure 14.5(b) shows the changes in the demand for and supply of capital that have changed the equilibrium quantity and real interest rate over the last four decades.

The Demand for Capital

- A firm's demand for financial capital stems from its demand for physical capital.
- The firm employs the quantity of physical capital that makes the marginal revenue product of capital equal to the price of the capital.
- The returns to capital come in the future, but capital must be paid for in the present.
- So the firm must convert the future marginal revenue product of capital to a present value.

Discounting and Present Value

- **Discounting** is converting a future amount of money into a **present value**.
- The present value of a future amount of money is the amount that, if invested today, will grow to be as large as that future amount when the interest that it will earn is taken into account.
- The easiest way to understand discounting is to begin with the relationship between an amount invested today, the interest that it earns, and the amount it grows to in the future.
- If the interest rate for one period is r, then the amount of money a person has one year in the future is:
- Future amount = Present value + (r × Present value) Future amount = Present value × (1 + r)
- So the present value of the future amount is:
- Present value = Future amount/(1 + r)

Similarly, the amount of money that a person has *n* years in the future is:

- Amount n years in future = Present value × $(1 + r)^n$
- So the present value is:
- Present value = Amount n years in future/$(1 + r)^n$
- Because the return a firm earns from investing in capital accrues over a number of future years, the firm must calculate the present value of each year's returns and then sum them

- The net present value of an investment subtracts the cost of the capital good from the present value of its marginal revenue product.

- If the net present value is positive, buying the capital is profitable for the firm, and the firm buys the capital.
- A rise in the interest rate lowers the net present value of the marginal revenue product of capital, which in turn lowers the net present value of the capital.
- As the interest rate rises, fewer projects have positive net present value, other things remaining the same, and the quantity of capital demanded decreases.

The Demand Curve for Capital

- The quantity of capital demanded by a firm depends on the marginal revenue product of capital and the interest rate.
- The demand curve for capital shows the relationship between the quantity of capital demanded by the firm and the interest rate, other things remaining the same.

Two main factors that change the *MRP* of capital and the demand for capital are:

- Population growth
- Technological change

The Supply of Capital

The quantity of capital supplied results from people's savings decisions.
The main factors that determine savings are:

- Income
- Expected future income
- The interest rate

Supply Curve of Capital

- The supply curve of capital shows the relationship between the interest rate and the quantity of capital supplied, other things remaining the same.
- A rise in the interest rate brings an increase in the quantity of capital supplied and a movement along the saving supply curve.

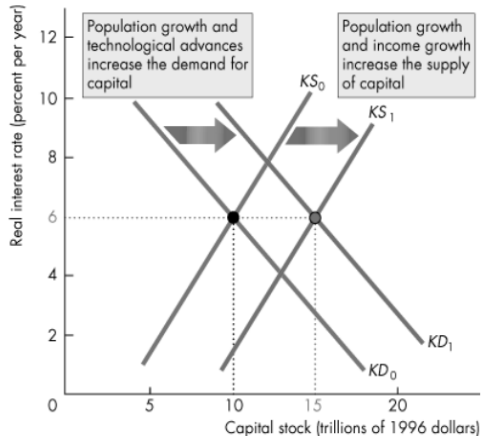
The main influences on the supply of capital are:

- The size and age distribution of the population
- The level of income

The Interest Rate

- The savings plans of households and the investment plans of firms are coordinated through the capital markets.
- Adjustments in the real rate of interest make these plans compatible.

Figure 14.6 shows capital market equilibrium and changes in equilibrium



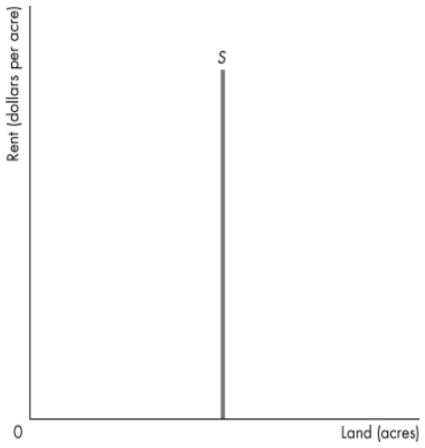
- ✓ Population growth and technological advances have increased the demand for capital.
- ✓ Population growth and income growth have increased the supply of capital.

A natural resource, or what economists call land, falls into two categories:

- **Renewable natural resources** are resources that can be used repeatedly, such as land (in its everyday sense), rivers, lakes, rain, and sunshine.
- **Nonrenewable natural resources** are natural resources that can be used only once and that cannot be replaced once they have been used, such as coal, oil, and natural gas.

The Supply of Renewable Resources

- The demand for natural resources as inputs into production is based on the same principle of marginal revenue product as the demand for capital.
- But the supply of natural resources is special.
- The quantity of land (and other renewable natural resources) at any given time is fixed, which means the supply of land is perfectly inelastic.
- Figure 14.7 illustrates this case.



The quantity of land (and other renewable natural resources) at any given time is fixed, which means the supply of land is perfectly inelastic.
Figure 14.7 illustrates this case.

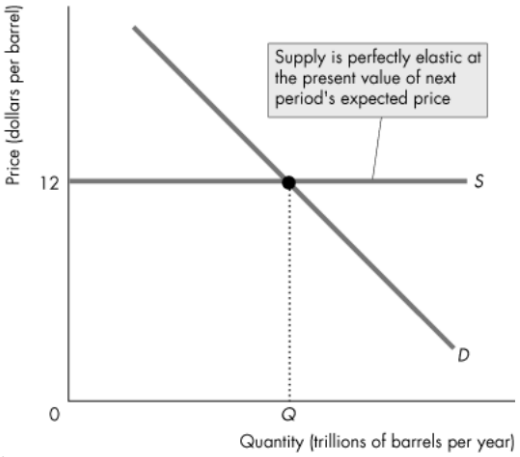
Natural Resource Markets

- The price (rent) for land and other renewable natural resources is determined solely by market demand.
- The market supply curve for land is perfectly inelastic, but the supply curve facing any one firm in a competitive land market is perfectly elastic.
- Each firm can rent as much land as it wants at the going market price.

The Supply of a Nonrenewable Natural Resource

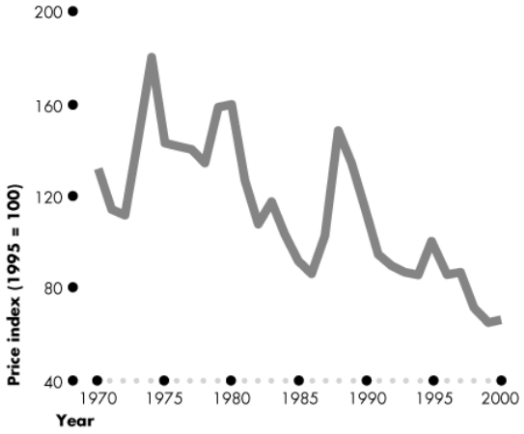
- For a nonrenewable natural resource, there are three supply concepts:
- The *stock* of a nonrenewable natural resource is the quantity in existence at any given time.
- This quantity (like the quantity of land) is fixed and is independent of the price of the resource.
- The *known stock* of a nonrenewable natural resource is the quantity that has been discovered.
- This quantity increases over time because advances in technology enable ever less accessible sources to be discovered.
- The *flow* supply of a nonrenewable natural resource is the rate at which the resource is supplied for use in production during a given time period.

- This supply is perfectly elastic at the price that equals the present value of the expected price of the resource next period



- ✓ The opportunity cost of selling a resource this year is the present value of the resource next year.
- ✓ If this year's price exceeds the present value of next year's price, owners sell this year.
- ✓ If this year's price is less than the present value of next year's price, owners hold on to their stock this year and plan to sell next year.
- ✓ These actions make the flow supply perfectly elastic at the present value of next year's expected price.

Figure 14.9 shows how the average prices for the nine most used minerals in production have fallen over the last 30 years, rather than increased at a rate equal to the interest rate.



Income, Economic Rent, and Opportunity Cost

Large and Small Incomes

- ✓ Demand and supply in factor markets determine the equilibrium price and quantity of each factor of production and determine who receives a large income and who receives a small income.

- ✓ Large incomes are earned by factors of production that have a high marginal revenue product and a small supply. National news anchors are an example.
- ✓ Small incomes are earned by factors of production that have a low marginal revenue product and a large supply. Fast-food workers are an example.

Economic Rent and Opportunity Cost

- ✓ The total income received by an owner of a factor of production is made up of its economic rent and its opportunity cost.

- ✓ **Economic rent** is the income received by the owner of a factor of production over and above the amount required to induce that owner to offer the factor for use.
- ✓ The opportunity cost of using a factor is the income required to induce its owner to offer the resource for use, which is the value of the factor in its next best use.

Market Power in the Labor Market

- ✓ Just as a monopoly firm can restrict output and raise price, so can a monopoly owner of a resource restrict supply and raise price.
- ✓ The main source of market power in labor markets is a **labor union**, which is an organized group of workers that aims to increase wages and influence other job conditions.

There are two types of unions:

- ✓ A *craft union* is a group of workers who have a similar range of skills but work for many different industries and regions.
- ✓ Examples include the carpenters' union or electrical workers' union.
- ✓ An *industrial union* is a group of workers who have a variety of skills and job types but work for the same firm or industry.
- ✓ Examples include the United Auto Workers and the Steelworkers Union.
- ✓ Union organization in the United States peaked in market strength in the 1950s when 35 percent of the non-agricultural workforce belonged to unions. Today that number has declined to 12 percent.

There are three forms of union organization.

- In an *open shop*, workers have the right to be employed by the firm without joining the union. There is no union restriction over who can work in the "shop," or firm.
- In a *closed shop*, workers must be union members in order to be employed by the company. The Taft–Hartley Act of 1947 made closed shop union arrangements illegal.
- In a *union shop* the firm may hire nonunion workers but the workers must join the union within a brief period of time after being hired. Twenty states have made union shops illegal by passing right-to-work laws, which give individuals the right to work for a firm without joining a union.
- Unions and employers negotiate wages, benefits, and working conditions through a process called collective bargaining
- The union and the employer use different methods to strengthen their respective positions in the bargaining process:
- The union can call a strike where all union members are to refuse to work.
- The employer can call a lockout where the firm refuses to operate its plant and allow its employees to work, depriving them of a paycheck.

- The employer and the union engage in binding arbitration to resolve a lengthy dispute--an independent third party enters the collective bargaining process to determine the wage rates to be paid and resolve any other issues being negotiated.

Unions' Objectives and Constraints

A union has three objectives:

- Raise compensation
- Improve working conditions
- Expand job opportunities for its members

Unions are constrained in their pursuit of these goals by:

- The ability to restrict non-union labor from replacing union labor, which depends upon having a large fraction of the relevant labor force.
- The ability to retain union jobs in the face of higher wages and benefits, which depends upon the elasticity of demand for the union labor.

- Increasing the marginal revenue product (*MRP*) of labor: Unions try to increase the marginal product of union labor, to make the firm's demand for labor less elastic.
- Encouraging import restrictions: Unions seek government assistance to reduce availability of substitute goods and services that are produced by non-union labor.
- Supporting minimum wage laws: Unions seek to increase the cost of employing unskilled labor to replace higher- skilled union labor.

The Scale of Union-Nonunion Wage Differentials

- The average effect of union activity on wage rates in the United States has been a 30 percent increase in wages compared to non-union labor markets.
- But not all unionized industries have achieved higher wages.
- In mining and financial services, union wages are no different than non-union wages.
- Union wages are 65 percent higher in the construction industry.

Monopsony

- A **monopsony** is a market with just one buyer.
- Decades ago, large manufacturing plants, steel mills and coal mines were often the sole buyer of labor in their local labor markets.
- Because a monopsonist firm controls the labor market, it has the market power to set the market wage rate.
- In monopsony the firm's marginal cost of labor (*MCL*) exceeds the average cost of labor (the wage rate) for all levels of labor employed.

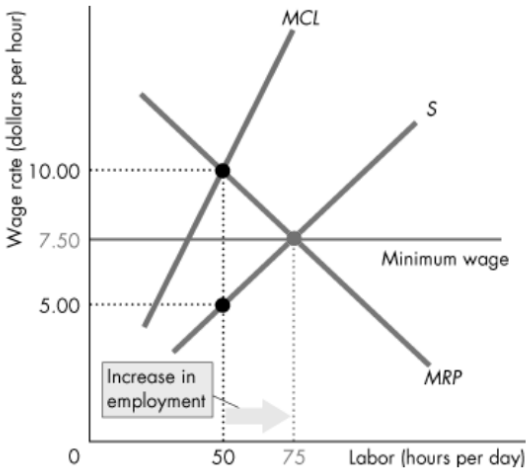
- The wage rate increases with the quantity of labor supplied, which means the firm's average cost curve is the supply curve for labor.
- The *MCL* curve for the firm is upward sloping and higher than the supply curve for labor for all quantities of labor.
- To maximize its profit, a monopsonist firm hires the quantity of labor where its *MCL* is equal to *MRP*.
- At the profit-maximizing quantity of labor, marginal revenue product (*MRP*) exceeds minimum wage rate at which that quantity of labor is willingly supplied.

Monopsony Tendencies

- Today monopsony is rare.
- A large managed health-care organization might be the only employer of health-care workers in a local area.
- But often, where a monopsony tendency is present, a union is also active.

Monopsony and a Union

- Sometimes both the firm and the employees have market power when a monopsony encounters a labor union, a situation called a **bilateral monopoly**.
- Both the employer and the union must judge each other's market power and come to an agreement on labor supplied and wages paid.
- Depending on the relative costs that each party can inflict on the other, the outcome of



this situation may favor either the union or the firm.

- The *MCL* curve is equal to the labor supply curve over this range of labor.
- If this part of the supply curve of labor intersects the monopsony *MRP* curve, as a result of the minimum wage the monopsony increases the quantity of labor employed and pays a higher wage rate than if the minimum wage were not imposed.

ECONOMICS

Economics is the social science that studies the production, distribution, and consumption of goods and services. The term economics comes from the Ancient Greek οἰκονομία (oikonomia, "management of a household, administration") from οἶκος (oikos,"house") + νόμος (nomos, "custom" or "law"), hence "rules of the house(hold)". Current economic models developed out of the broader field of political economy in the late 19th century, owing to a desire to use an empirical approach more akin to the physical sciences.

A definition that captures much of modern economics is that of Lionel Robbins in a 1932 essay:

"The science which studies human behavior as a relationship between ends and scarce means which have alternative uses." Scarcity means that available resources are insufficient to satisfy all wants and needs. Absent scarcity and alternative uses of available resources, there is no economic. The subject thus defined involves the study of choices as they are affected by incentives and resources.

Economics aims to explain how economies work and how economic agents interact. Economic analysis is applied throughout society, in business, finance and government, but also in crime, education, the family, health, law, politics, religion, social institutions, war, and science. The expanding domain of economics in the social sciences has been described as economic imperialism.

Common distinctions are drawn between various dimensions of economics: between positive economics (describing "what is") and normative economics (advocating "what ought to be") or between economic theory and applied economics or between mainstream economics (more "orthodox" dealing with the "rationality-individualism-equilibrium nexus") and heterodox economics (more "radical" dealing with the "institutions-history-social structure nexus").

However the primary textbook distinction is between microeconomics ("small" economics), which examines the economic behavior of agents (including individuals and firms) and macroeconomics ("big" economics), addressing issues of unemployment, inflation, monetary and fiscal policy for an entire economy.

MICROECONOMICS

Microeconomics looks at interactions through individual markets, given scarcity and government regulation. A given market might be for a product, say fresh corn, or the services of a factor of production, say bricklaying. The theory considers aggregates of quantity demanded by buyers and quantity supplied by sellers at each possible price per unit. It weaves these together to describe how the market may reach equilibrium as to price and quantity or respond to market changes over time.

This is broadly termed supply and demand analysis. Market structures, such as perfect competition and monopoly, are examined as to implications for behavior and economic efficiency. Analysis of change in a single market often precedes from the simplifying assumption that behavioral relations in other markets remain unchanged, that is, partial-equilibrium analysis. General-equilibrium theory allows for changes in different markets and aggregates across all markets, including their movements and interactions toward equilibrium.

- **Markets**
- **Specialization**
- **Supply and demand**
- **Market failure**
- **Firms**
- **Public sector**

MARKETS

In microeconomics, production is the conversion of inputs into outputs. It is an economic process that uses resources to create a commodity that is suitable for exchange. This can include manufacturing, warehousing, shipping, and packaging. Some economists define production broadly as all economic activity other than consumption. They see every commercial activity

other than the final purchase as some form of production. Production is a process, and as such it occurs through time and space. Because it is a flow concept, production is measured as a "rate of output per period of time".

There are three aspects to production processes, including the quantity of the commodity produced, the form of the good created and the temporal and spatial distribution of the commodity produced. Opportunity cost expresses the idea that for every choice, the true economic cost is the next best opportunity. Choices must be made between desirable

yet mutually exclusive actions. It has been described as expressing "the basic relationship between scarcity and choice.". The notion of opportunity cost plays a crucial part in ensuring that scarce resources are used efficiently. Thus, opportunity costs are not restricted to monetary or financial costs: the real cost of output forgone, lost time, pleasure or any other benefit that provides utility should also be considered.

The inputs or resources used in the production process are called factors of production. Possible inputs are typically grouped into six categories. These factors are raw materials, machinery, labour services, capital goods, land, and enterprise. In the short-run, as opposed to the long-run, at least one of these factors of production is fixed. Examples include major pieces of equipment, suitable factory space, and key personnel.

A variable factor of production is one whose usage rate can be changed easily. Examples include electrical power consumption, transportation services, and most raw material inputs. In the "long-run", all of these factors of production can be adjusted by management. In the short run, a firm's "scale of operations" determines the maximum number of outputs that can be produced, but in the long run, there are no scale limitations. Long-run and short-run changes play an important part in economic models.

Economic efficiency describes how well a system generates the maximum desired output a with a given set of inputs and available technology. Efficiency is improved if more output is generated without changing inputs, or in other words, the amount of "friction" or "waste" is reduced. Economists look for Pareto efficiency, which is reached when a change cannot make someone better off without making someone else worse off.

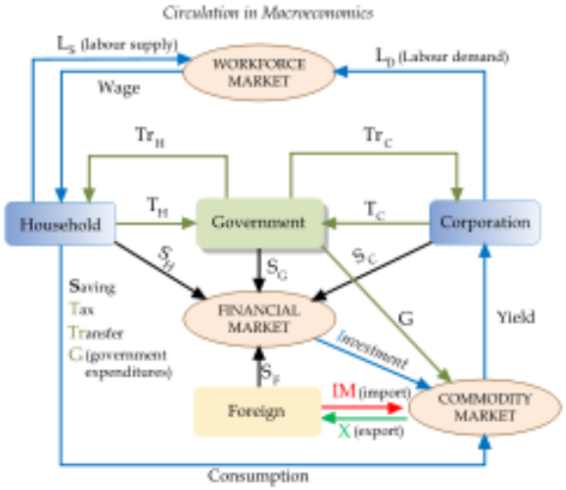
Economic efficiency is used to refer to a number of related concepts. A system can be called economically efficient if: No one can be made better off without making someone else worse off, more output cannot be obtained without increasing the amount of inputs, and production ensures the lowest possible per unit cost. These definitions of efficiency are not exactly equivalent. However, they are all encompassed by the idea that nothing more can be achieved given the resources available.

MACROECONOMICS

Macroeconomics examines the economy as a whole to explain broad aggregates and their interactions "top down," that is, using a simplified form of general-equilibrium theory. Such aggregates include national income and output, the unemployment rate, and price inflation and sub aggregates like total consumption and investment spending and their components. It also studies effects of monetary policy and fiscal policy.

Since at least the 1960s, macroeconomics has been characterized by further integration as to micro-based modeling of sectors, including rationality of players, efficient use of market information, and imperfect competition. This has addressed a long-standing concern about inconsistent developments of the same subject.

Macroeconomic analysis also considers factors affecting the long-term level and growth of national income. Such factors include capital accumulation, technological change and labor force growth.



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