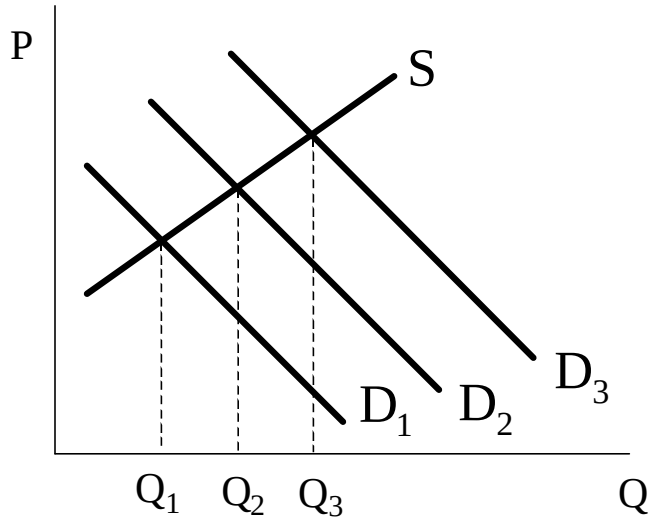
Microeconomics
Topic 4: "Show how prices affect the allocation of resources and coordinate a decentralized economy."

Reference: Gregory Mankiw's *Principles of Microeconomics*, 2nd edition, Chapter 4.

**How Markets Allocate Resources**

One important result of the supply and demand model (see notes for Micro Topic 3) is that consumer desires drive the production of goods. When the demand for a good increases, more resources are allocated to produce that good. When the demand for a good decreases, fewer resources are allocated to produce that good. This can be seen in the following graph:




This graph shows how production responds to changes in demand. As demand increases from $D_1$ to $D_2$ to $D_3$, we can see that more of the good is produced: ($Q_1$, $Q_2$, and $Q_3$). As demand increases for this good, resources are moved from alternative uses into the production of this good. Because of scarcity, more production of this good involves less production of other goods.

Example: As cities grow in size, the land surrounding cities is converted from farmland to residential and commercial uses. How does this occur? The increased demand for houses leads to higher housing prices, which in turn induces greater production of housing. As the producers of houses are willing to pay more for the land than its value as farmland, more land is converted into use for housing.

Example: An increase in the demand for computer programmers will lead to higher wages being offered by software firms. As these prospective salaries increase, more young people will go into the study of computer programming, leaving fewer workers for jobs in other industries.

> These two examples demonstrate a broader conclusion. Since resource owners want to maximize earnings, they will sell or rent their resources to the highest valued uses. As some uses rise in value, owners will allocate more of their resources toward those uses (and away from less valued uses). Changes in relative prices move resources to where they are more highly valued.

As resources become more valued in one use, they become more costly to use elsewhere. Thus, they are removed from alternative uses and moved toward higher valued uses. As land moves to be used for housing and commercial development (due to the increased demand and the resulting higher price of land), which farm products will be cut back first? Those that have the lowest value will be the first not to be planted. For instance, if farmland can earn a higher return on corn than on soybeans, then soybeans will be the first product sacrificed as farmland is converted to residential use.

> When resources are taken away from other uses, they are taken from the least valued uses first.

Firms and farms are not alone in responding to changes in prices. Consumers also respond by buying less of more expensive goods and more of less expensive goods.

Example: Suppose there is a rise in the demand for peanut butter. This leads to a higher price and thus more peanut butter production. The higher value of peanuts in peanut butter will lead to a higher price of unshelled peanuts, because peanut butter producers will pay more for them. As a result, consumers who like to eat unshelled peanuts will buy fewer of them. In a nutshell, more peanuts are being allocated to peanut butter instead of direct consumption because the relative value of peanut butter has increased.

**How Markets Coordinate a Decentralized Economic System**

Notice that buyers of products do not need to know where the resources have a higher value in order to adjust their purchases. The increase in price will lead to adjustments in usage. The same process applies to decreases in price. As the price of a good falls, buyers will become willing to use the product for lower valued uses.

Example: Suppose a technological change lowers the cost of producing aluminum. This will increase the supply and cause the market price of aluminum to fall. As the price falls, product manufacturers will now consider aluminum a cheaper alternative input in their production decisions, so they will buy more of it and less of alternative inputs like steel. Thus, aluminum will now replace other, more costly alternatives. The steel, previously used, is released for use in other applications. All of this happens even if the users of steel and aluminum have no idea that a technological improvement in aluminum production has taken place.

> Firms and individuals respond to changes in relative prices without having to know what caused the price changes.

As a result, a market economy allows people to <u>use</u> information without actually <u>knowing</u> the information. No central planner or bureaucracy is required to make sure that people respond to changes in tastes, resource supplies, and so on. This allows the economic system to work without central control.