Chapter 4

Demand and Supply Analysis

In this lecture we will first discuss demand and then supply. After that we will put the two together and demonstrate how the tool can be used. We begin by discussing Individual Demand.

The demand for a product or service is a curve that shows the maximum amount of the good that the individual is willing and able to buy at a given price. He must be both willing and able to buy the amount. The demand for the good is for a particular fixed period, say one day, one week, or one month.

The graph of demand is downward sloping and looks as follows:
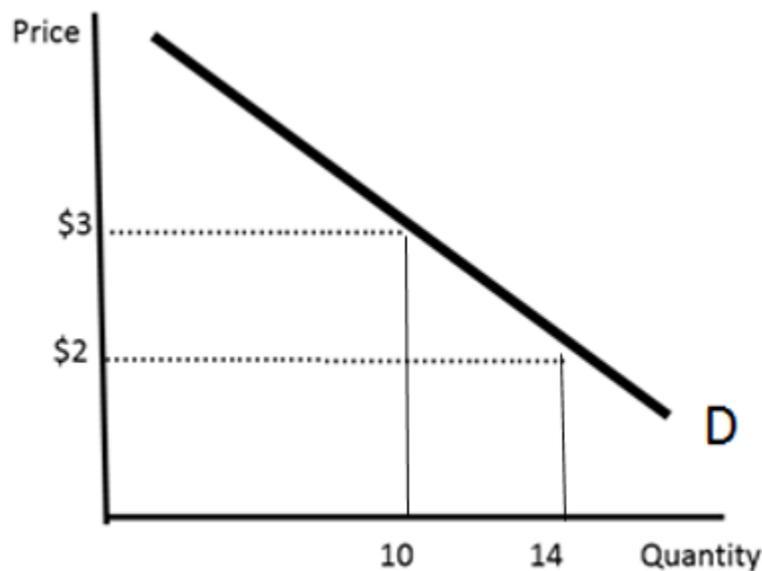
If price is $3 then the quantity demanded is 10, while if the price drops to $2 the individual demands 14, say for the month. Why does he demand more at the lower price? First, the lower price causes him to substitute more of his income into buying the cheaper product. Second, as the price falls the income he has buys more (i.e. he has increased purchasing power), so he will buy more. The first effect is called a substitution effect, while the second is called an income effect, respectively.

Naturally for all this to hold we must assume other factors do not change. We call this the ceteris paribus assumptions. For individual demand we make a list as follows. These are assumed NOT to change.

(1)   the nominal income or wealth of the individual

(2)   the quality of the good or service (or of substitutes and complements)

(3)   the price of substitutes, exchange rates, and interest rates

(4)   the price of complements

(5)   the health, tastes, and preferences of the individual

(6)   the expectations of the individual (including aggregation problems)

(7)   taxes or subsidies

(8)   any risks associated with the transaction (compare risks with uncertainty)

What happens if one or more of the above change. A change in one of the listed assumptions will cause demand to shift, either right (increase) or left (decrease). The shift may be large or small. It may be parallel or not. Sometimes, it may be more of a tilt. The extent demand shifts will be determined by many factors, but mainly by how powerful the variable is.

Now that we have individual demand, we might ask how that we get market demand. That is rather easy to explain. You just add the individual demands horizontally across all the people. But, there are two things which we need to be concerned about. First, the population may change and this will shift demand. We usually hold this assumption constant. Second, and this is subtler, adding the demands across may not be correct due to the fallacy of composition. Remember how we said earlier in the first lecture, adding the demands for saving by each individual may in fact result in lower total saving in the economy. What one person thinks is feasible and right may not be true when we aggregate such behavior across all such people.

Here is a simple horizontal addition of 1000 demands to get market demand.
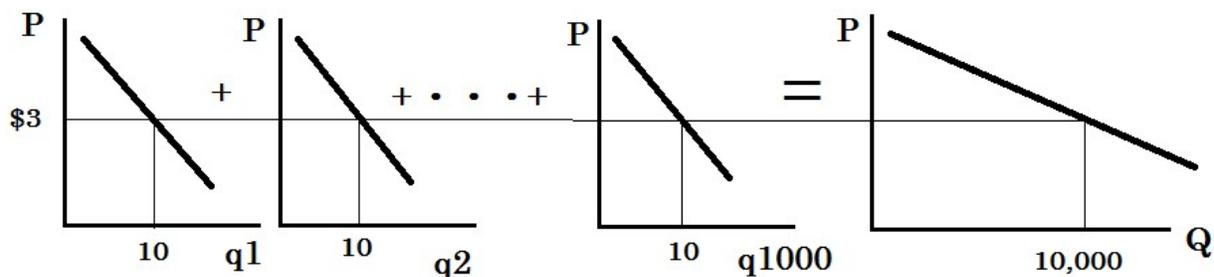
Learning the shifters (1-8 above), as well as the correct aggregation to get market demand, and how time affects demand is important — if one is to analyze the market well. Another important point to remember is that this type of demand analysis for one market is really designed for cases where the market is small relative to the entire economy. We say that it is a partial equilibrium model since it does not consider the whole economy and how the market affects and is affected by the whole economy. In the end, you will just have to experiment around to find whether or not your partial equilibrium supply and demand model of the market is convincing and performs well or must be expanded to a general equilibrium model.

We now turn our attention to the other side of the market — individual supply.

Remember, to successfully use supply and demand analysis, we must separate clearly the actors on both sides of the market for the period of time we are considering. Demanders must not be the same people as the suppliers. This is hard in some cases. Health care is a notorious example, but really anytime we have a supplier acting as our agent in the market there is bound to be trouble. Think of a real estate agent who is helping you sell your house, and at the same time is helping other people buy your house. Also, think of very big car companies that are trying to get their workers to buy more cars. Supply and demand gets mixed up and it is hard to analyze.

The supply of a product or service is a curve that shows the maximum amount of the good that the individual firm or company is willing and able to sell at a given price. The firm must be both willing and able to sell that amount.

The supply of the good is for a particular fixed period, say one day, one week, or one month.

The graph of supply is upward sloping and looks as follows:
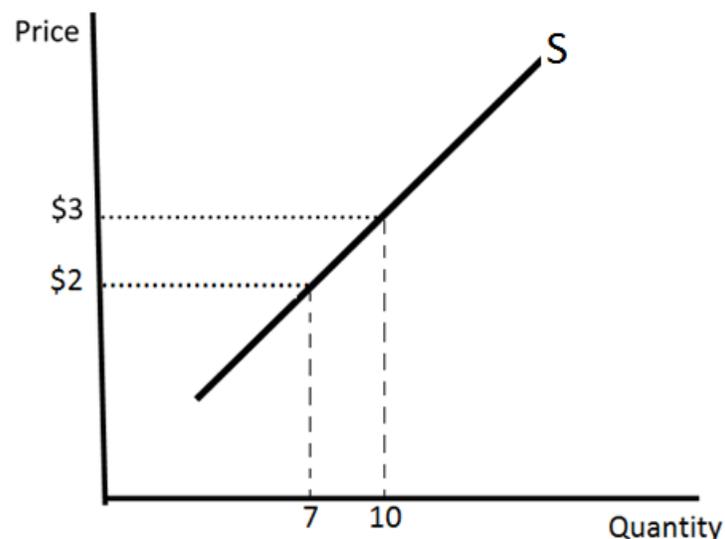
If price is $3 then the quantity supplied by the firm 10, while if the price drops to $2 the firm supplies 7, say for the month.

As with demand, we must assume certain other factors do not change, or what we have come to call ceteris paribus assumptions. For individual supply we make a list as follows. These are assumed NOT to change.

(1)   wage rates

(2)   technology and management processes

(3)   transport costs, components and raw materials prices

(4)	short run interest rates and exchange rates

(5)	expectations of the firm

(7)	taxes, regulations, or subsidies

(8)	any risks associated with production (compare risk with uncertainty)

What happens if one or more of the above change. A change in one of the listed assumptions will cause supply to shift, either right (increase) or left (decrease). Anything that impacts on costs associated with production of output will shift the curve.

As with market demand, we have a market supply that is the horizontal sum of the individual supply curves. In this case we sum across 1000 firms, but it could be a larger or smaller number of companies.
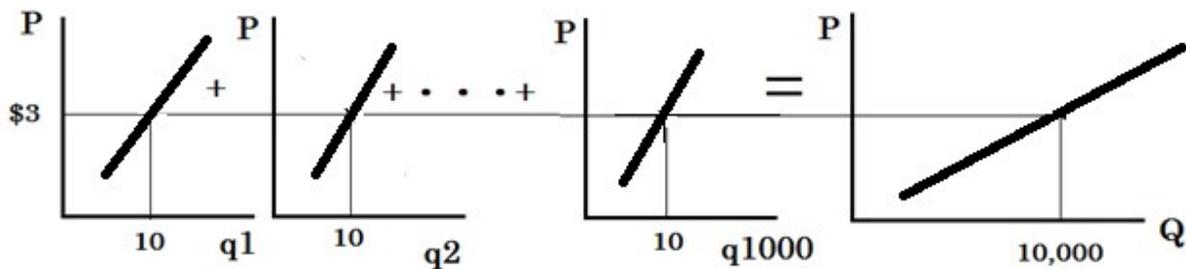
The same problem of fallacy of composition exists for market supply. Firms may be willing and able to supply an output at a given price according to their own estimates, but may find the factor markets change when so many firms try to produce their outputs. The market supply we have derived by adding together the individual supply curves is only a first approximation. It is an ideal sort of thing that ignores the interaction of the firms on each other.

The two sides of the market, when put together, generate an equilibrium or a balancing of supply and demand. At equilibrium there is no surplus or shortage in the market. There is one price in the market and this is the equilibrium price, P^e.

We can now do many thought experiments and see how that the equilibrium price and quantity in the market changes. Below are many examples.

Examples: Shift the Curves and Show the Effect on P and Q

Increased Time

Increased Income
(Normal Good)

Higher Wage Rate
for Industry

Increased Price of
Substitute Good

Heavy Increase in
Immigration

Increase in Sales Tax

Higher Short Term
Interest Rate

A Rise in Expected
Price

A Reduction in Income
Tax Rates