Chapter 4

Price Determination

In the previous chapters, demand and supply were considered separately so that we have a clearer understanding of the behaviour of consumers and producers. The question now revolves around how these agents react in a market to determine the price and quantity supplied and demanded.

Markets

Traditionally, a market has been defined as a place where buyers and sellers meet to exchange commodities. In the modern world, a veritable revolution in the communications sector has revolutionized the whole concept of the market. Physical presence is no longer required for commodities to be traded, although buyers and sellers remain at the core of these exchanges. A market can be defined as a range of goods and services over which buyers and sellers agree to negotiate the exchange of goods and services with price playing a mediating role. Consumer and producer behaviour can be represented by the demand and supply curves.

A market for a product will only exist when consumers are prepared to buy it (demand), and producers are willing to produce it (supply).Therefore, as long as you have demand for and supply of, for example, smart phones, tablets, beef, motorcycles, entertainment, tourism, banking services and medical care, you also have markets for these commodities. Where markets differ is in the degree of competition among buyers and sellers. In the following market analysis, we will explain how prices are determined when markets are completely free so that the interplay between demand and supply determines the price at which the market clears.

The Price Mechanism

Let us consider the determination of the price of wine in a hypothetical case. The demand schedule for wine is shown in Table 4.1, columns A and B. The supply schedule of wine is given by columns A and C. These two schedules representing consumer and produce behaviour are plotted together in a single graph as in Figure 4.1.

If the price of wine is set at €1/bottle, the demand will be high at 100 million bottles per year. But at this price, producers are only willing to offer 20 million bottles. Clearly, the demand will be unsatisfied at this price and the result will be a prevailing shortage of 80 million bottles. This excess demand over supply can be reduced by an increase in the price of wine from €1 to €2/bottle. Certeris paribus, with income remaining constant, the consumption of wine is now more expensive to consumers and the demand falls to 80 million bottles, shown by a movement along the demand curve, in Figure 4.1.

Table 4.1: Demand and Supply Schedules for Wine

Determination of the equilibrium price of wine

A	B	C	D
Price per bottle (€)	**Quantity demanded** (Millions/year)	**Quantity supplied** (Millions/year)	**Excess demand (D-S)** +/- (in millions)
1	100	20	-80
2	80	40	-40
3	60	60	0
4	40	80	+40
5	20	100	+80

Concurrently, ceteris paribus, with unchanged costs, a €1 rise in the selling price of wine increases the profit margin of producers who are motivated to double production to 40 million depicted by a movement along the supply line from 20 to 40 million in Figure 4.1. As can be observed, an increase in the price of wine has caused the behaviour of numerous consumers and producers to move in opposite direction to reduce the excess demand by 40 million bottles (40-80). Price will continue to rise until finally it satisfies the demand at the price of €3. At this price, the market clears and equilibrium is reached between quantity demanded and quantity supplied

The Price Mechanism
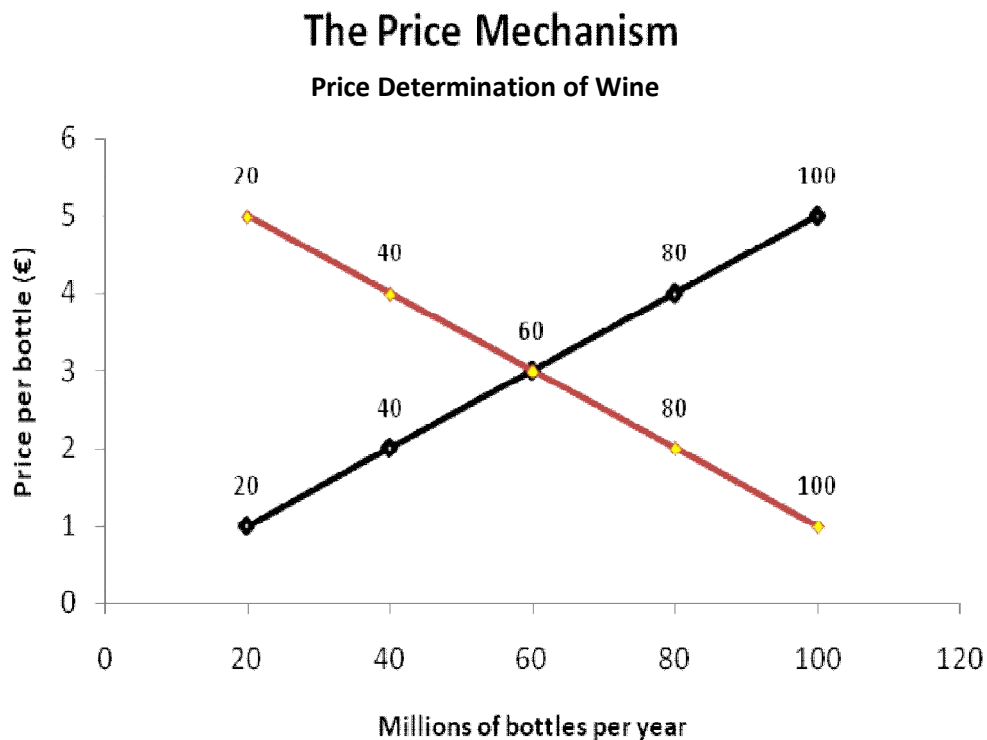### Price Determination of Wine

Figure 4.1 illustrates how the price mechanism works when only the commodity's own price changes. If the price is set too high or too low, the price will move down or up until the resulting surpluses or shortages are cleared at the equilibrium price. It is therefore the price, which acts

as 'the invisible hand' that finally brings diametrically opposed buyer and seller innumerable decision behaviours to agree on the countless exchanges of a wide range of goods and services. The London Stock Exchange and the Commodities Market are prime international; examples of how the price mechanism works.

Changes in factors other than price that influence the demand for and supply of commodities also demonstrate the efficiency of the market mechanism. These changes and their outcomes on the market price and equilibrium quantity demanded and supplied are shown by shifts in the demand and supply curves in Figure 4.2. Under certain conditions, we will be able to make four market predictions which are popularly known as the 'laws' of demand and supply.
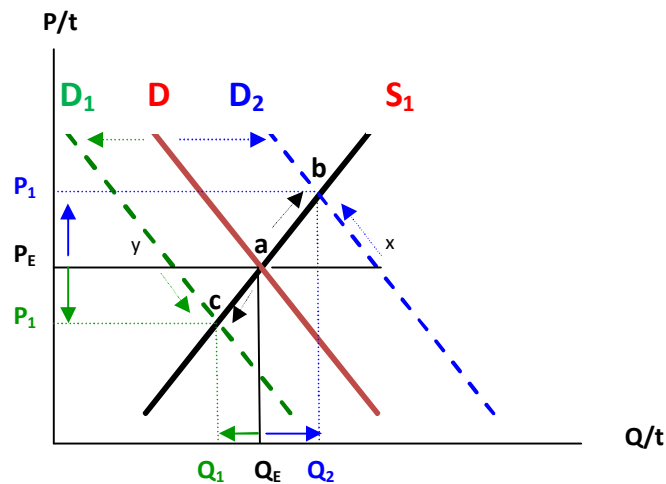
1. A fall in demand

The impact on the equilibrium price and quantity demanded and supplied of a change in the factors influencing demand other than the commodity's own price that leads to a fall in demand is shown in Figure 4.2 (a) by a downward shift in the demand curve from D to D_1. Following the leftward shift in the demand curve, at P_E now a surplus develops, where the excess supply is given by ay. To clear the surplus, the price falls from P_E to P_2 so that quantity demanded and supplied will also fall from Q_E to Q_1, shown by a downward movement along the demand line (y to c) and the supply line (a to c). A comparison of the original equilibrium at P_E to the new equilibrium P_2 gives us the first law of demand and supply:

1. *A fall in the demand for a commodity causes the equilibrium price and the equilibrium quantity bought and sold to fall.*

Thus, for example, ceteris paribus, it can be predicted that a fall in the incomes of British residents, or a reduction in the price of a Spanish holiday accommodation rates, a rise in airfares to Malta, a general preference for long haul tourism or a combination of these factors will

result in a decrease in British tourism to Malta as well as a fall in the price of a Maltese holiday.

Figure 4.2 (a) Laws of Demand and Supply
Shifts in the Demand

2. An increase in demand

The effect on the equilibrium price and quantity demanded and supplied of a change in the factors influencing demand other than the commodity's own price that leads to a rise in demand is illustrated in Figure 4.2 (a) by a rightward shift in the demand curve from D to D_2. Now at P_E scarcity for the commodity develops (D > S) where the excess demand is given by ax. To clear this scarcity, the price rises from P_E to P_2 so that quantity demanded and supplied will also increase from Q_E to Q_2, shown by a upward movement along the demand and supply lines. A comparison of the original equilibrium at P_E to the new equilibrium P_2 gives us the second law of demand and supply:

2. *A rise in the demand for a commodity causes the equilibrium price and the equilibrium quantity bought and sold to increase.*

Thus, for example, ceteris paribus, it can be predicted that a rise in the incomes of British residents, or an increase in the price of a Spanish holiday accommodation rates, a fall in airfares to Malta, a general preference for island tourism or a combination of these factors will result in a rise in British tourism to Malta as well as a rise in the price of a Maltese holiday.

3. A fall in supply

A fall in the supply of a commodity can be depicted by a leftward shift in the supply schedule from S to S_2 in Figure 4.2 (b). Equilibrium is initially at point a where the equilibrium price is P_E and the equilibrium quantity demand and supplied is at Q_E. Following the shift in the S-Line, at P_E now demand exceeds supply (D > S by ay). As a consequence, price rises to eliminate this scarcity causing a movement along the demand line D (a to c) and a movement along the new S_2 line (y to c). The price continues to rise until a new equilibrium is reached at P_2 and the market is cleared at Q_2. Comparing the new equilibrium at P_2 to the original equilibrium at P_E enables us to derive the third law of demand and supply:

3. A fall in the supply of a commodity causes the equilibrium price to rise and the equilibrium quantity bought and sold to fall.

Suppose, for example, that investment in the communications industry becomes more attractive than in the hotel industry, or that labour costs in the tourism industry rises, or that the government introduces a hefty levy on room rates, or that the overall profits in hotel accommodation sector falls. Any one or a combination of these factors can lead to a fall in the supply of hotel accommodation. As it becomes scarcer to find a hotel room, rates will go up and the demand for hotel accommodation will go down.

Figure 4:2 (b) Laws of Demand and Supply
Shift in the Supply
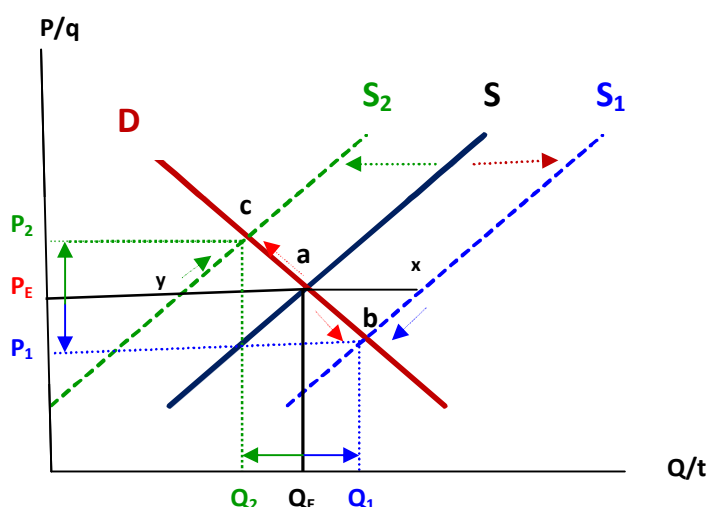
4. A rise in supply

In Figure 4.2 (b), an increase the supply of a commodity, for reasons other than its own price, causes the supply line to shift rightwards from S to S_1. With increased supply, at the original price P_E more is being produced than demanded. The resulting surplus (ax) pushes the price downwards causing a movement along the demand line D (a to b) and a movement along the new supply line S_1 (x to b) until the market settles at a new equilibrium at point b The equilibrium market price is now P_1 and the new quantity demanded and supplied is at Q_2. A comparative static analysis between the original market equilibrium at point a with the new equilibrium at point b resulting from a rise in supply allows us to state the final 'law' of demand and supply:

4. *A rise in the supply of a commodity causes the equilibrium price to fall and the equilibrium quantity bought and sold to increase.*

A simple example can illustrate the consequences of a rise in the supply of a good or service on the market price, quantity demand and quantity supplied. Let us assume that it is relatively very profitable to invest in the restaurant business. The cost of employing kitchen staff has gone down while investing in modern advanced catering equipment can further reduce operational costs. It is

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also the government's policy to charge lower electricity rates for restaurants and reduce VAT rates on restaurant meals and drinks. The likelihood is that many more new restaurants open for business in tourist destinations. As competition for customers among an ever growing number of restaurants increases, prices of restaurant meals fall pushing up the demand for restaurants services.

The determination of prices discussed so far assumes perfectly competitive conditions. That is, we assume that no single seller or buyer has any influence over the market price. However, as will be discussed later, supply and demand analysis can be extended to situations where the supplier has extensive market power and can actually determine the price. In cases of imperfect competition or monopolies, this theory will still generate useful predictions. The value of these predictions will be determined empirically (through observation on the ground)..