

Module 3

Lecture 20

Topic

3.4 Alfred Marshall II

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- What determine price demand or supply? Two distinct school of thoughts preceded Marshall.
- Classical School maintained that supply is the only factor responsible while Jevons, Menger and Walras stressed demand.
- Marshall's demand-supply based analysis was seen as reconciliation between the classical and the marginalist.
- A typical demand curve is falling while a supply curve is rising. Shorter the period, more important is the role of demand. Longer the period more important is the role of supply. According to Marshall, it is not correct to say that marginal utility or marginal cost determines price.
- For him the main lesson from the marginal analysis was that we must look at the margin to understand the decision making process at both the demand and supply side. Neither Demand nor supply alone can determine prices
- Marshall's most important contribution to demand theory was his clear formulation of the concept of price elasticity of demand. Price elasticity This is defines as

$$e_d = -\frac{\Delta q}{\Delta p} \times \frac{p}{q} \quad (1)$$

- The utility for perceived by Marshall was additive. Two of Marshall's contemporaries Edgeworth and Fisher conceived more generalized functions. An additive utility function with n number of goods looks like this:

$$U = f_1(q_1) + f_2(q_2) + f_3(q_3) + \cdots + f_n(q_n) \quad (2)$$

- Marshall, assumed that utility is measureable by price. If an individual pays Rs. 100 for 1 unit of A and another pays Rs. 300 for unit of B, then a unit of B must give 3 times more utility than a unit of A. He also argued that interpersonal comparison of utilities is possible.
- In his attempt to explain demand curve, Marshal used the following equation:

$$\frac{MU_1}{P_1} = \frac{MU_2}{P_2} = \dots = \frac{MU_n}{P_n} = MU_M \quad (3)$$

where MU_i represents the marginal utility from the i th good and MU_M is the marginal utility of money.

- Hence, for a particular good, the condition that $\frac{MU_1}{P_1} = MU_M$
- This is Marshalian formulation amounts to be the demand curve as he assumed that marginal utility of money is constant. Then because of diminishing marginal utility the last equation yields a negative relationship between price and demand.
- Marshal in this formulation used cardinal (measurable) utility. His explanation of downward sloping demand curve is driven by the assumption of diminishing marginal utility. However, later in the first half of the twentieth century Hicks came up with the ordinal formulation of utility and explained the downward sloping demand curve in terms of *substitution effect* and *income effect*. This explanation is now found in any standard textbook.
- By substitution effect we mean that when the price of one good falls it becomes relatively cheaper than other goods in the market and as a result people substitute that good for others. As a result demand goes up. At the same time with drop in price, real income $\left(\frac{M}{P}\right)$ goes up. If the good is a normal good its demand goes up with rise in (real) income. Hence, for normal goods demand curve is unambiguously negatively sloped. However, for inferior good, income effect is positive $\left(p \uparrow \Rightarrow \frac{M}{P} \downarrow \Rightarrow q \downarrow\right)$ which runs opposite to the substitution effect. Hence, for inferior good the demand curve can be upward as well which is known as the case of *Giffen goods*.

- From the relationship $MU_i = p_i MU_M$ Marshall concluded that marginal utility can be measured by the price one is willing to pay because MU of money was assumed to be constant.
- The downward sloping marginal utility curve implies that a consumer is willing to pay more for x th unit than she is willing to pay for $(x + 1)$ th. However, in market one pays the same price for all the units consumed, the difference between price willing to pay and price paid is the net benefit to the consumers.
- This is known as the consumer surplus which is the area CAD in the diagram. This represents the monetary gain by consumers when they buy some commodities.
- However, Marshall's strategy to measure welfare gain by prices depends on two assumptions:
 1. additive utility function
 2. constant marginal utility of money which can be sustained if income effect from small price changes is negligible
- Marshall was also aware of these problems and he responded to that by taking small changes in prices only

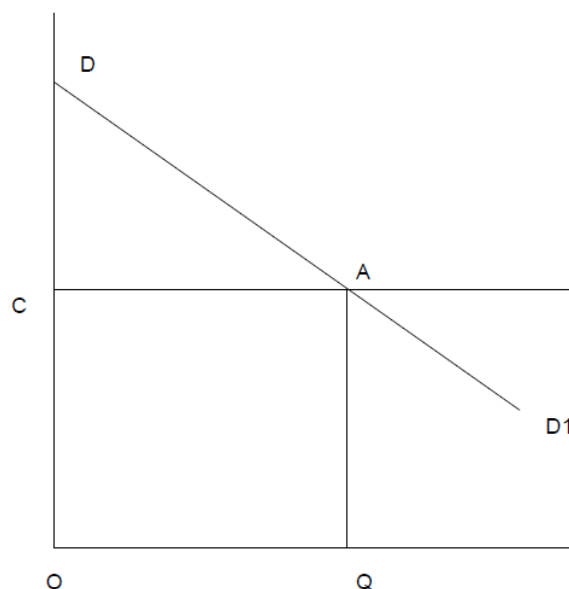


Figure 1: Consumer Surplus