[Academic Script]

Markets: Consumer Surplus

Subject:	Business Economics
Course:	B.A., 1st Semester, Undergraduate
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Unit No. & Title:	Unit – 5 Markets: Consumer Surplus
Lecture No. & Title:	Lecture – 2 Markets: Consumer Surplus

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1. Introduction

The concept of consumer surplus was first propounded by the French engineer Jules Dupuit in 1844 to measure the social benefits of public goods but his work was not remembered then it was independently propounded by Marshal in his "Principles of Economics" published in 1890. These days the relevance of the consumer's surplus and producer's surplus can be analyzed practically by many aspects. I.E: - if a producer wants more profit it has to find out a new kind of product or the market where competition is less and the demand is higher so that it can earn more surplus. On the other hand it is also helpful for the government to analyze the welfare effects of its policies on consumers that weather it is a consumer's surplus behind the increase in the demand of government influence area.

The concept of consumer surplus has more importance in the field of economic theory and welfare economics. This also helps to government to frame the policies regarding tax.

Objectives:

1) To explain the concept of Consumer surplus.
2) To explain the concept of producer's surplus.
5) To explain the effects of taxation and subsidy.

Consumer surplus

Marshal define the consumer surplus as "excess of the price which a consumer would be willing to pay rather than to go without a

thing over that which he actually does pay is the economic measure of the surplus satisfaction, it may be called consumer's surplus". So one can say that the Consumer surplus is the difference between what consumer is willing to pay for his/her preferred goods and what (less) actually they pay.

So Consumer surplus = Assumed price – Actual price.
Or we can say consumer's surplus = total marginal utility – (Price * total number of commodity purchased).

The concept of consumer surplus is derived from the law of diminishing marginal utility. As any consumer is purchasing or having more and more of any goods its marginal utility goes diminishing by every successive consumption of good. Moreover consumer purchases the good at price where its marginal utility and price remains same.

This shows that at the marginal level whatever price consumer is ready to pay is equal to the price actually pays but for previous units where consumer was getting more marginal utility, he was paying same price because in market price of the commodity remains same.

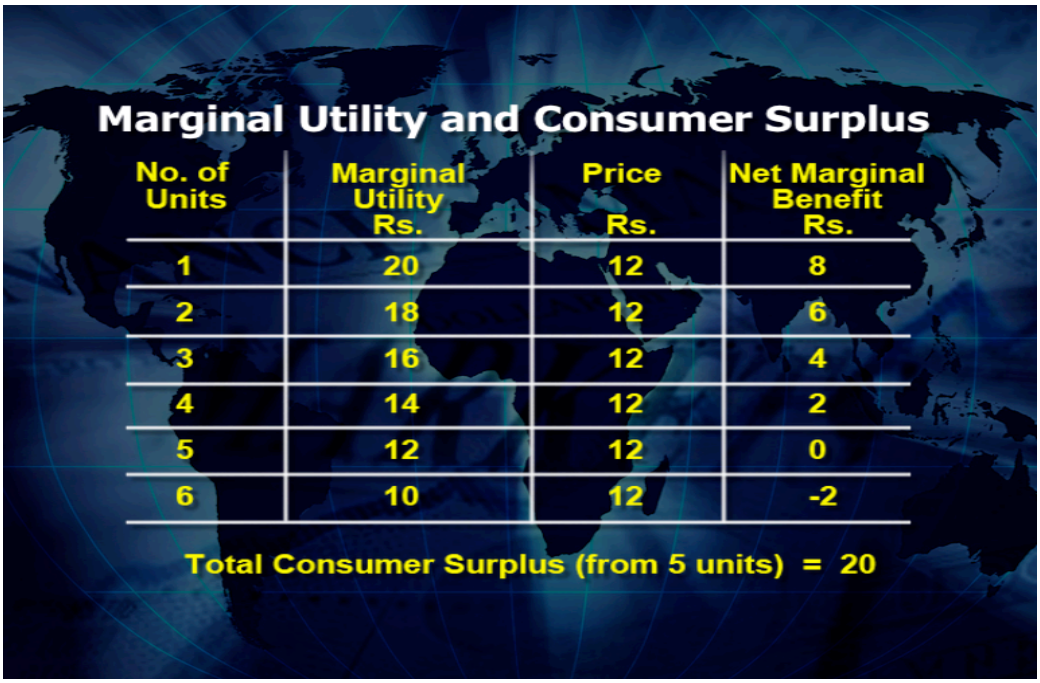
This means consumer was willing to pay more for initial marginal units of the goods because he was getting more marginal utility but actually he paid less but as subsequently marginal utility goes down as the law of diminishing marginal utility, consumer's marginal payments and marginal utility becomes same and need of further

consumption becomes zero and also consumer surplus become zero.

Measurement of consumer's surplus by Marshal

Marshal tried to measure consumer surplus with the help of money. According to him consumer surplus measures the extra utility of consumer he is getting by consuming certain amount of commodities over and above the market values of those goods. it is because of the law of diminishing marginal utility that consumer is getting more marginal utility than the marginal price paid for those goods.

Let's understand this with the help of this table. (Table 1)



Marginal Utility and Consumer Surplus

No. of Units	Marginal Utility Rs.	Price Rs.	Net Marginal Benefit Rs.
1	20	12	8
2	18	12	6
3	16	12	4
4	14	12	2
5	12	12	0
6	10	12	-2

Total Consumer Surplus (from 5 units) = 20

In this table it is shown that by consuming 1st unit of a commodity consumer is getting marginal utility of 20, means it is worth of rupees 20 to him. From the second unit he derives 18 marginal utility that means he is ready to pay rupees 18 for that commodity. So same in the subsequent goods he is getting marginal utility of 16,14,12,10. Actually consumer is not paying equal to the marginal

utility, because the market price is same all the time from the consumption of 1st good till 6th good but he was getting different marginal utilities, this is because of law of diminishing marginal utility.

Now from the first unit consumer is getting 20 marginal utility while price is only 12 so we can say consumer is getting rupees 8 as a surplus, same with the second unit of consumption consumer is getting 18 marginal utility and pays again 12 so he is getting rupees 6 as a surplus ans subsequently as he consumes more and more goods consumer surplus goes down with marginal utility. So according to marsh consumer surplus can be measured cardinally with the help of marginal utility and the money.

Consumer's surplus with diagram.

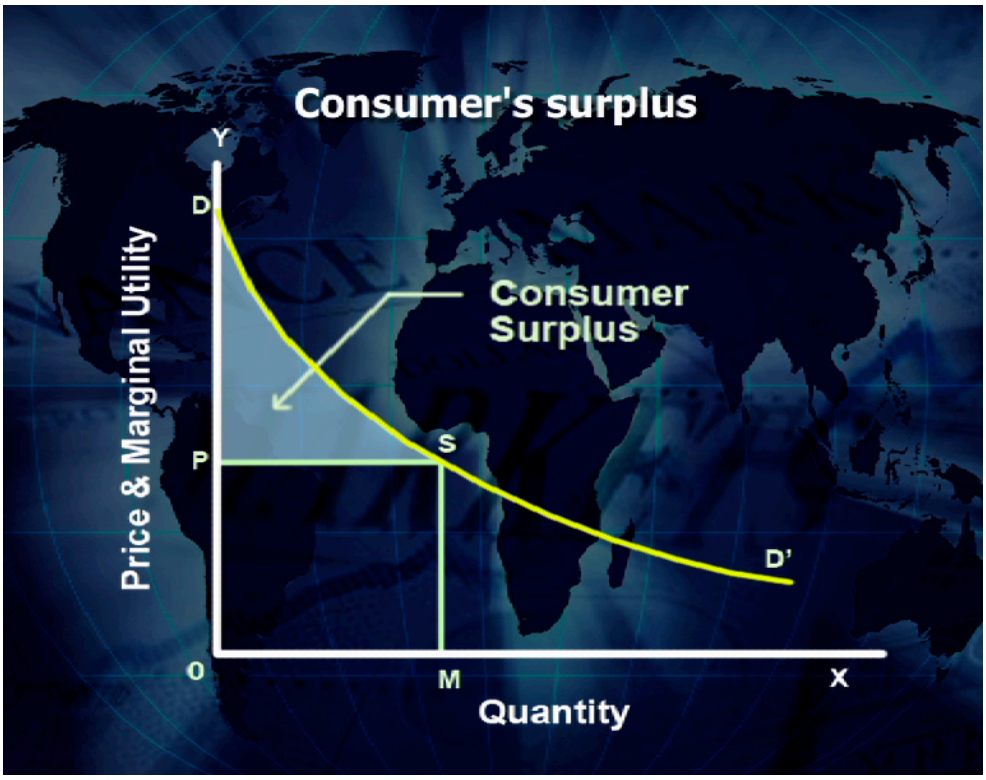


Diagram 1

In this diagram we can see on x axis we have take quantity and on y axis we have taken price and marginal utility (willingness to pay of consumer) is taken. At OP price consumer is purchasing OM amount of goods so at point S consumer is in equilibrium. In other words we can say on point S the consumer's surplus becomes zero, because at point S the price consumer is paying for is equal to the marginal utility consumer is getting. In the diagram the shaded area PDS shows the total consumer's surplus.

2. A glance of hicksian consumer surplus

Criticisms of Marshal's consumer surplus.

There are few fundamental limitations in the marshal's concept of consumer surplus.

1) It is based on the utility analysis so the it is incorporating the limitations of this analysis.
2) Marshal assumes that utility is measurable while according to hicks utility is subjective and can't be measured.
3) Marshal also assumes that the marginal utility of money remains constant while actually utility of money changes as the quantity of money changes with the individual.

Seeing all these limitations of the Marshal's consumer surplus hicks has given the same concept of consumer surplus on the basis of indifference curve analysis through which hicks is able to eliminating those limitation. In 1930s hicks and Allen rejected this Marshall's theory and in 1940 they published articles in the "Review of economic studies" and tried to establish new theory based on indifference curve.

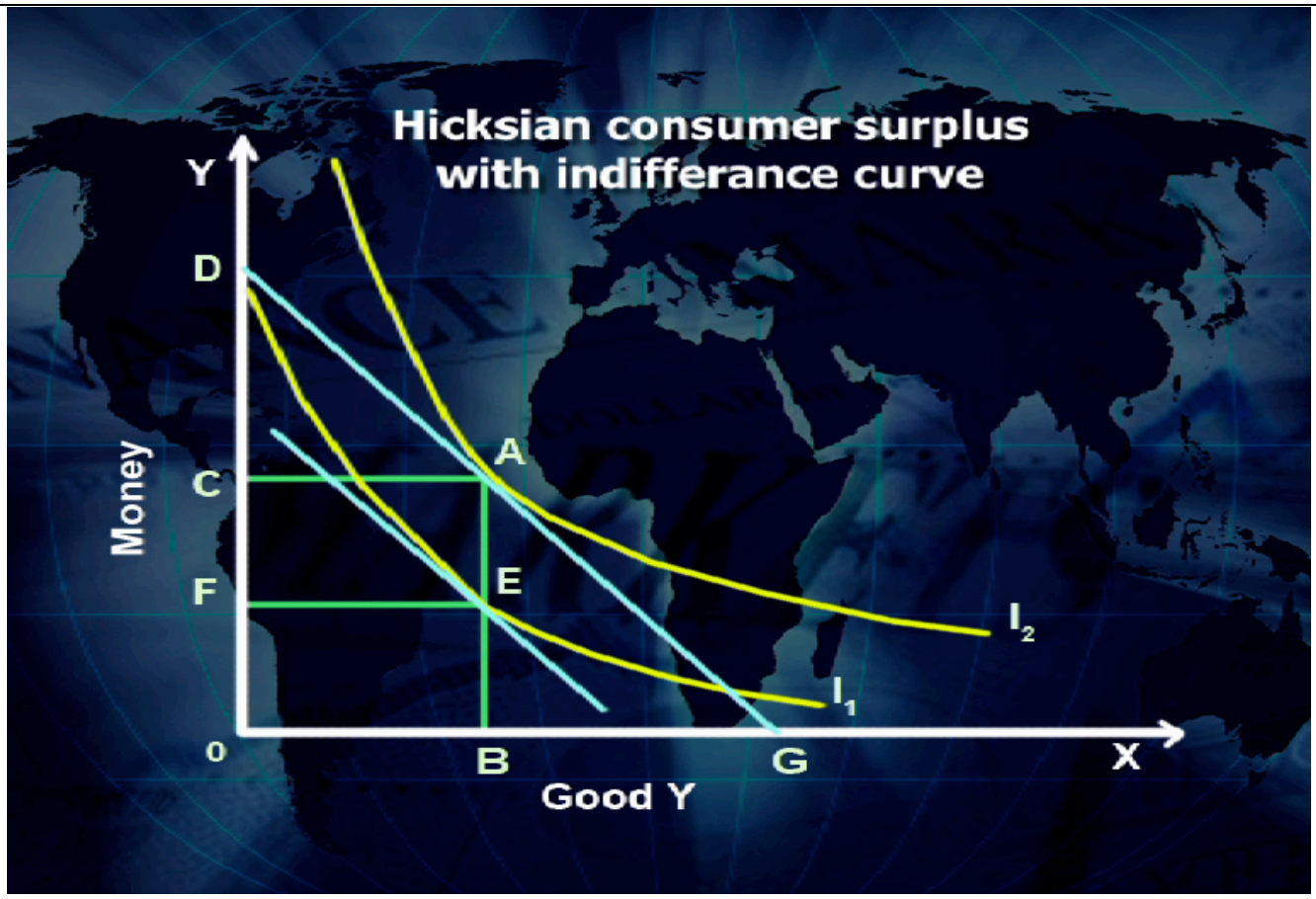


Diagram 2

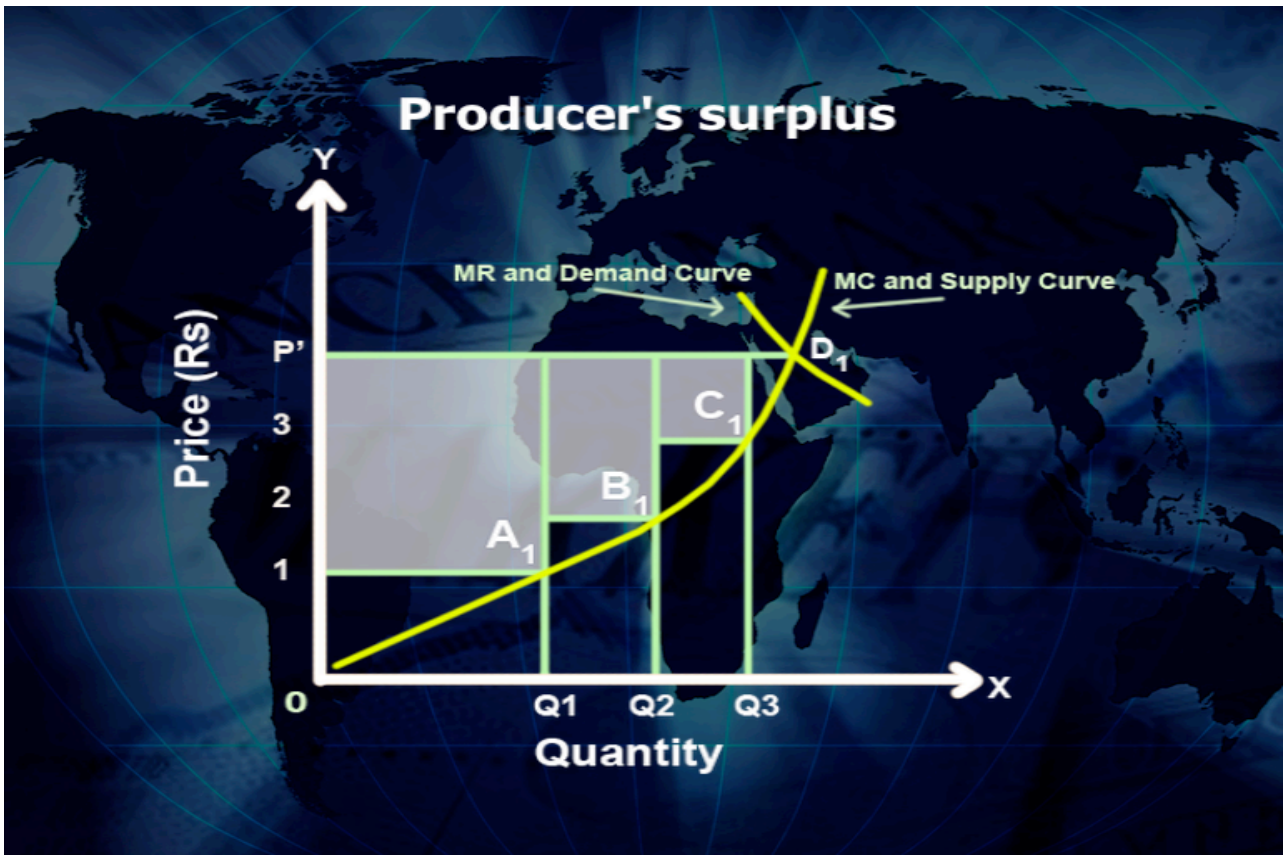
In this diagram DG is the price line on which indifference curve I2 is touching at point A which shows that consumer is purchasing good Y of quantity OB at OC price, but actually how much consumer wants to pay that we have to decide. For that we have to draw another indifference curve I1 parallel to I2. Consumer is ready to pay FD amount of money but actually pays CD amount of money so CF is the consumer surplus. This explanation is given on the understanding of keeping marginal utility of money constant.

Producer's surplus

Producer surplus is the analogous to the consumer surplus. If producer is able to sell its goods on higher prices than the minimum prices prevailing in the market that will be considered producer's surplus. In other words we can say that if producer sold its goods

on higher prices which he was ready to sell on lower prices also will be considered its surplus earning. So one can say that producer's surplus is what extra producer is earning than its marginal cost per unit.

(Producer's surplus Explanation through Diagram)



Let's take the example how Producers earn surplus through figure 1. In this figure on X axis we can see the quantity and on Y axis we are having price of the good. We have demand curve and supply curves also which also represent marginal revenue and marginal cost curves. As we can see initially when the price is 1 which is lowest price offered by producer. At this price he is selling only Q1. Point A1 shows this situation where marginal cost curve is much below the marginal revenue and the producer is earning surplus of Rs.3. As the price increases from 1 to 2, seller is ready to sell Q2 amount of quantity and seller is earning Rs.2 surplus. At price 3

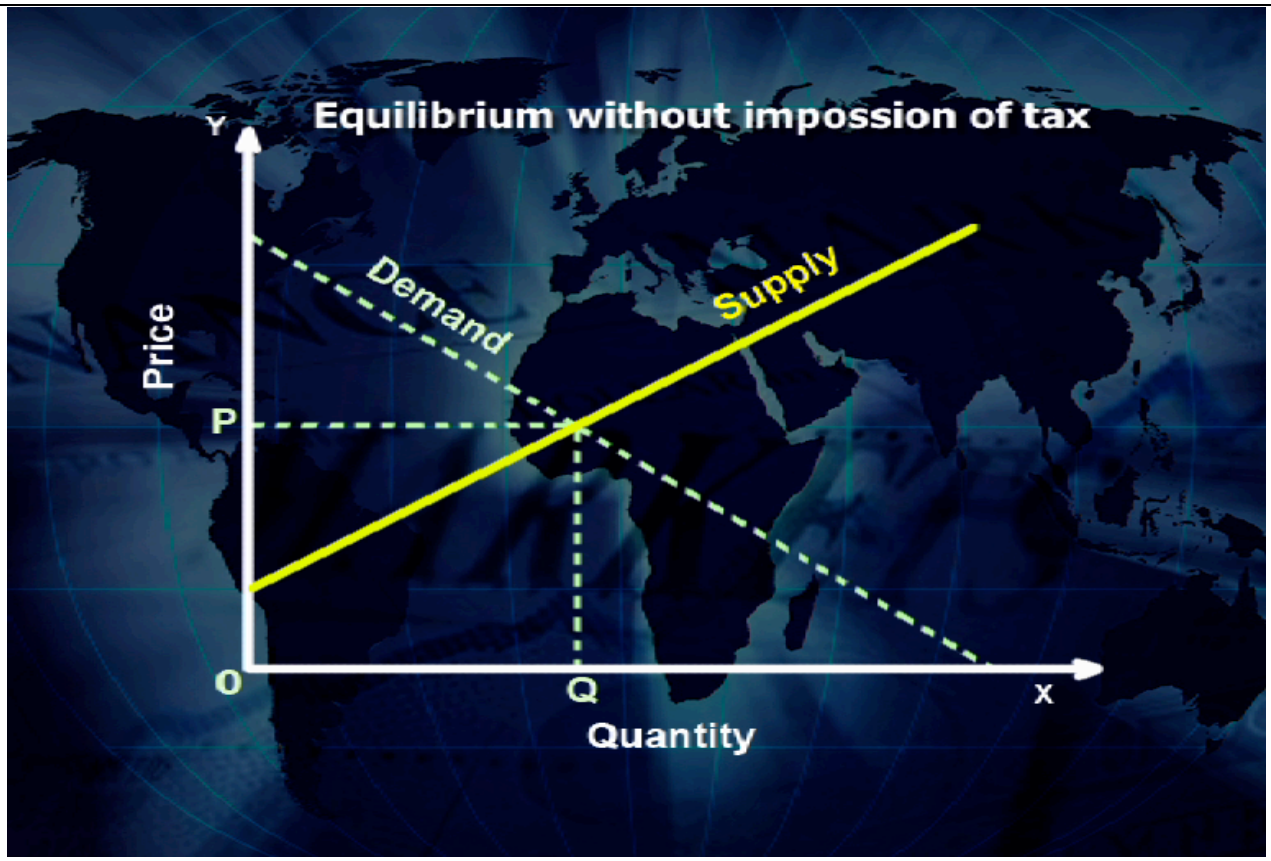
seller is selling Q3 where he is earning Rs.1. As the quantity is increases the surplus of the producer is decreasing and at point D1 firm is earning no surplus. Beyond that producer will not sell any goods because the marginal cost of per production will exceed to the marginal revenue.

Suppose if the goods are perfectly divisible Producer would get $8 as a surplus. We can also say as the price is changing the producer's surplus is changing.

3. Effects of Taxes

Adam Smith a pioneer classical economist talks about the ***laissez faire*** policy where here is no control of the government on the functions of the market so the market does what it wanted to do and if something goes wrong it corrects itself. These days it is almost impossible to find out a country where government intervention seems less important or negligible. Changes in the market by government is possible through various instruments and two of them are **Taxes** and **Subsidies**. Thought demand and supply analysis one can explain the effects of Taxes and Subsidies.
Here we will discuss about the specific tax or we can say certain fix amount of tax on per unit sold.

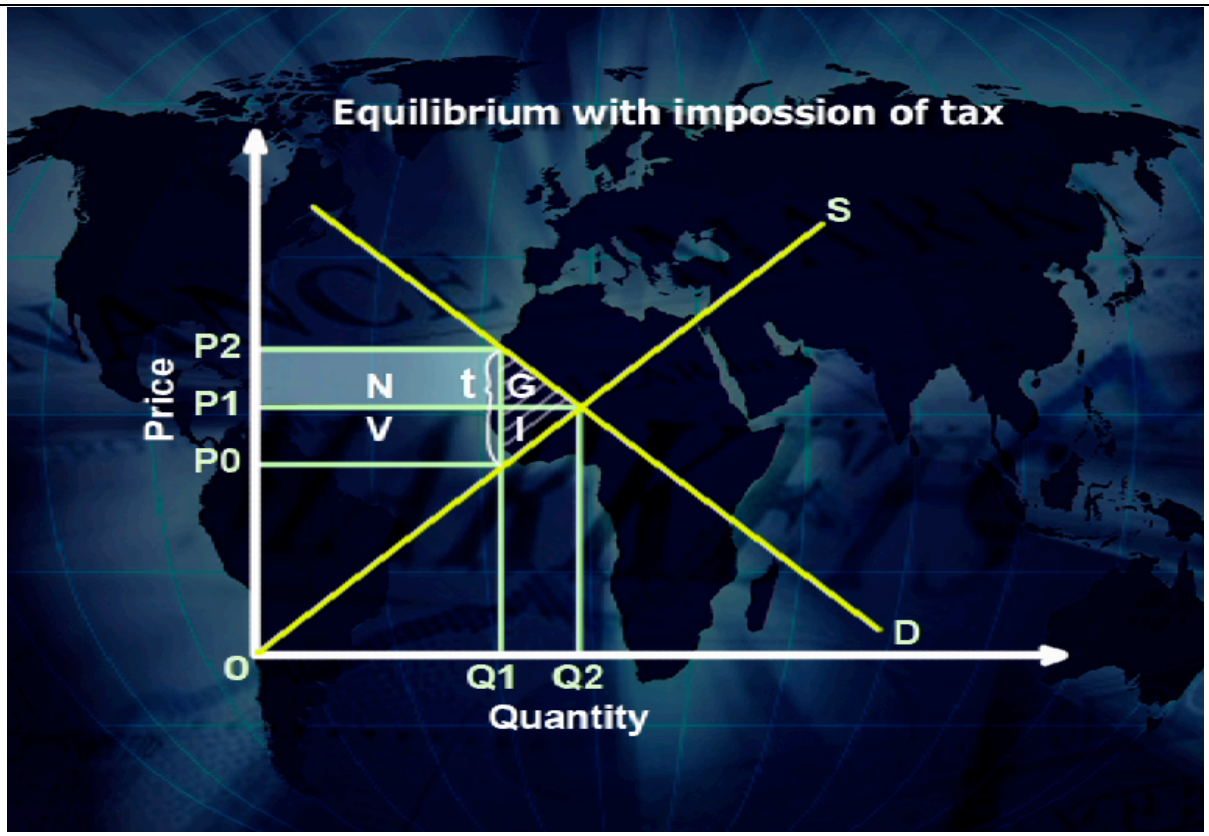
(Explanation through Diagram)



In the figure 3 we can see when there is no tax imposition, consumer is purchasing Q quantity of goods at P prices and E1 is the equilibrium point where demand and supply curve intersect each other.

Not let see what happens after tax imposition? Also there are some basic questions which must be answered such as who bear the tax? How much tax would be paid by buyers and sellers?

(Explanation through Diagram)



In this figure 4 we can see that at P1 Price consumers are ready to purchase Q2 amount of goods as sellers are also agreed on that price. But as the tax T has been imposed and the price increased from P1 to P2, the quantity demanded reduced from Q2 to Q1 because consumers always care about what price they are paying for the goods. So there would be reduction in demand.

On the other hand seller is receiving P0 prices after the tax imposition and selling Q1 quantity of goods.

Now the tax paid by consumer is showed as the shaded area N and tax paid by seller is V and G and I are the deadweight loss. So the government is getting tax T which is equal to the area N+V. this shows that consumers and sellers both are paying equal amount of tax.

It is not necessary that both should pay the same amount of tax it's depend on the intensity of need for consumer to purchase goods or intensity of need for seller to sell the goods in the market.

The concept of elasticity would be useful to decide who will bear more or less tax burden. For example if the demand is perfectly elastic and the supply is inelastic then sellers would bears the most of the tax burden and if the demand is inelastic and supply is more elastic then the consumer will bears the most of tax burden. So we can say that impact of tax depends upon the elasticity of demand and supply

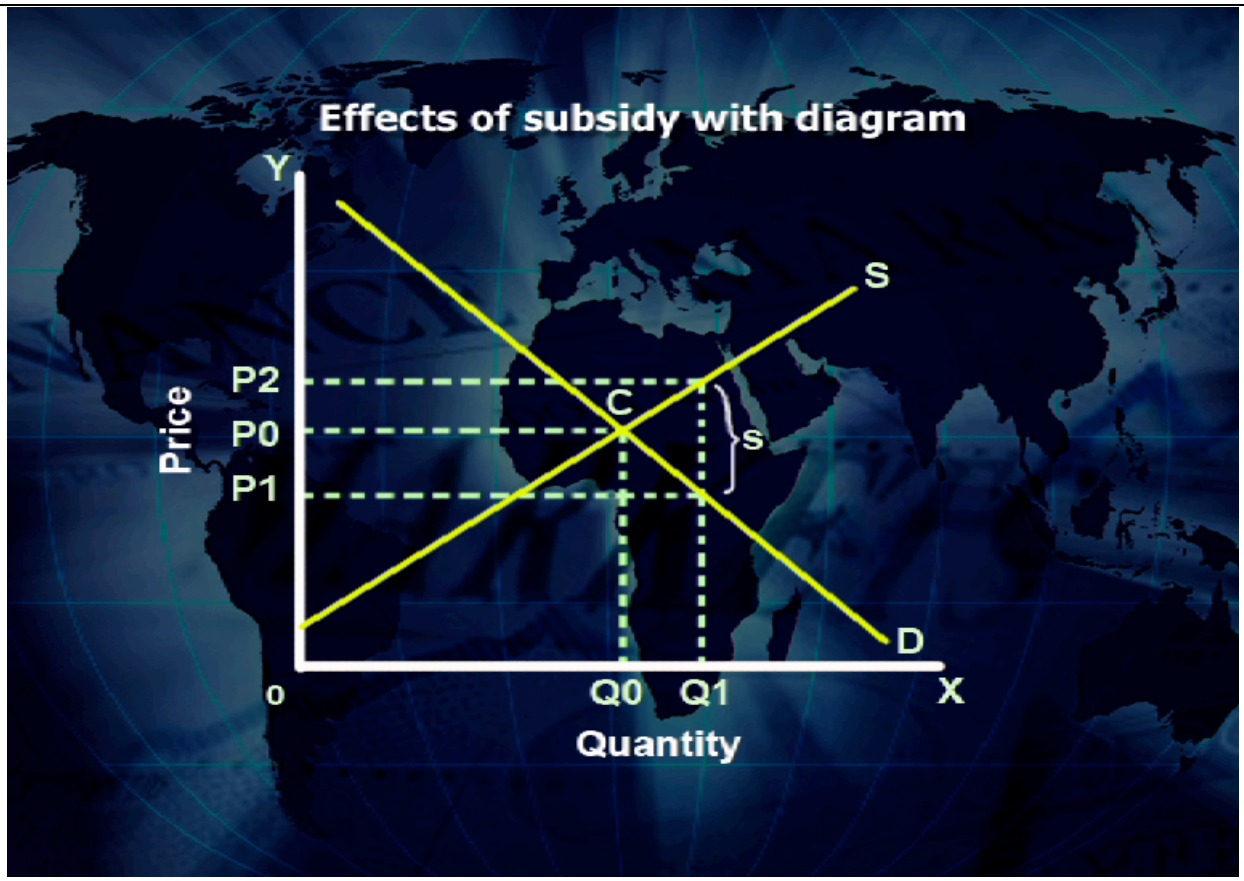
If we assume the elasticity would remain same; the incident of tax will fall on consumer and producer equally. So half of the tax burden would be paid by consumer and half would be paid by producer, but it doesn't mean that always elasticity would remain same. In general we can say that tax falls mostly on the consumer if E_d/E_s is small and mostly on the producer if E_d/E_s is large.

4. Effects of Subsidy

Effects of subsidy can be analyzed as we analyzed the tax. We can say subsidy is a negative tax and also has vice versa effect than the tax. For example after imposition of the tax the demand is decreasing but after allotting subsidy the demand is increasing. Why? Because of subsidy the actual price paid by consumer is less than what he would have to pay without subsidies.

Again if we want to study this concept we have to take an assumption.

1) The elasticity of demand and supply roughly remain same.



In this figure 5 we have taken quantity on X axis and prices on Y axis. Demand and supply curves are intersecting each other at point C which is initial equilibrium point when there is no subsidy allotted. At P0 prices consumers are ready to purchase Q0 quantity of goods. Now suppose the price has been increased from P1 to P2 the demand will get reduce and if price decreased from P2 to P0 the supply will get reduce. So the subsidy has been given which is shown as the area S, after subsidization the center of equilibrium would remain same but consumers will get higher quantity of goods at same price P0 and seller would also get the price what they wanted to get. So at point P0 the benefit of the subsidy is also shared equally between consumers and sellers. But it does not happen always that both share same benefits it is again depends on the elasticity.

5. Summery

Consumer surplus and producer's surplus both are emphasizing on the importance of the marginal benefits and marginal gains. It also trying to solve the famous paradox of water and diamond, that's why selling water has fewer benefits while in diamond the benefits are much more, because it ignores the value in use and only stresses the marginal utility rather than total utility. It also an important part of cost benefit analysis where not only cost of project is matter but the long term satisfaction derived by that project is also considered because it is an important tool of welfare economics.