An Introduction to Microeconomics
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Lecture - 29
Tax Imposed on Seller

Now, let us see that it is imposed on seller rather than on buyer, starting with the same equation.

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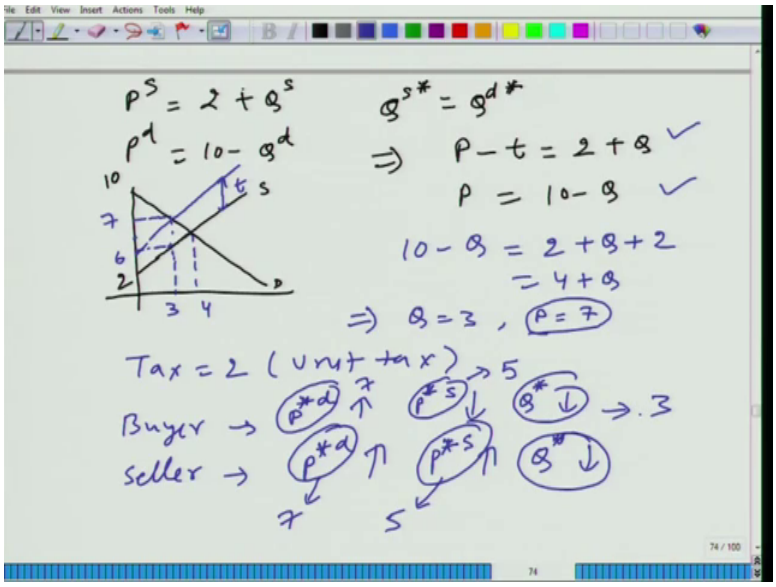

Ps is equal to 2 plus, 2 plus Qs and Pd is equal to 10 minus. What we will have in the equilibrium that Qs star is equal to Qd star and what happens when tax is imposed on seller, but whatever buyer pays to the seller, seller will have to spare some amount as decided by the government to the government.

Student: Hm.

So if seller is paying P, then how much of, if buyer is paying P how much seller can keep?

Student: P

P minus t.

Student: T.

In case of the unit tax, that is the case we are describing. So, again we will write it in terms of P, what happens here we have P minus t.

Student: T.

2 plus Qs or just Q because you know we writing in terms of Q and here what we have P is equal to 10 minus Q. So, if you draw it, here we have 10, here we have 2; this is the original supply curve this is the original demand curve ok.

Student: Yes.

Now, what happens to the supply curve?

Student: Upward.

It would shift upward because you can think although tax is not, tax is not something that a seller pays for raw material or for input, but you can think in terms of that seller has to pay to sell; seller has to pay these tax to sell a product.

So, in a sense it is increasing the cost of production and hence since tax is imposed on each unit of the good. So, it is increasing the marginal cost by the amount of tax.

Student: Tax.

So, marginal cost is going up by tax and in this case 2. [

Student: Tax.

So, supply curve is nothing, but the marginal cost again not precisely speaking, but roughly speaking that supply curve is nothing, but it is a marginal cost with respect to Q that we have already discussed.

So, now marginal cost is going up per quantity. What would happen to the supply curve? It would shift upward. So, this is the way it will shift [FL] and again you should notice this vertical shift is equal to t same as tax amount. So, now, what we can do, we can find the equilibrium using this equation and this equation and what we will get?

Student: 7 minus.

10 minus Q plus 2 plus Q plus t and t is equal to?

Student: T.

Student: 2

This is this we can write it as 2. So, 4 plus Q and what happens now?

Student: Q equals to 3.

Q is equal to 3 and.

Student: (Refer Time: 03:59) P is

P is equal to?

Student: 7.

P is equal to 7, but this 7 includes,

Student: Tax.

This 7 includes the tax or this 7 is the price that buyer is paying. So, from this graph, we can see here this is 7, this is 3 and let me mark this also 4 and this is 6, again this is (Refer Time: 4:29), this is 6 fine.

So, what is happening in both cases? So, tax let me say here, tax 2 and that is unit tax, that is imposed first on, first on buyer.

Student: Seller.

Student: (Refer Time: 05:07).

First on buyer.

Student: (Refer Time: 05:08)

And second one Seller.

Student: Seller.

What happens, the P equilibrium that buyer pays goes up, P equilibrium that seller receives goes down.

Student: (Refer Time: 05:29).

And Q equilibrium also goes down and similarly the same thing happens here, exactly the same thing. Not only they go up both go up, but also go up by the same amount.

Student: Amount.

In this case this is equal to 7, here also this is equal to 7, this is equal to 3.

Student: 5.

Student: Sorry.

Oh 5, sorry this is equal to 5 and this is also equal to.

Student: 5.

5 and these 2 both are equal to 3.

Student: 3.

So, at least in this example, at least in this example it does not matter whether the tax is imposed on whether the unit tax is imposed on buyer

Student: Or seller.

Or on seller. Do you think it always happens or because the particular example that I have selected?

Student: It is a particular example because you need unit tax case.

Do you think it does not happen in case of proportional tax?

Student: If this is the supply and demand condition that it then it will happen so.

See as it happens in It, it is not because the specific example I have selected. Let me give you one homework that you can do on your own. Do not take a particular example of the

supply or demand function. Take, let us take just linear, just do it for any linear demand function, P is equal to a minus Bq and this is the demand function.

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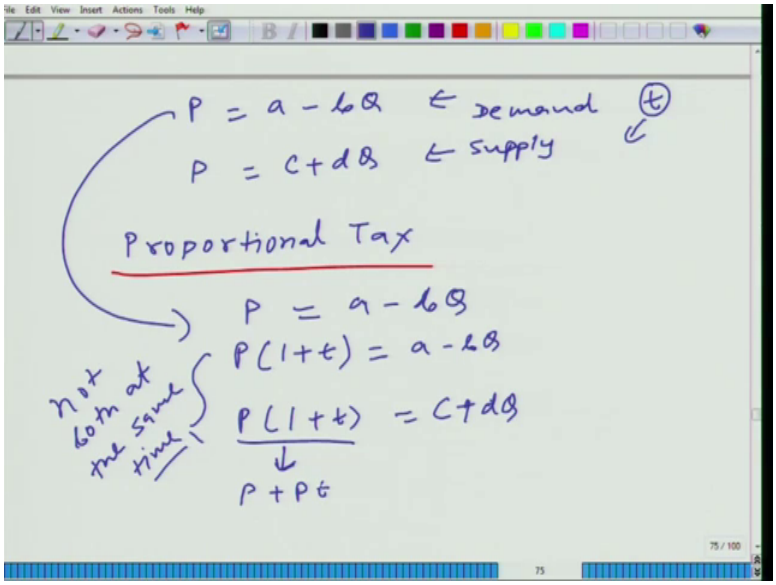

Student: (Refer Time: 07:13) B I guess.

And this is c plus dQ, supply function and then what you do you impose a tax t on buyer and then you do it for seller. Again you will get the same result, that it does not matter that distortion is the same, exactly same whether it is imposed on buyer or it is imposed on seller.

Now, in proportional tax it may change depending on your interpretation. Why it would change? because see, let me just give you a little hint about because I am not going to solve the proportional case, but if you take care of the 1 particular quirkiness of this case, then again you will get the same example, same result. Let us look at the proportional case not again in detail just briefly. Tax ok. What happens in the proportional tax case? If it is imposed on, if it is imposed on buyer, go back to the case here it is imposed on buyer. Pd is replaced by P plus t. Here, you cannot replace it by this P in this equation, a minus bQ. You cannot replace it by P plus t. If you do that it means that you are using unit tax fine ok.

Now, here for proportional tax what would you do?

Student: Sir we have to multiply a proportion quantity p (Refer Time: 09:09).

So, P should be replaced by,

Student: P.

P multiplied by 1 plus t, there t is not the same as the earlier t, t here is in percentage.

Student: Percentage.

T here is in the percentage ok. When it is imposed on buyer fine and when it is imposed on selle,r then P should again be replaced on this side, but not both at the same time. You can do only 1 side ok. c plus dQ.

So, what is happening if you look at this supply side? Let us say that you are doing it on the supply side, then P is replaced by P plus, P plus t.

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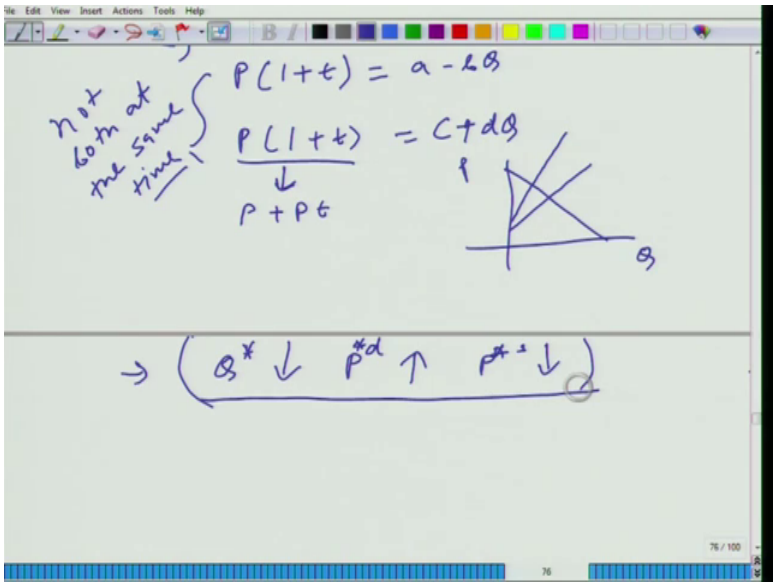

If you go to the earlier example, just let me write it like this here. What you have here is like this P Q ok. Here the shift is not going to be the same at all the price label, higher the price shift would be higher. So shift is going to be something like this not exactly the same.

So, when you are moving from 100 to 120 and then you are moving from 100, see when just, just an example let us say, earlier we talked about 2, 2 unit change the tax is equivalent to 2 unit.

But now let us look at the at equilibrium price. How much is the percentage at equilibrium price. Earlier it is 6; the price is 6 equilibrium price.

Student: (Refer Time: 11:04).

So, tax is 33.33 percent roughly. So, if you do that here, then its fine, but again it will be distorted a little bit by the because here you have shift as well as rotation.

Student: Rotation.

This line is supply curve is rotating. So, if you take care of this rotation part by adjusting the tax rate because when you are comparing the 2 scenarios, unit tax case and the proportional tax case, you should talk about the imposition of same tax. So, if you it means you have to take care of the rotation. Then you get the same result, the effect would be the same. It does not matter whether the tax is imposed on buyer or on Seller.

Student: Seller.

Whether you are talking about the specific tax or proportional tax, you will get the same outcome.

Now, what, why it is happening. why it is happening. So, when, but one thing that you should keep in mind, whenever a tax is imposed Q star will go down, Pd star the buyer pays goes up and it goes down.

Student: P star.

Student: Down.

If you leave out some extreme cases, where Pd or Ps does not change? What I mean to say that, Q star will not go up either it remains the same or it go down, P star d either it goes up or remain the same and P star is goes down or remain the same.

Student: Same

Fine is it clear?

Student: Yes.