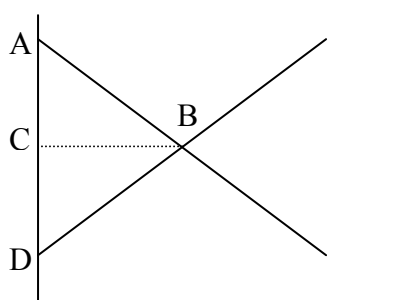


Social welfare loss

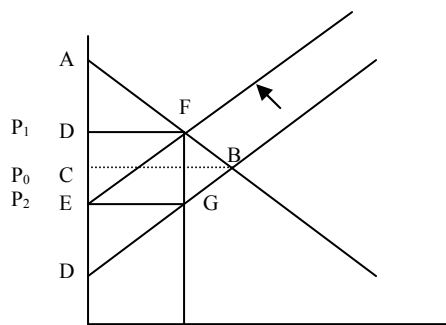
I am not sure whether I made my self clear about the welfare loss from the imposition of a tax. So let me try one more time:

Social Welfare= Consumer Surplus+ Producers Surplus

Consumers' Surplus: The Area Above the equilibrium price, up to the point where the demand curve meets the vertical axis. Why? Because there are some consumers who are willing to pay more than the equilibrium price. Since they are actually paying the equilibrium price they are better off! So the triangle ABC represents this surplus. Using the same logic, **the producers' surplus** is CBD, there are some producers who are willing to sell at a price lower than the equilibrium. But they finally sell at the equilibrium price. Thus the producers' surplus is the area CBD



Suppose now that a tax is imposed in the market. As we already know we can show this diagrammatically by either shifting the supply curve to the left or the demand curve downwards. Remember, the general effect of a tax is that the price goes up and the quantity falls. Let's show the tax by using the supply curve.



Attention now !! Since we have moved the supply curve upwards the new equilibrium point is F (lower quantity, higher price). The consumers' surplus now is the triangle AFD. Before the tax it was ABC. Thus, the loss is the area DFBC.

The producers' new surplus is the triangle EGD. Why?? Because although they receive the new higher price P_1 they return $P_1 - P_2$ to the government which includes the consumers' burden, $P_1 - P_0$, as well as their own, $P_0 - P_2$. They actually receive P_2 . Thus, their loss is the difference between the old surplus (triangle CBD) and the new one (triangle EGF), namely the area CBGE.

Now, adding what consumers lose and what producers lose we come up with the area DFBGE. But the rectangular DFGE which is included in this area is the tax revenue that the government receives. We can't consider this area as a loss since those money returns to the society (think of public goods, schools, highways e.t.c.). Thus, the actual loss as a result of the tax is the triangle FBG.

→ Suppose you don't want to do it in the way I described above (deriving the social welfare loss as the sum of the two separate losses) but you care **directly** about the aggregate loss. The triangle ABD is the Social Surplus. It includes the surplus of the consumers and the surplus of suppliers. When we move the curve upwards the social surplus shrinks and equals the area of the triangle AFE. The loss is thus the area EFBD which is equal to the area DFBGE we saw above (since the triangle DFE = triangle EGD). The tax (which returns to the society) is the area EFGD. Consequently the actual loss is again the triangle FBG.