Taxes

Taxes are another policy instrument the government has to influence supply, demand, quantity sold and price of goods, raise revenue.

A tax can be either on buyers of a good (for each unit bought, the buyer pays something to the government) or on sellers of a good (for each unit sold, the seller pays something to the government).

When a tax is imposed on a good, who bears the tax – the sellers or the buyers of the good?

Tax incidence refers to how much of the tax burden falls on buyers and how much on sellers.

Consider first a tax on buyers of ice cream.

What happens when buyers must pay $0.50 to the government for every ice cream cone they buy?

Each cone bought now costs $0.50 more to the buyer. So at each price $P$, buyers are only willing to buy the quantity they would have bought before at price $P + 0.50$. Or, for each quantity $Q$ to be bought, buyers require a price that is $0.50$ lower than before. Thus the demand curve shifts vertically down by $0.50$. 

The new equilibrium price is the intersection between the new demand curve and the supply curve. It is lower than the original equilibrium price because the demand curve has shifted to the left (down).

But the price paid by the buyer of ice cream is $0.50 more than the new equilibrium price. In our drawing, this is higher than the original equilibrium price. So buyers pay more per cone post-tax than pre-tax; sellers get less per cone post-tax than pre-tax.

The tax incidence is the part of the tax paid by the seller and the part of the tax paid by the buyer.

Suppose the pre-tax price was $3.00 per cone and the post-tax price is $2.80 per cone. Then buyers pay $2.80 + $0.50 = $3.30 per cone.

The part of the tax paid by the buyer is the difference between the original price and the post-tax amount paid by the buyer. This is $0.30. The part of the tax paid by the seller is the difference between the original price and the post-tax price received by the seller. This is $0.20. Thus in this case, the buyer pays more of the tax than the seller.
Now suppose the government imposes the tax on the seller: For each ice cream cone sold, the seller must pay $0.50 to the government.

Now the supply curve shifts up (to the left). For each cone sold, the effective price to sellers is now $0.50 lower. So for sellers to be willing to sell a quantity $Q$, the unit price must be $0.50$ higher than it was pre-tax.

Or, the quantity sellers would be willing to sell at a given price $P$ is the quantity they were willing to sell at price $P - 0.50$ before the tax. So the supply curve shifts vertically up by $0.50$ due to the tax.
Suppose that we have used the same original supply and demand curves as is the previous example. So the original pre-tax price was $3.00 per cone. When the supply curve shifts up by $0.50, the new intersection with the demand curve is at $3.30. So the post-tax price is $3.30, the same as the amount paid by buyers when the tax was on buyers. The amount received by sellers now is $3.30 − $0.50 = $2.80, the same as the post-tax price when the tax was on buyers.

The tax burden on buyers is $3.30 − $3.00 = $0.30. The tax burden on sellers is $3.00 − $2.80 = $0.20. These are the same as when the tax burden was on the seller.

This example illustrates a general point. The amount per unit paid by buyers after the tax is the same whether the tax is on buyers or on sellers. The amount per unit paid by sellers after the tax is also the same whether the tax is on buyers or on sellers. The tax incidence also does not depend on whether the tax is on buyers or on sellers. So effectively, it does not matter whether government imposes the tax on buyers or on sellers.

Example: Can Congress distribute the burden of a payroll tax?
One of the taxes deducted from paychecks is the FICA, the Federal Income Contribution Act. Revenue from this tax is used to pay for Social Security and Medicare. FICA is a payroll tax, a tax on wages.

To make a compromise, Congress legislated that 1/2 of the tax be paid by firms and 1/2 the tax paid by workers. What shows up as being deducted out of the paycheck the the worker’s contribution.
But due to above analysis, the tax incidence will be the same no matter who pays the tax. To analyze the incidence of the tax, need not shift either demand or supply curve but just show the wedge that the tax places between supply and demand curves – a wedge the size of the tax per unit.
The division of the tax burden does not depend on who physically pays how much of the tax.

Instead it depends on the relative elasticities of the demand curve and the supply curve. The tax burden falls more heavily on the side of the market that is less elastic. The graphs illustrate this:

The left graph has an inelastic supply curve and an elastic demand curve. The tax burden falls more heavily on sellers than on buyers. The right graph has an elastic supply curve and an inelastic demand curve. The tax falls more heavily on buyers than on sellers.

Why? Intuitively, elasticity measures ability or willingness of agents to leave the market for a good when conditions become unfavorable. When a good is taxed this is an unfavorable condition. The one who has less elastic curve can less easily leave the market than the other one and therefore bears more of the tax burden.

For payroll tax, supply of labor believed to be less elastic than demand. So workers bear the incidence of a payroll tax more than firms.
Luxury Tax

A luxury tax was passed by Congress in 1990. Goods covered: Yachts, private planes, fur, jewelry, expensive cars. Goal was to raise revenue from the rich. But revenue increase was not what was expected.

Even for the rich, demand for luxury goods is very elastic – there are many non-luxury goods they can buy with their money, or other ways they can use the money.

By contrast supply of luxury goods relatively inelastic. So tax burden falls heavily on suppliers.

Congress repealed most of luxury tax 1993.