In the last in-class exercise we looked at the impact of taxes on the market equilibrium. One of the conclusions we drew is that it doesn’t matter whether or not the producers are forced to pay the tax or the consumers are forced to pay the tax, the effects on equilibrium quantity, the price the consumers actually pay, and the price the producers actually receive are the same, as are the resulting consumer surplus, producer surplus, tax revenue, and deadweight loss. Presumably, the government doesn’t just create deadweight loss – we’ll assume it does something useful that the market can’t provide. Given that, the government needs to regularly fund its activities and so it must tax something. The big picture questions we are thinking about are what should be taxed in order to minimize deadweight loss, and how should those things be taxed?

1. To help answering these questions, recall that price elasticity of demand is

\[ E^D = \frac{\partial Q^D}{\partial P} \frac{P}{Q^D} \]

and price elasticity of supply is

\[ E^S = \frac{\partial Q^S}{\partial P} \frac{P}{Q^S} \]

Then no matter who is taxed, the share of the tax paid by consumers is

\[ \frac{E^S}{E^S + |E^D|} \]

while the share paid by the producers is

\[ \frac{|E^D|}{E^S + |E^D|} \]

(remember \( E^D \) is negative, so taking the absolute value just ensures that our percentages are positive). So the more elastic the demand curve is, the less of the tax the consumers pay and the more the producers pay while the more elastic the supply curve is, the more of the tax the consumers pay and the less of the tax the consumers pay.

(a) Suppose the government wants to favor consumers over producers so that producers end up paying most of the tax in any given market. What should the elasticities look like in the sorts of markets they should be taxing?

(b) Give a couple examples of goods that the government should tax in this case.

2. The main reason that taxes create deadweight loss is that they cause both producers and consumers to change their behavior in response how the tax changes their respective prices. Recall that a high elasticity (in magnitude, i.e. a large \(|E|\)) of any sort means that quantity demanded or supplied changes a lot whenever the price changes, while a low elasticity means that the change in quantity is low.

(a) Suppose that the government doesn’t care who pays the tax burden, but instead that the government just wants to minimize deadweight loss while obtaining the necessary revenue. What should the price elasticities of supply and demand look like in the sort of market that the government should tax in order to minimize deadweight loss?

(b) One common tax is an income tax. List some pros and cons of taxing income, based on 1) cost of collection and 2) elasticities of supply and demand. (Note: this includes both corporate and individual income. If you think the two should be treated differently, tell me why).

3. One assumption we’ve made is that it costs nothing for the government to collect taxes. In reality this isn’t true — the government has to pay someone to figure out how much everyone owes in taxes and collect them, and sometimes it may only be able to obtain an imprecise estimate of how much a company or individual owes in taxes. Some of these costs are imposed on either the consumers or the producers as well, depending on how the taxes are collected. This doesn’t necessarily increase deadweight loss since those costs are paid to someone so someone benefits. However, it does reduce government revenue from the tax and thus requires higher taxes to achieve a target revenue, which in turn must increase deadweight loss.

(a) Taking into account how costly it is to collect taxes, do you think it’s better to tax consumers or producers?

(b) One common tax is an income tax. List some pros and cons of taxing income, based on 1) cost of collection and 2) elasticities of supply and demand. (Note: this includes both corporate and individual income. If you think the two should be treated differently, tell me why).
(c) Another common tax is a sales tax – a general tax on all retail sales. List some pros and cons based on 1) cost of collection and 2) elasticities of supply and demand.

(d) A tax that many economists love is a tax on the value of land (but not improvements on the land). Why do you think economists love it? (Hint: why is the tax on the value of land but not improvements?) What is one big problem with the tax?