1. (5 pts) Exercise 12 on page 688: A researcher found that when the capital gains tax rate declined, the average bequest size fell as well. How does the tax treatment of capital gains in the United States explain this relationship?

One possibility is that the decrease in the capital gains tax rate reduces the lock-in effect (holding on to an asset longer to get more interest on the tax-free loan from the government), causing more sales of assets. People who would otherwise have held on to their assets until their death and passed them on to their heirs now sell the assets and consume the money they receive. Thus the bequest they leave to their heirs is smaller.

Another possibility is that people have a target after-tax value that they want to leave to their heirs. When the capital gains tax rate falls, they must bequest less to their heirs to reach that target value. However, due to the markup of the capital gains cost basis at death, it is possible that the heirs would not be paying any capital gains tax anyway if they sell the inherited asset soon after the death of their parent. So this reason is less likely than the first possible reason.

2. A city is considering building a bridge to link its two parts, which are separated by a river. The demand curve for crossings of the bridge in a year is linear. It has a choke price of $6 (this is the price at which demand is zero) and 8 million crossings at a price of zero. The bridge costs 200 million to build, and there are maintenance costs of 5 million a year. The cost of building the bridge would be financed by borrowing at an interest rate of 7% over the lifetime of the bridge (60 years). The loan would be repaid by charging higher property taxes.

a. (7 pts) Should the bridge be built?

First we determine the social benefit from the bridge being built. This is the area under the demand curve and above the marginal cost curve. In this case the marginal cost is zero. Since the demand curve is linear, the area under it is a triangle with height 6 dollars per crossing and base 8 million crossings per year. So its area is 24 million dollars per year.

Next we determine the social cost. Since the building cost of 200 million will be financed at borrowing at a 7% interest rate over 60 years, we need to find how much will be paid each year. Thus, assuming that the same amount will be paid each year, we have to find the number \( a \) such that

\[
\frac{a}{0.07} + \frac{a}{0.07^2} + \frac{a}{0.07^3} + \ldots + \frac{a}{0.07^{60}} = 200 \text{ million.}
\]

Since

\[
\frac{1}{0.07} + \frac{1}{0.07^2} + \ldots + \frac{1}{0.07^{60}} = \frac{1-\frac{1}{0.07^{60}}}{0.7},
\]

we get

\[
a = \frac{200 \times 0.07}{1-\frac{1}{0.07^{60}}} \approx 200 \times 0.07 = 14 \text{ million.}
\]

Add to the 14 million that must be paid each year 5 million of maintenance
costs per year to get total costs of 19 million. Since 19 million is less than 24 million, the bridge should be built. This was all done without using a multiplier.

b. (3 pts) What determines whether you should use a multiplier in your answer to (a)?

We need to consider the amount of the spending on the bridge that pays for local value added and compare that amount to what locals would have spent on local value added if they had kept that money as personal income instead of paying it in taxes for to finance the bridge. The difference between these two amounts is the net new spending on the project. It should be multiplied by a profit rate times the multiplier. The multiplier is approximately 1 + (locals’ marginal propensity to consume local value added) if the local economy is operating near full capacity. The profit rate is less than 1 since the locals do not get the full benefit from a payment for local value added. They provide labor or other inputs that they own and those inputs have an opportunity cost. (For example, if they provide labor, then the cost is the value of the leisure they give up.)

The multiplier will be larger the worse the economic situation of the city is. If the city is in a recession, the multiplier will be larger than if the city is in a boom. In a recession, some inputs the locals provide have lower value (since they would be unemployed without the project). This makes the profit rate (the fraction of each dollar spent on local value added that is net value to the locals) is higher.

3. Exercise 15 on page 574: The city of Malaise is considering a 10% tax on the revenues of all hotels/motels inside the city limits. Although not completely different from hotels and motels in the nearby suburbs, the ones in Malaise have a distinct advantage in their proximity to interesting sights and convention centers. So individuals will pay some premium to stay in Malaise rather than to stay nearby.

Furthermore, all land is used equally well by hotels/motels and other forms of business; any Malaise land not taken by a hotel/motel is readily absorbed by other forms of business.

Mayor Maladroit calls you in to advise him on the incidence of such a tax. He is particularly interested in who will bear this tax in the short run (one month) and in the long run (five years).

a. (4 pts) What is the incidence of the tax in the short run? Answer intuitively, and use a diagram if possible.

Because of the advantage of hotels in Malaise over hotels in the suburbs, the demand curve for hotels in Malaise is not perfectly elastic; it is downwards-sloping. We can assume that the supply curve of hotels in Malaise has some elasticity (since hotels can be converted into other businesses). Therefore, since the demand curve for hotels in Malaise is not perfectly elastic and the supply curve of hotels in Malaise is not perfectly inelastic, hotel guests will bear some
of the burden of the tax.

Now we must consider the short-run incidence on each of the factors. Because any land not taken by a hotel is readily absorbed by other forms of business, the supply of land for hotels must be very elastic. We can assume, as in the example in the book, that short-run supply of capital is perfectly inelastic and short-run supply of labor is perfectly elastic (since there are also suburban hotels, workers can go find work there if their wage decreases in a hotel in Malaise). This tells us that the burden of a tax on hotels in Malaise falls on consumers and capital owners. The price of a hotel stay will increase, and the rate of return to capital will decrease.

b. (3 pts) What is the long-run incidence? Once again, use a diagram if possible.

In the long run, capital will also be elastic and demand will be more elastic than in the short run. Therefore the tax burden will be shared between consumers and the owners of the hotels - their profits will fall.

c. (3 pts) How would your analysis in (b) change if hotels/motels in the suburbs were perfect substitutes for those in Malaise? What would happen to tax revenues?

If hotels in the suburbs were perfect substitutes for those in Malaise the demand curve would be perfectly elastic. Then all the burden of the tax would fall on hotel owners; their profits would fall. Because of the higher elasticity of demand for hotels in Malaise, revenues would be smaller: As can be seen in a graph, revenues are smaller when elasticities of demand and supply of the taxed good are larger.

4. (5 pts) Exercise 12 on page 607: Gruber and Krueger (1991) found that mandated increases in the costs of workers’ compensation benefits in the 1970s and 1980s led to substantial wage offsets for workers. Some of the wage reductions they found were even larger than the total cost to firms of providing the additional benefits. What does this suggest about the deadweight loss from the implicit "benefit tax" involved in imposing these mandatory benefits?

If the wage reductions were larger than the cost to firms of providing the additional benefits, it must be that workers value insurance more than the cost of the insurance to firms. Graphically, the mandated increase in workers' compensation caused the supply of labor curve to shift down by more than the demand for labor shifted down. This implies that the deadweight loss from the implicit benefit tax is negative. There is more social surplus after the mandated increases in workers’ compensation than before.