University of California, Davis
Department of Economics
ECONOMICS 131

Spring 2010 L. Jay Helms

Problem Set #3: Taxation and Efficiency

1. Excess Burden of a Tax on an Inelastically Demanded Good

Suppose that the marginal cost of producing light bulbs is constant at $1.00 per bulb. People often think of taxes as having higher excess burdens when they are levied on commodities for which the elasticity of market demand is greater. However, this is an imprecise statement of the situation.

a. Suppose the *market* (or "ordinary," or "Marshallian," or "fixed-income," or "uncompensated") demand curve for light bulbs is vertical. Use *indifference curve analysis* (not demand curves) to show that the unit tax levied on buyers of bulbs can nonetheless produce an excess burden.

b. Now explain verbally how a "tax wedge" can generate an excess burden despite the fact that the tax leaves the quantity demanded of the taxed good unchanged.

2. The Incidence and Excess Burden of a Subsidy

Consider a perfectly competitive market for books. The marginal cost of producing books is constant at $20 per book so that the supply curve is horizontal. The demand curve is linear and downward sloping. The government decides to promote reading by giving sellers a subsidy of $10 for each book sold.

a. Using a *demand-and-supply* diagram, show what happens to the posted price of books, the amount paid by the buyers, and the amount received by the sellers.

b. Again using a *demand-and-supply* diagram (*not* indifference curves), show the excess burden of this subsidy. Explain fully. (Hint: excess burden can still be defined in the usual way—as the burden to the consumer minus the taxes raised—but both of these terms are negative for a subsidy.)

3. Excess Burden and Marginal Excess Burden

Assume that the marginal cost of beef is constant at $5.00 per pound (so that the supply curve is horizontal) and that the demand curve is linear and downward sloping. Now suppose that a $1.00 per pound tax is imposed on *suppliers* of beef.

a. Show, using a diagram, what will happen to the "posted" price of beef, the amount paid by the buyer, and the amount received by the seller. Explain.

b. Show the revenue raised by the tax. Explain.

c. Define excess burden.

d. Show the excess burden of the tax on your diagram and explain.

e. Rosen states that

> The *marginal* excess burden from raising one more dollar of revenue exceeds the *average* excess burden. That is, the incremental excess burden of raising one *more* dollar of revenue exceeds the ratio of total excess burden to total revenues.

Using your diagram, show that the *marginal* excess burden is greater than the *average* excess burden.