

AUSTRALIAN NATIONAL UNIVERSITY

APPLIED TAX POLICY

Honours and Graduate (ECON 2090 / ECON 8043)

Mid-Semester Exam – September 2002

Study Period: 15 Minutes

Time Allowed: 90 Minutes

Permitted Materials: Non-programmable Calculators, English and Foreign Language Dictionaries

Answer the ONE question in Part A and any TWO of the THREE questions in Part B. Each question is worth EQUAL marks.

Part A

Students must answer this question

1. Consider an economy in which there are three taxed goods: food, clothing and shelter which are all produced by competitive firms. All goods are supplied at constant marginal cost. There are specific taxes of t_c , t_f and t_s on food, clothing and shelter respectively.
 - a. Suppose that demands for food and clothing are independent (i.e., food and clothing are neither net substitutes nor net complements). However, food and shelter are net substitutes. Using a diagram, show how much compensation would be required to hold utility constant and how much excess burden would increase by if the tax rate on food is increased a tiny amount. Derive an expression for the marginal excess burden ($dEB/dTax$) of the tax on food.
 - b. Suppose that the tax rate on shelter is \$5 per unit and that the other two goods are taxed at a rate of \$10 per unit. Assume that food and clothing are produced at a marginal cost of \$10. A rise in the price of food by a dollar increases demand for shelter by half a unit. A rise in the price of clothing by a dollar increases demand for shelter by a unit. Given the prices of other goods, the inverse compensated demand curves for food and clothing are as follows:

Food
$$p_f = 220 - 2x_f$$

Clothing
$$p_c = 120 - x_c$$

where p_f and p_c are prices and x_f and x_c are quantities of food and clothing respectively. Is this structure of tax rates consistent with raising revenue from taxing food and clothing as efficiently as possible? Explain. If not, which good should be taxed more heavily and which less heavily?

Part B

Answer any TWO of the THREE questions from this section.

1. The Australian Government wishes to support competitive sugar producers. It decides to levy a tax on consumers and use the revenue to subsidise production. Carefully explain the incidence of such a scheme under the following assumptions:
 - Australia is an open economy which is a net exporter of sugar.
 - Australia is a closed economy with no imports or exports of sugar.
 2. Consider an individual who lives for two periods earning labour income of nothing in period 0 and I_1 in period 1. The individual borrows at the interest rate, r to finance consumption in period 0.
 - a. Draw the individual's budget constraint in the absence of tax.
 - b. Now suppose that a tax is levied on period 1 earnings at the rate, m and that interest expense is made deductible (so that each dollar borrowed means that $1 + r(1 - m)$ must be repaid). Identify in your diagram the amount of tax collected on period 1 earnings, the amount borrowed in period 0 and the tax savings as a result of the interest deduction. Indicate the net amount of tax collected and any excess burden created by this tax system. Carefully explain your reasoning.
 - c. Now suppose instead that a tax is levied on period 1 earnings at a lower rate, m' but interest expense is no longer deductible. The net effect of this is to leave the present value of tax collections unchanged. What would happen to consumption in each of the periods, the amount the consumer borrows and utility?
 3. Consider an economy in which there are three assets. Interest on double-taxed bonds are taxed at twice an individual's marginal tax rate, interest on taxable bonds is taxed at an individual's marginal tax rate and interest on semi-taxed bonds is taxed at half of an individual's marginal tax rate. Double-taxed bonds have a pre-tax yield (i.e., a pre-tax interest rate) of $r_D = 0.12$, taxable bonds have a pre-tax yield of $r_T = 0.08$ and semi-taxed bonds have a pre-tax yield of $r_S = 0.06$. Discuss how preferences for these bonds will depend on marginal tax rates. If the highest marginal tax rate in this economy is 80 per cent, who would end up paying the highest average tax rates on capital income. Discuss any complications this might cause for attempts to measure the progressivity of the tax system.
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