

AUSTRALIAN NATIONAL UNIVERSITY

APPLIED TAX POLICY

Undergraduate Pass Course (ECON 2040)

Mid-Semester Exam – September 2002

*Study Period: 15 Minutes*

*Time Allowed: 90 Minutes*

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

**Answer any THREE of the FOUR questions. Each question is worth EQUAL marks.**

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. Comment on 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. An individual can work for as many hours as she wishes at a fixed wage rate of \$20 per hour. The first \$160 per day is taxed at a rate of 20 per cent and all subsequent income is taxed at a rate of 50 per cent.
  - a. Initially suppose that there were single worker with a compensated labour supply curve of  $L_s = w - 8$ ,  $w \geq 8$  where  $w$  is the marginal after-tax wage. Explain what is meant by the  $EB_{EV}$  of this tax. Find the  $EB_{EV}$ . Now suppose that the 20 per cent marginal tax rate were increased to 25 per cent. How would this affect excess burden and tax revenue. Use your answer to estimate the marginal excess burden ( $dEB / dTax^*$ ) of increasing the 20 per cent marginal tax rate.
  - b. Now suppose instead there is a single worker with a compensated labour supply curve of  $L_s = w - 4$ ,  $w \geq 4$  where  $w$  is the marginal after-tax wage. What would be the marginal excess burden associated with increasing the 20 per cent marginal tax rate? What would be the marginal excess burden associated with increasing the upper limit of the range of income over which the 20 per cent rate applies. (To estimate this suppose that rather than income between \$0 and \$160 being taxed at 20 per cent, income between \$0 and \$180 is taxed at 20 per cent).

3. 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.
- Draw the individual's budget constraint in the absence of tax.
  - 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.
  - 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?
4. 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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