

**RESEARCH DEGREE PROGRAMME IN
ECONOMICS**

Term-End Examination

00473

December, 2017

RECE-010 : PUBLIC ECONOMICS

Time : 3 hours

Maximum Marks : 100

Note : Answer questions from each section as directed.

SECTION A

Answer any two questions from this section.

2×20=40

1. Consider a two-sector (X and Y) economy. Each sector produces output using two inputs : labour and capital. Consider a tax on capital in sector Y.
 - (a) Under the Harberger assumptions, how will the burden of the tax be shared among producers, consumers, labour and the dirty input ? Explain.
 - (b) The Harberger model assumes that capital is completely mobile between the sectors. Provide an example that contradicts this assumption. How are the incidence results affected if the dirty input is not perfectly mobile between the sectors ?

2. (a) What is the excess burden formula that includes the compensated derivative S_{ij} (which equals $\frac{\partial x_i}{\partial p_j}$) ?
- (b) Set up a Lagrangian optimisation problem to minimise excess burden and choose tax rates to solve for the inverse elasticity rule.
- (c) (i) Assume that there are two goods in the economy. Calculate the overall burden from ad valorem taxes t_1 and t_2 on goods x_1 and x_2 , assuming that there are non-zero cross-price effects. Use the data given below to derive your results :

$S_{11} = -400$	$t_1 = 0.05$	$X_1 = 8,000$
$S_{12} = 40$	$t_2 = 0.10$	$X_2 = 12,000$
$S_{21} = 40$	$P_1 = 1$	$H_1 = 0.067$
$S_{22} = -800$	$P_2 = 10$	$\eta_2 = 0.10$

- (ii) Assume that the cross-price effects equal zero ($S_{12} = S_{21} = 0$). If all other variables in the table remain the same, will the tax rates in the table be optimal ? Explain.

3. Suppose you are estimating the following female labour supply relationship :

Labour supply, $L_i = -320 + 85 W_i + 320 G_i - 120 M_i$,
where labour supply is measured in annual hours worked and wages are given as hourly wages.

W_i = after-tax wage

G_i = dummy variable (college graduate)

M_i = dummy variable (married)

- (a) Interpret the coefficient on after-tax wages. What does this coefficient imply about the effect of increasing wages from ₹ 6 to ₹ 10 per hour on labour supply ?
- (b) What can we learn from this estimate about the income and substitution effects of wages on labour supply ?
- (c) How might this estimated coefficient be biased ? Explain.
4. Suppose that the Government of Maharashtra imposes ₹ 6 tax on each pack of cigarettes. Supply is given by $Q = 30 + 5P$ and demand is given by $Q = 48 - P$.
- (a) What is the reduction in quantity caused by the tax ?
- (b) What is the dead weight loss caused by the tax ?

SECTION B

Answer any **five** questions from this section.

5×12=60

5. Suppose that the per-period marginal benefit to you of purchasing new machinery is $MB = 24 - 6K$, where K = number of units of the machinery purchased. The depreciation rate is 15% and the dividend yield is 10%.
- (a) What amount of capital will you purchase? Why?
- (b) What amount of capital would you purchase, if there were a 20% tax rate on cash earnings minus labour costs?
6. India has a tax rate of 10% on the first ₹ 20,000 of taxable income, then 25% on the next ₹ 30,000, then 40% on all taxable income above ₹ 50,000. There is a provision of ₹ 4,000 exemption per family member.
- (a) Arvind's family has three members and earns ₹ 54,000 per year. Compute their marginal tax rate, average tax rate and effective tax rate.
- (b) Suppose that India changed their policy to a flat tax of 30% with ₹ 8,000 per family member exemption. Would this change in the tax system make it more progressive, more regressive or neither? Explain.

7. Describe two ways to finance a government budget deficit and effect of each on the economy.
8. Suppose that you have a wealthy friend who is 60 years old and wants to know how to pass on her wealth to her children without paying more than necessary in taxes. What suggestions do you have ?
9. Explain the concepts of vertical and horizontal equity on goals for tax systems. Which of the concepts is easier to measure in practice ? Explain.
10. Write a note on India's system of inter-governmental fiscal relations.
11. Assume Fifi has 2000 hours to allocate each year between leisure and work. Her wage is ₹ 8 per hour.
 - (a) Sketch Fifi's budget constraint.
 - (b) Suppose an income support programme provides an income guarantee of ₹ 4,000 and a benefit reduction rate of 50%. Sketch Fifi's budget constraint under this programme.
 - (c) Suppose a revised programme provides ₹ 3,000 and a benefit reduction rate of 25%. Does the reduced income guarantee necessarily imply that Fifi will increase her labour supply compared to her choice before the change ? Use a graph to support your answer.