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Department of Economics
ECONOMICS 131

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Answers to Problem Set #4

1. Tax Equity and Optimal Taxation

a. *Horizontal equity* (which requires individuals with equal income to pay equal taxes) would argue for taxing X and Y equally. (Farm income and the wages of a construction worker shouldn't be treated differently.)

b. *Vertical equity* (which looks to equitable treatment of people with different abilities to pay) would argue for higher taxes on Z (who earns $30,000) than on either X or Y (who both earn $10,000). How *much* higher is a value judgment, which should be made with cognizance of both incentive (efficiency) and equity principles.

c. *Optimal tax principles* call for taxing more heavily those goods (including leisure) which are less elastically demanded. This would argue for taxing farm income more heavily than construction wages. (The inverse elasticity rule says that tax rates should be inversely proportional to the (compensated) elasticity of demand.)

2. Optimal Commodity Taxation

a. The *inverse elasticity rule* says that if goods are unrelated in consumption, tax rates should be inversely proportional to elasticities. Thus the percentage tax on good X should be half as high as the percentage tax on good Y since its elasticity is twice as great.

b. The *Ramsey Rule* says that optimal taxes effect the same percentage reduction in the quantity demanded of each good.

c. Horizontal equity is violated by optimal taxes since a person who prefers good Y pays a larger tax than a person who prefers good X even if their incomes are the same. (This becomes more obvious if the goods are different persons' leisure time and different types of labor supply are taxed at different rates.)

Vertical equity may be violated if the poor spend a greater proportion of their income on good Y than on good X.

d. Yes. Optimal commodity taxes minimize excess burden among all possible *commodity* taxes, but they still have a positive excess burden (because of the tax wedge between the price buyers pay and the price sellers receive). In contrast, lump-sum taxes always have zero excess burden because there is no tax wedge.