Midterm Exam
(Econ 512M)

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I. Kim-Park's's utility depends on consumption (c) and leisure (l). He earns a tax wage equal to w per hour, and needs to sleep 8 hours in a day.

(i) Draw Kim-Park's indifference curve between consumption and leisure (or labor, you can choose) and show the optimal bundle.

(ii) Suppose the government institutes a proportional income tax. Identify the new optimal bundle Kim-Park chooses.

(iii) Show the excess burden of the tax through **either** a diagram that keeps Kim-Park's utility constant **or** a diagram that keeps Kim-Park's tax revenue constant.

II. Doug Elmendorf, US Congressional Budget Office Director, gave a Senate Testimony a few weeks ago about the incidence of health care costs. He said, in part, "Although U.S. employers may appear to pay most of the costs of their workers health insurance, economists generally agree that workers ultimately bear those costs. That is, when firms provide health insurance, wages and other forms of compensation are lower (by a corresponding amount) than they otherwise would be." Do you agree? Why or why not?

III. Consider the following demand and supply equations:

$$p^c = 12 - x$$
$$p^s = 2x$$

(i) Draw these curves and find the equilibrium quantity, consumer and producer price.

(ii) Consider an ad valorem tax of 50% placed on the producer prices. Find the new equilibrium quantity, consumer price and producer price. Do consumers or producers pay a larger portion of the tax?

(iii) Calculate the demand and supply elasticities at the new equilibrium point. Which is more elastic or inelastic? Does this reinforce or contradict your answer in (ii) about the incidence of the tax? Explain.

(iv) Find the tax revenue that the government collects.

(v) Find the excess burden of the tax using the elasticity formula.

IV. Firmanestan is a closed economy. Firmanees produce two goods, X and Y, using their two factors of production, labor and capital, which are in fixed aggregate supply.

(i) Firman who rules Firmanestan orders his chief economics advisor, Hedayat, to write a two sector general equilibrium model that shows the working of Firmanestan's economy for him. What equations will Hedayat write down and how will he specify the exogenous and endogenous variables of the economy?

(ii) Hedayat, who loves to guide and lead, uses this occasion to teach Firman about Walras Law. What do you think Hedayat tells Firman about Walras Law and its implications for his model?

(iii) Next Hedayat guides Firman to open up Firmanestan's borders and import a third good, Z, which is not produced domestically. Firmanestan purchases Z at a fixed price and, in exchange, exports Y to the countries from which it buys Z. How does the existence of this third good change the equations of Hedayat's two-sector model?

IV. Kims and Murats live in SeoXin-Land producing two goods X and Y. Industry X hires relatively more Murats than Kims. King Seo, the ruler of SeoXin, wants to build a palace for Queen Xin and finance it by taxing either good X **or** good Y. He asks three trusted economics advisors to advise him which good to tax.

(i) Hoda who cares a lot about equity. What is Hoda's advice if we know X is consumed relatively more by Murats who are poorer than Kims?

(ii) Xiao who cares a lot about efficiency. What is Xiao's advice if we know the demand more X is relatively more elastic than Y?

(iii) Mehmet who does not like Murat's name and would simply like to hurt Murats. What is Mehmet's advice?

V. (i) Define and distinguish between lump-sum and distortionary taxation.

(ii) If lump-sum taxes are so good, why don't we always use them?

VI. State True or False, and explain

(i) The doubling of a tax will double the excess burden.

(ii) The greater the magnitude of the substitution effect, the smaller the excess burden.

(iii) In a monopoly, price always rises by half the amount of the tax.