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Econ 4620 Public Economics A2013: Seminar assignment for 21 October

Please, prepare for the seminar.

Problem 1

Consider the following economy. A fixed amount of capital $\bar{K}$ is available. An amount *e* of an intermediate good is being produced by means of *k* units of capital. The production function is g(k) where g'>0, g''<0. An amount c of a single final good is being produced in two firms; one firm produces *x* units by means of *K* units of capital with the production function *f(K), f'>0, f''<0*, and the other firm produces y units by means of the intermediate good with the production function *h(e); h'>0, h''<0*. The resource constraint is $\bar{K} = K + k$.

a) Explain what is the efficient allocation in this economy, and provide a mathematical characterisation.

Denote by *p* the before-tax price of *e*, and by *q* the tax-inclusive price, and let *t* be a specific tax on *e* paid by the buyers of *e*. Set the price of *c* equal to one, and denote by *r* the user cost of capital.

b) Assume that the producers (one in each sector) are profit maximising price takers, and derive profit maximising conditions.

c) Explain the distortion that occurs in this economy.

Problem 2

Suppose that an investor in a corporation has the option also to invest in market assets, e.g. bonds, yielding an exogenous pretax rate of return *i*. Suppose that the tax rate on personal capital income is *t*.

a. What is the opportunity cost of an investor liable to pay tax?
b. What is the opportunity cost of an investor who is tax exempt?

Suppose the pretax return to investment in the corporation is *r*, and the corporate tax rate is τ.

c. What is the pre-tax return to the corporate investment required by the investor in case *a* and case *b*, respectively. Assume there is no personal tax on dividends.
d. What is the pre-tax return to the corporate investment required by the investor in case *a* if there is classical double taxation of dividends?

Problem 3

Consider a shareholder who is taxed according to the principles of the the Norwegian shareholder income tax model. The rate of return allowance is (for computational ease) set equal to 0.1.

At time t the basis of the return allowance is 2000. The shareholder receives a dividend equal to 100.

a) What is the shareholder's taxable income?
b) What is the basis of the return allowance at time t+1?

At time t+1 the shareholder receives a dividend equal to 250.

c) What is the shareholder's taxable income?
d) What is the basis of the return allowance at time t+2?
e) Suppose shares are sold at a price equal to 3000. What is the taxable income?
f) Would you expect current shareholders to earn large above-normal profits?

Problem 4

Suppose that VAT is entirely uniform and the VAT rate is 20%. Assume there is a 40% income tax on labour earnings. What is the effective tax rate on labour earnings? Suppose there is no income tax on capital income. What is the effective tax rate on savings?

Problem 5

Discuss effects of imposing a wealth tax**?**

Problem 6

There is a proposal to make households' investment in energy-saving equipment tax deductible. Give an assessment of the proposal based on social efficiency considerations.