Eksamen i Econ 4620 H06 – løsningsveiledning

Problem 1

a) A tax is distortionary if it causes a violation of a first best condition for a socially efficient allocation, e.g. MRS=MRT.

b) - c) There are several distortions that may be discussed.

i. Distortion of the intertemporal trade-off made by a consumer who saves.

ii. Distortion of the (domestic) allocation of investment/capital when different kinds of capital (income) are taxed at different rates as is often the case in practice due to tax favours, exemptions, depreciation allowances, etc.

iii. The distortion caused by a resource-based tax on capital in a small open economy (violation of production efficiency from the small country perspective).

iv. Distortion of capital allocation across countries from a global efficiency perspective when a resource-based tax is imposed and differs across countries.

v. International distortions of savings when a residence-based tax differs across countries.

vi. Distortions between financial/physical capital and human capital. The simplest case assumes a proportional tax and *de facto* immediate expensing of education expenses (income foregone).

It is important that it is explained in the case selected for further discussion which efficiency condition that is (or conditions that are) being violated.

Problem 2

a) It is important to recognise that, with redistribution in favour of the low-skilled type, the asymmetric information about skill levels implies that the income tax schedule must be chosen subject to the self-selection constraint that the high-skilled person does not find it in his interest to select the income point intended for the low-skilled type (being a "mimicker"). This binding self-selection constraint then constrains the welfare level that can be achieved (for instance the utility level that can be attained by type 1 (the low-skilled) for a fixed utility level for type 2). The condition in the problem has four terms reflecting that a "small" change in G has four types of effects (in order of appearance):

i. It increases the utility that the consumers derive from the public good measured by their marginal valuation (or marginal willingness to pay) in terms of private goods. The first term is the sum of these marginal benefits.

ii. It inflicts a real cost, r, on society by diverting resources from other uses (opportunity cost).

iii. It may relax (or tighten) the self-selection constraint (discussed in further detail below).

iv. It may affect the consumption of taxed commodities which has an efficiency effect due to pre-existing distortions (discussed in further detail below).

We may note that if there is no effect on the self-selection constraint and there are no commodity taxes the Samuelson rule is valid. The sum of marginal benefits (since the public nature of the good makes it affect, in principle, the utility levels of all consumers) is equated to the marginal cost. If not, say the marginal benefit exceeds the marginal cost, the additional benefit from a marginal unit exceeds the loss in terms of consumption forgone and there is a case for changing the amount that is provided.

The mimicker differs from the genuine low-skilled type by enjoying more leisure as, being more productive, he can earn the same income in less time. The mimicker derives a smaller marginal benefit from the public good if it is less beneficial when leisure is more abundant. The mimicker will however make the same contribution to the funding of G since when mimicking he pays the same income tax as the true low-skilled type. A change that makes the low-skilled type equally well off will then make the mimicker worse off and thus discourage mimicking. The self-selection constraint is relaxed and welfare can be enhanced. The third term is negative which is equivalent to reducing the cost of making the public good available. The effects are opposite if the mimicker values the public good more highly at the margin than does the true low-skilled type.

When a commodity is taxed the marginal benefit from the commodity (reflected by the consumer price) exceeds its marginal cost (reflected by the producer price) by the tax per unit (the tax wedge). If an extra amount is consumed there is an efficiency gain equal to the tax times the extra amount. Then the last term in the condition is negative and the effect is equivalent to reducing the cost of supplying the public good. Conversely, there is a similar net efficiency loss and a cost increase if consumption of the good in question is discouraged. Additional provision of a public good may in general encourage, discourage or leave unchanged the consumption of a commodity. (Investment in transport may affect the demand for petrol, cars, tyres. Investment in public recreation facilities may affect the demand for private gardens, summer houses, etc. More police may affect the demand for locks, safety equipment, etc.)

b) If there is an external effect it is only the tax on commodity 1 *in excess of* the marginal external cost (the Pigovian level) that is distortionary and the tax on commodity one should be replaced by the tax minus the external cost.

Problem 3.

a. A dual income tax (DIT) means that capital income and labour income are taxed differently, normally by taxing the former at a flat rate and the latter by a progressive tax schedule.

b. The model involves differential taxation of a normal return to capital (which may be defined as the risk free rate of return that investors require in order to make capital available) and the above-normal return (superprofit) where the former is taxed at a low rate and the latter at a higher rate. The former is taxed at the corporate tax rate of 28%. The purpose of the rate of return allowance is to shield a normal return to shares from further taxation. This applies both to a return in terms of distributed dividends and in terms of capital gains. The rate of return allowance ensures that the tax scheme exhibits a

number of attractive neutrality properties with respect to choice of funding, timing of sales, risk-taking, etc.
c. The problem with the former DIT was that income splitting was required to distinguish capital income and labour income. This scheme induced income shifting on a large scale from highly taxed labour income to leniently taxed capital income. The shareholder model implies that a return above the normal one is taxed approximately as labour income thus providing no incentive to shift income from labour to capital as one could previously do by escaping the splitting model.
d. The model ensures differential taxation of a normal return to capital and labour income which was indeed the primary purpose of the DIT.
e. There is no effect since the unutilised allowance exceeds the dividend.
f. The tax base increases by 50 which is the difference between the capital gain and the stepped-up basis.