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Econ 4620 exam autumn 2008 – guidelines for marking.

Problem 1.

One would like to raise as much revenue as possible to be used for transfers in order to enhance the utility of the worst off individuals. The optimisation problem may be conceived of as setting the marginal tax at all income levels z. The optimal choice will then be governed by the effects of changing the marginal tax. With a positive marginal tax there will be a disincentive to supply labour as the worker will not reap the full income generated at the margin by increasing labour supply. A higher marginal tax diminishes the after-tax wage rate and induces workers to substitute away from labour towards leisure eroding the tax base and diminishing the revenue available for transfers. This effect is larger the larger is the labour supply response measured by the wage elasticity in the numerator. The effect is also obviously more serious the larger is the number of people affected, as measured by the density at the income level in question. The partial effects of these factors are to depress the marginal tax. On the other hand a larger marginal tax will increase the tax liability of agents at income levels beyond the one in question and increase the revenue available for transfers. This effect is larger the larger is the number of people in this range, which is given by 1-G(z). The partial effect on the marginal tax is positive. We may note that this effect diminishes as z increases and approaches zero in the limit.

Rawlsian taxation is covered by the extract from Salanié included in the compendium, and the chapter on Rawlsian taxation in Hindriks and Myles (HM) is therefore not on the reading list. However, in the teaching I found it more convenient to use the HM formulation and this is the formulation presented in the exam problem. The epsilon parameter in the denominator is given a slightly different formulation in Salanié. As this may be unfortunate, those who have problems with the interpretation of this specific parameter should not have their mark degraded because of this. (However, I expect that most students who have read Salanie and attended teaching will not have problems.)

Problem 2

The condition is taken from an article on the reading list (Edwards et al.) slightly reformulated in line with the approach taken in the teaching.

There is a need to recognise the crucial assumption that there is asymmetric information which imposes a self-selection constraint on the tax optimisation making sure there is no incentive for the high-skilled to mimic the low-skilled, i.e., selecting the gross and net income bundle intended for the low-skilled type. The condition is a condition for information constrained Pareto efficiency. In this context there is conceivably a role for commodity taxes in relaxing the self-selection constraint. Suppose the mimicker would choose a larger quantity of some good than would the genuine low-skilled type: $x_k^1 < \hat{x}_k^2$**.** This would be a good which is a leisure complement as the mimicker is distinguished from the true low-skilled type only by working less, as being more productive he can earn the same income in less time. Suppose that this good is taxed while the income taxes on the low-skilled and high-skilled skilled, respectively, are adjusted to keep their utilities unchanged and keeping tax revenue unchanged. Then the mimicker is made worse off (as the tax relief being the same as for the

true low-skilled – by definition of mimicking – falls short of the larger commodity tax liability of the mimicker), and mimicking is discouraged.

This case for taxing the good must be balanced against the distortions created by the commodity tax (being zero starting from a no-tax situation). Where commodity taxes are present, a change *dx* in the consumption of a good with consumer price *q*, producer price *p* and tax *t* will generate a welfare change equal to *qdx-pdx=tdx* where *qdx* is the marginal valuation of the change, *pdx* is the cost and *tdx* is the net gain, which is negative where *dx* is negative and *t* positive. It follows that the left hand side of (2) can be interpreted as the efficiency effects of the (compensated) changes in all taxed goods when a change in a commodity tax induces changes in the consumption of the various goods. At the optimum these distortionary effects and the relaxation of the self-selection constraint must be traded off.

Alternatively, the left hand side may be interpreted by considering the quantitative change in consumption induced by an intensification of the tax structure (increasing all tax rates by the same percentage). Well presented, this approach should be equally rewarded.

b. It follows that (strong) leisure complements are good candidates for being taxed while (strong) work complements are good candidates for being subsidised or taxed leniently.

c. Little has been said about this in the course. There is likely to be administrative difficulties and enforcement problems with operating a highly differentiated tax structure. Another problem is to recover the various demand responses and other empirical evidence required to implement this tax structure.

d. The major case covered in the course is externalities. A brief argument why there is a market imperfection and a few words about the merits of using a tax would be fine.

Another possibility is the use of differentiated excises to redistribute income where taxable income is not deemed reliable as an indicator of standard of living making the income tax inadequate for redistribution. One would then tax goods for which the rich have particularly large consumption shares.

Taxes affecting terms of trade and enabling tax exporting may be mentioned.

Even further, but presumably minor, examples are conceivable and should be accepted.

No exhaustive list should be expected.

Problem 3
A good “essay” should give some overview of relevant issues and elaborate on some aspects. The presentation cannot be expected to be exhaustive, and one has to allow for the scarce time available at the exam. Structure, coherence, formulations, and ability to point out major issues should be rewarded. The students have been told not to prepare for reproduction of *formal* analysis but they should be able to convey insights.

The basic issue is that *tax bases become internationally mobile*. Capital, profits, labour etc. may flow across borders. Consumers may do cross border shopping. People may move.

A government is likely to take into account that a tax increase may shrink the tax base by driving some of it abroad. Erosion of the tax base is not a novel thing in an open economy but the difference is that with mobility across borders there is a *fiscal externality*. Another jurisdiction will benefit in terms of tax revenue (effects are of course opposite for a tax cut), and the other jurisdiction(s) may respond. The result may be a *(tax) game*. Countries may be competing for tax bases. A possible outcome is a race to the bottom.

Another but related issue is *tax exporting* (shifting taxes to foreigners who may be for instance foreign owners of (domestic) companies, foreign producers, or foreign consumers. Part of this may be to manipulate terms of trade to one's own advantage. For instance vehicle taxes may induce foreign producers to lower their (pre-tax) prices.
The textbook discusses (source-based) capital taxation. Each country will allow for the fact that the tax rate will also affect the tax base since increasing the tax rate may drive capital out of the country. A small country facing a given required after- tax return to capital will set a zero tax rate. Any tax will distort production efficiency.

An international tax game between two identical countries is presented showing that a Nash equilibrium will imply equal but non-optimal tax rates. Both countries could do better by coordinated action to increase tax rates.

It is shown that where countries differ in size the large country will have a less elastic tax base and set the larger tax.

Where countries pursue income redistribution and rich and poor are imperfectly mobile the tax imposed on the rich will depend on the mobility of the rich and poor. There is a lower tax on the rich where they are mobile, while mobility of the poor will increase the tax on the rich as more poor will then follow the rich out of the country.

The implications for tax policy will depend on the tax principles that are accepted and that can be enforced. Where the residence principle applies people pay domestic taxes irrespective of the source country of income. Under the source principle taxes are paid in the jurisdiction where the source of income is located. This has been covered a bit in the lectures but is hardly mentioned in the book. Mentioning these principles should be a bonus.

In general, knowledge, understanding and clear presentation should be rewarded. Minor mistakes or omissions, in an otherwise convincing performance, should be tolerated.