

The exam consists of three main questions. The weight of the different questions is indicated in the parentheses. You should allocate available time accordingly.

1. **True/False/Depends Questions (25 %)**. You need to explain your answer, just a true false or “it depends” statement without any arguments, is not rewarded.
 - (a) There are n consumer goods; x_1, x_2, \dots, x_n . There is a tax on every good except good j . Introducing a very small tax on good j have no excess burden in the taxation of good j , but may alter the excess burden associated with taxation of the other goods. **This is correct if we assume that there is no externalities associated with the consumption of good j and that the consumers have optimized their choices of goods (if j is chocolate consumers do not suffer from willpower issues). With prior maximization of consumer goods a small change in good j has no first order effect on the utility of the consumers. If, however, a change in the price of good j changes the consumption of good k this may have a first order effect on the tax income for the government.**
 - (b) It is optimal to concentrate taxes on goods that are inelastic with respect to the price of the good. **This is correct if we disregard distributional effects of consumption taxes. If, however, consumers differ in terms of income and the government is especially sensitive to the tax burden of the poor, it may deviate from the inverse elasticity rule in order to have a lower tax on goods that are consumed disproportionately by the poor.**
 - (c) The government should provide social insurance because it can reduce market problems associated with adverse selection and moral hazard. **It is correct that adverse selection can result in underinsurance in a market and that the government that can mandate social insurance can improve upon the situation. This will be the case if there are no loading (no admin costs) associated with insurance and all individuals are risk averse. With loading it may not be optimal to insure all individuals even if they are risk averse (the admin cost may be larger than the low risk individuals willingness to pay for insurance). Good students will also point out that it is not always there will be adverse selection in insurance, even if the insurer cannot observe individual risks. If risk aversion and risk is negatively correlated we may have advantageous selection and the market works fine.**
 - (d) A subsidized child care program costs the government 30 millions, but increases the labor supply for female workers so that the government obtains 30 millions in increased tax income due to the child care program. This program has a MVPF of 1. **This is not correct. In this case the project is self financed and the MVPF is infinite.**
 - (e) In an economy where goods y are produced with capital (K) and labour (L) according to the macro production function $y = f(K, L)$ with $\frac{\partial(\partial f/\partial L)}{\partial K} > 0$. The production capital can be moved to another country at no cost (full mobility). The effect of introducing a tax on capital returns will lower wages and have no effects on the returns to capital. **This is correct if we assume that this is a small country and that the capital that migrate from the country does not change the marginal product of capital in the “world market”. If not, if moving capital abroad reduces the returns to capital in the “world market” both workers and capital earners will suffer a lower price of their input due to the tax.**
2. **Mirrlees model (25 %)** Explain briefly the main features and insights of the Mirrlees model of redistribution and non-linear income taxation. Discuss if the Mirrlees model can provide a normative justification for public provision of private goods. **The main feature of the M model is that the government is taxing individual income under the constraint that it cannot**

observe individual ability or productivity, operationalized as their wages w . The government observes $z = wl$ where l is hours worked and taxes according to $T(z)$. The individual problem is to

$$\max u(c, l) \text{ st. } z - T(z) = c$$

The government takes into account how individuals adjust their income to taxes $w(1-T)u_c + u_l = 0$, this is the incentive constraint, and solves

$$\max SW = \int G(u(wl - T(wl), l)f(w)dw \text{ st. } \int T(wl)f(w)dw \leq R$$

Some students may set this up as a two type problem. That is fine. The important thing is that they are aware that M model puts no a-priori restrictions on the tax function, but makes the assumption that taxes can not be contingent on ability or w , but must be levied on the endogenous variable z . If welfare is utilitarian and taxes could be contingent on w , there would be no incentive problem associated with taxation and it would be optimal that the most productive persons work more than those with lower productivity, but all should have the same consumption (if they have the same util fn).

With taxation of z there are incentive problems associated with taxation; a positive marginal tax rate will set a wedge between the social value of work and the private take home income. It is more important that the students can describe this problem than write down the formula - since that is easy to do in a take home exam.

They should also be able to explain how public provision of in kind goods may relax the “incentive constraint” sometimes also called the “no mimicking constraint”. The point is that a good that has low value for someone with a lot of leisure may make it less tempting for those with a high ability (high wage) to reduce their labour supply. Suppose for example (and this example is from Vidar Christiansen and I guess many students will use it, kudos if another example is used) that the government provides free child care. This is more valuable the longer hours someone works, hence it will be less valuable for those with a high w that chooses a low l to mimic those with a lower w .

3. **Taxation of net wealth and wealth transfers (50 %).** Taxation of net wealth and wealth transfers are some of the most debated tax policy issues in Norway. In the following you are asked to discuss some of the arguments in favor and against this type of taxation.

- (a) a. The Atkinson-Stiglitz theorem is a public economics benchmark which states that (under some assumptions) there is no need for other types of taxation than a non-linear tax on labor income. All the desired redistribution of the optimal tax system is achieved through the labor income tax. Explain under which conditions the Atkinson-Stiglitz benchmark can be obtained for taxation of wealth according to Scheuer and Slemrod (2020).

ANSWER HINT:

This question is straightforwardly answered by referring to the exposition in Scheuer and Slemrod (2020), which builds on some key insights from Atkinson-Stiglitz reasoning, now there is initial inequality in wealth too (in addition to labor income inequality). The paper by Scheuer and Slemrod (2020) discusses the case when there is both inequality in wealth and labor income, people are born with different endowments (wealth), $k(\theta)$: is the labor tax sufficient to deal with both inequality in wealth and labor income? The

discussion departs from the following:

$$T'_k(Rk_1(\theta)) = \frac{T_y(y_0(\theta))}{1 - T'_y(y_0(\theta))} \left[\frac{\sigma(\theta)}{\alpha(\theta)\eta(\theta)} \left(1 + \frac{1}{\varepsilon(\theta)} \right) - 1 \right]^{-1}$$

where $T'_k(Rk_1(j))$ is the marginal tax on intertemporal wealth, σ = the intertemporal elasticity of substitution, $\varepsilon(\theta)$ is the Frisch elasticity of labor supply,

$\frac{k'_0(\theta)\theta}{k_0(\theta)} = \eta(\theta)$ is the elasticity of initial wealth with respect to labor productivity, and $\alpha = \frac{k_0}{c_0}$ is the share of period-0 consumption financed out of initial wealth.

The term in square brackets introduces a wedge between the two: one may obtain redistributive taxation which can not be obtained by the labor tax alone. With no initial wealth inequality, when η approaches 0, we are back to the Atkinson-Stiglitz benchmark where all redistribution is achieved through the labor income tax, and we have $T'_k(Rk_1(\theta)) = 0$. The same is true when the Frisch elasticity (ε) is zero. Inelastic labor supply implies that the labor income taxation is lump sum, and not distortive, and all redistribution is achieved through a non-distortive labor tax. Further, when the intertemporal substitution elasticity (σ) is infinite, savings distortions by a wealth tax explode, we should also not tax wealth. T'_k depends on how $\alpha\eta$, which summarizes the importance of initial wealth relative to labor income inequality, varies across the income distribution.

- (b) b. What are the main arguments for and against a wealth tax (for example in Norway)?
ANSWER HINT:

Here the student is invited to demonstrate some overview. The answer should include arguments as:

- Redistribution: could be difficult to achieve redistribution from other parts of the tax system there could be scope for a tax on wealth inequality (ref 3a). There could be constraints on taxation of capital income (as there is in Norway). One may achieve redistribution of economic resources, although one here taxes wealth instead of income. Could be a problem that some people with low income have high wealth and may have troubles in paying the tax.
 - Efficiency losses: the literature is mixed. Here the student may refer back to 3a too, for example the implication of savings distortion. The losses come in many categories, for example evasion.
 - Problems for start-up firms which do not generate income (yet).
 - Externalities: concentration of power
- (c) Instead of, or in addition to, a tax on net wealth, one may tax intergenerational transfers, which could mean that one re-introduces an inheritance tax in Norway. One main argument for letting intergenerational transfers be taxed is that the efficiency loss from this type of taxation could be small. Discuss distortions of taxation of intergenerational transfers under different transfer models.

ANSWER HINT:

This question is straightforwardly answered by referring to the paper by Laitner and Ohlsson.

Under people act under the life-cycle hypothesis there no or very little deadweight loss: when a household dies young, the resources generate bequests. If it lives long it may

die with little or no estate. But the agent does not plan to leave bequests and correspondingly, does not care about the transfer being taxed. In contrast, when donors have transfer motives, there are larger efficiency losses involved, from Laitner and Ohlsson (2001):

Table 1

Theoretical determinants of bequests and excess burden of taxation

Model	Parent's resources	Child's earnings	Excess burden of taxation
Accidental model	+	0	No
Altruistic model	+	-	Yes
Egoistic model	+	0	Yes, if amount received matters No, if amount given matters
Exchange model	+	?	Yes

Altruistic model:

A parent lives one period, period 1, and raises a child. The parents total earnings, Y^p , arrive in period 1, and child's income, Y^c in period 2

More importantly the parent provides inheritance to the child, I^c . The child's total resources is $Y^c + I^c$ and the parent solves $\max_{I^c} \{U(Y^p + I^p - I^c) \lambda V(Y^p + I^p)\}$ subject to $I^c > 0$. λ measures the strength of altruism.

$V(\cdot)$ measures the parental utility from the child's consumption and λ measures the strength of altruism. When $T^* = T^*(Y^p + I^p, Y^c, \lambda)$ is the utility-maximizing transfer to the child. Then we have $(\partial T^*)/(\partial Y^p) > 0$ and $(\partial T^*)/(\partial Y^c) < 0$, and a tax will distort this behavior with accompanying efficiency loss.

The egoistic model:

The parent derives utility from the amount he bequeaths, but does not value the increased consumption of the child. The parent gets no utility from the amount consumed by the child $\max_{I^c} U(Y^p + I^p - I^c) \lambda V(I^c)$ subject to $I^c > 0$. In contrast to the altruistic case an heir's earning have no bearing on $V(\cdot)$. In this case we therefore have $(\partial T^*)/(\partial Y^p) > 0$ and $(\partial T^*)/(\partial Y^c) = 0$. If the donor only cares about his own sacrifice of making the bequest, there is no distortion. If the donor cares about the amount transferred, the argument of V is net-of-tax: then an inheritance tax is distortive.

The exchange model:

The parent values attention from the child more than services purchased in anonymous markets. If C^s is the quantitative attention the parent "purchases" from his child and let P be the price. Thus, the maximization problem can be seen as $\max_{C^s} U(Y^p + I^p - P(Y^c)C^s) \lambda V(C^s)$ subject to $C^s > 0$. $V(\cdot)$ measures the parent's pleasure from the attention of the child. Now we have $(\partial T^*)/(\partial Y^p) > 0$ and $(\partial T^*)/(\partial Y^c) > 0$ or < 0 . The ambiguity of $(\partial T^*)/(\partial Y^c)$ follows from the cost of providing attention is increasing in Y^c . A tax rate on bequests increases the price, distorts behavior and creates a distortion.